BINARY
ICTSKILLS

Empowering excellence
ICT Skills for the modern workforce

binarylogic

BINARY
ICTSKILLS

Binary ICT Skills New Edition

Binary ICT Skills New Edition is a dynamic series designed to prepare students, employees, and individuals for the technology-driven workforce. This series covers a broad spectrum of topics, from basic computing to advanced digital skills, matching the growing use of technology across sectors. It's designed to develop a thorough understanding of modern digital tools, crucial for success in today's digital work environment.

> The Binary ICT Skills New Edition series is a collection of eight textbooks, each focusing on a critical aspect of information and communication technologies:
>
> - **Modern Computing**
> - **Text Documents**
> - **Spreadsheets**
> - **Presentations**
> - **Databases**
> - **Graphic Design**
> - **Computer Science**
> - **Digital Business**
>
> Covering a wide array of topics, from basic computer operations to complex data analysis and digital design, learners acquire essential skills for professional documentation, data management, effective communication through presentations, and creative design. The series also explores the essentials of computer science, including networking, and addresses the latest trends in digital commerce and online business, covering cybersecurity concepts and project planning.

Adapting to the Needs of Today's Learners and Workforce

Global Standards Developed in adherence to international standards, ensuring educational excellence.

Current and Evolving Content Regularly updated to include the most recent technological advancements and the latest versions of software applications.

Versatile Teaching Approaches Supports diverse teaching methods, including traditional, flipped classroom, and remote or hybrid learning environments.

Localization Customized editions with feedback from local experts, making the series culturally relevant and adaptable to diverse educational settings.

ISTE SEAL
JUNE 2023-2025

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Key Features:

In-Depth Practical Learning
Each textbook is designed to provide a comprehensive understanding of its subject matter, ensuring learners are well-versed in practical applications of ICT skills.

Step-by-Step Instructional Design
The series offers clear, concise guidance, enabling learners to grasp and apply complex ICT concepts easily.

Project-Based Learning
Emphasizes project-based and inquiry-based learning, promoting hands-on experience and deep understanding.

21st Century Skill Enhancement
Beyond technical skills, the series promotes critical life skills like teamwork, problem solving, and effective decision-making.

Workplace Relevance
With a focus on digital skills required in modern workplaces, this series prepares individuals for professional environments where technology is integral.

Empowering Educators and Trainers
Accompanied by detailed guides for instructors, the series supports educators and trainers in delivering effective, engaging ICT education.

Join Us in Empowering the Workforce of Tomorrow
Binary ICT Skills New Edition is not just a textbook series; it's a pathway to mastering the digital skills essential in the modern workplace. Whether for high school students, young adults, or professionals seeking to enhance their digital proficiency, this series is an invaluable resource for anyone looking to thrive in the digital era.

Binary ICT Skills New Edition
Rengineering Education

Contact us for more information at **ict@binarylogic.net**
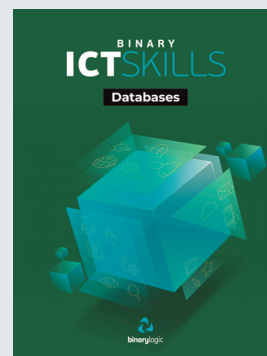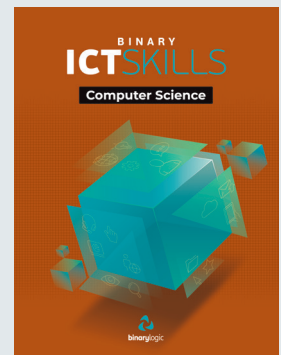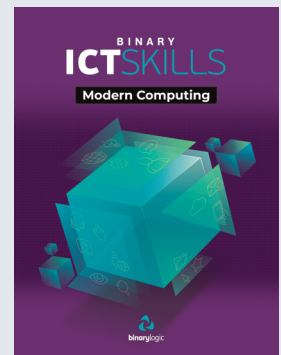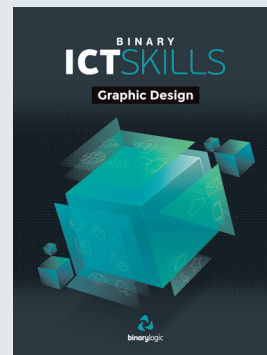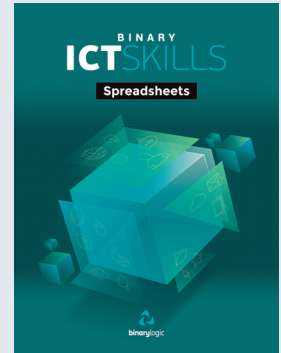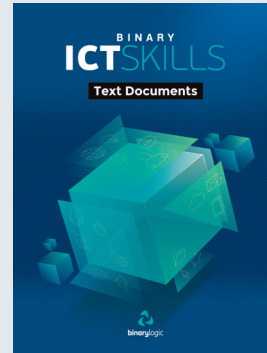
Text Documents

Overview

BINARY
ICTSKILLS
Text Documents

binarylogic
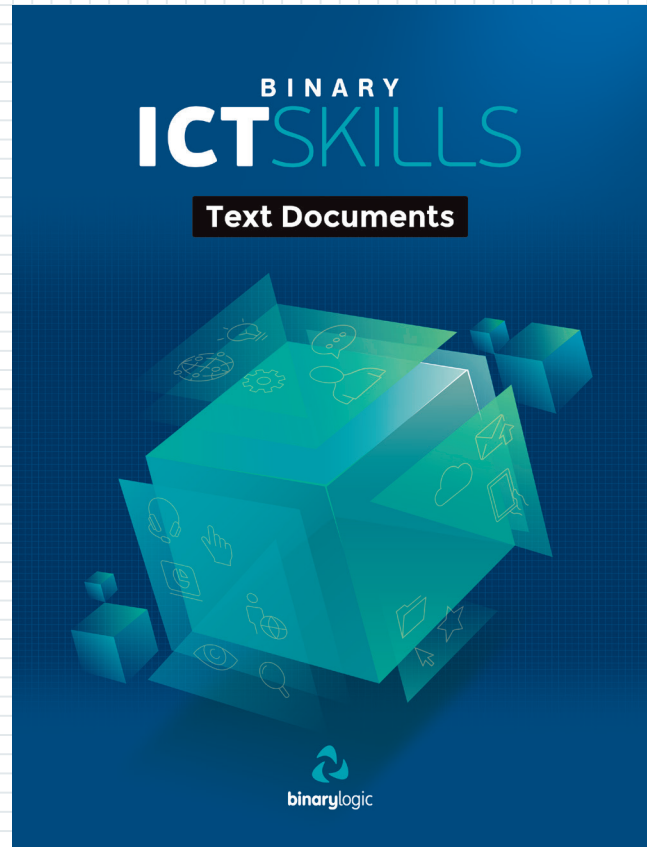
MODULE 1
1 Creating a document

In this module, you will learn how to create text documents and how to make them look beautiful! You will also learn how to create long documents for a class assignment or your school newspaper. Find out how you can use color and borders around a text to make it easier to read and insert images to make it appealing. Organize some of your data in tables and learn how to print your document on paper after checking all your mistakes or finding new words in Thesaurus.

Learning Objectives

In this module you will learn:

> what the environment of Microsoft Word is like.
> how to write texts in different ways.
> how to create a document that is easy to read.
> how to use images, 3D models and screenshots in your document in order to make it interesting and attractive.
> how to correct your mistakes.
> how to put your document on paper.

Skills

After this module you will be able to:

> use Microsoft Word.
> format text and paragraphs.
> insert images.
> insert 3D models.
> use borders and shadings.
> use Spelling to check for mistakes.
> use Thesaurus to find synonyms.
> print your document.

Tools

> Microsoft Word
> LibreOffice Writer
> Apple Pages
> Docs To Go for Google Android
> Microsoft Word for Android

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TASK 1
Formatting text

One of the most common tasks that we do on a computer is to write text. It can be anything from a small note or an email to a friend, to a school project. Text is so important that many different programs have been developed to create and edit it. **Microsoft Word** is a very powerful program, not only for writing but also for formatting text, making tables and labels or even having fun with pictures and shapes. The environment of Microsoft Word is simple and easy to use.
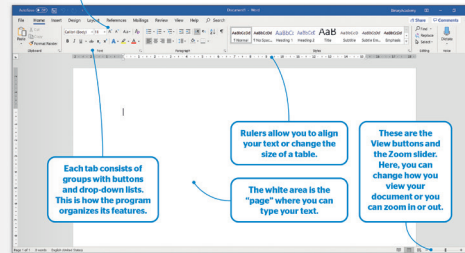
To open Word:

> Click the **Search** button, type **Word** and press Enter ↵

> The program opens.

The Ribbon is dynamic. When you select an object, let's say a picture, a new tab offering new options for pictures will appear. If you change the size of the main window, the Ribbon may hide some options.

This is the Ribbon. From here you can access all the tools in Microsoft Word. Each tab deals with a specific task, e.g. the page layout.

Grouping the buttons is very important, because some buttons do similar things. For example, the Font group gives you all the necessary tools to format the font of your text.

Rulers allow you to align your text or change the size of a table.

These are the View buttons and the Zoom slider. Here, you can change how you view your document or you can zoom in or out.

Each tab consists of groups with buttons and drop-down lists. This is how the program organizes its features.

The white area is the "page" where you can type your text.

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TASK 2
Headers and footers

A page header is one or more lines of text that appear at the top of each page. Usually, it shows some information that relates to the entire text, e.g. the title of the document. A page footer is the text that appears at the bottom of each page. Like the header, it may also show some information that relates to the entire text, e.g. page numbers. You can use a header, a footer, or both, to make your document look more professional.

You can insert predesigned headers or footers into your document and easily change their format, or you can create your own header or footer, and save them.

To add a Header:

> On the **Insert** tab, in the **Header & Footer** group, click **Header**. ❶
> Click **Blank (Three Columns)** to insert a blank header. ❷
> Type some information. For example, you can type **your name** on the left, *London* at the center and the **date** on the right. ❸
> Click **Close Header and Footer**. ❹

More Headers from Office.com takes you to a pop-up menu with additional headers that can be used in your document.

Edit Header makes changes to the header, which is the same as double-clicking the header area.

Remove Header deletes your header.

Save Selection to Header Gallery saves a header which you've designed for future use.

Every header and footer has some default tabs to help you align your text. You can always use your own, of course.

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To add a footer:

> On the **Insert** tab, in the **Header & Footer** group, click **Footer**. ❶
> Click **Banded**. ❷
> The number of the page will be displayed at the bottom of the page. ❸
> On the **Header & Footer** tab, in the **Close** group, click **Close Header and Footer**. ❹
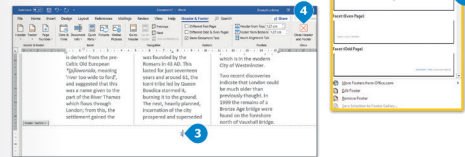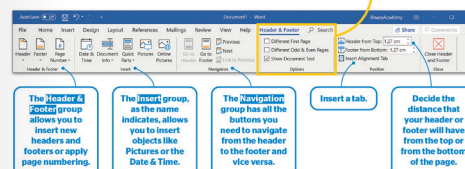
More Options

On the **Header & Footer** tab, you can find all the necessary tools you need to edit the headers or footers in your document. Let's see some of them!

Use a different header and footer for the first page.

Use different headers and footers on odd and even pages.

See the rest of your text as you edit your header and footer.

The **Header & Footer** group allows you to insert new headers and footers or apply page numbering.

The **Insert** group, as the name indicates, allows you to insert objects like Pictures or the Date & Time.

The **Navigation** group has all the buttons you need to navigate from the header to the footer and vice versa.

Insert a tab.

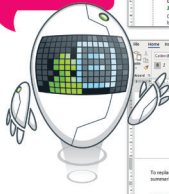Decide the distance that your header or footer will have from the top or from the bottom of the page.

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Text Documents

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To add text to a template:
- Click the placeholder of the text you want to replace. ❶
- Type your text. ❷
- Save the file.

> A lot of people use templates to create their CVs or letters. It's easy, fast and can help you prepare a perfect document.

FIRST NAME **LAST NAME**
Address · Phone
Email · LinkedIn Profile · Twitter/Blog/Portfolio

To replace this text with your own, just click it and start typing. Briefly state your career objective, or summarize what makes you stand out. Use language from the job description as keywords.

EXPERIENCE
DATES FROM – TO
JOB TITLE, COMPANY
Describe your responsibilities and achievements in terms of impact and results. Use examples, but keep it short.

ALEX FORD
alex@binary-kids.com

To replace this text with your own, just click it and start typing. Briefly state your career objective, or summarize what makes you stand out. Use language from the job description as keywords.

EXPERIENCE
DATES FROM – TO
JOB TITLE, COMPANY
Describe your responsibilities and achievements in terms of impact and results. Use examples, but keep it short.

Table of Contents

If you are writing a book or a document with many pages, you will need a way to find out quickly where a particular subject is. To do this, you can add a table of contents.

Type the following paragraphs:

Characteristics of each planet

Mercury
It is named after the messenger of the gods of ancient Rome. It is the smallest planet in our solar system.

Venus
It is the brightest planet in the sky. It appears in the east as the "morning star" and as the "evening star" in the west.

Earth
It is the only planet known to have living beings on it. Its atmosphere is composed mostly of oxygen and nitrogen.

Mars
The planet Mars is similar to Earth in some ways.

Jupiter
It is the biggest of all the planets.

Saturn
It has a hot, solid inner core of iron and rocky material.

Uranus
It was discovered in 1781 by William Herschel. Unlike Jupiter and Saturn, Uranus does not seem to have an internal source of heat.

Neptune
It was discovered in 1846 by two astronomers, Adams and Leverier. Its composition is similar to that of Uranus.

Pluto
It was discovered in 1930 by the Lowell Laboratory. It's no longer considered to be a planet, because of its small size.
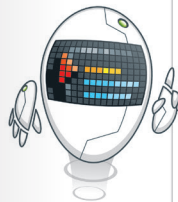
Satellites

Charon

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To apply headings:
- Select the word Mercury. ❶
- On the **Home** tab, in the **Styles** group, click **Heading 1**. ❷
- Repeat these steps for all the planets and Pluto. For the words *Satellites* and *Charon*, apply **Heading 2**. ❸

Mercury
It is named after the messenger of the gods of ancient Rome. It is the smallest planet in our solar system.

Venus
It is the brightest planet in the sky. It appears in the east as the "morning star" and as the "evening star" in the west.

Earth
It is the only planet known to have living beings on it. Its atmosphere is composed mostly of oxygen and nitrogen.

Mars

> Keep in mind that you can't add an automatic Table of Contents if you haven't applied heading styles to your document's titles first.

Characteristics of each planet

Mercury
It is named after the messenger of the gods of ancient Rome. It is the smallest planet in our solar system.

Venus
It is the brightest planet in the sky. It appears in the east as the "morning star" and as the "evening star" in the west.

Earth
It is the only planet known to have living beings on it. Its atmosphere is composed mostly of oxygen and nitrogen.

Mars
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Pluto
It was discovered in 1930 by the Lowell Laboratory. It's no longer considered to be a planet, because of its small size.

Satellites
Charon ❸

> Do you remember that you can apply a Heading from the Outline view?

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Page 92
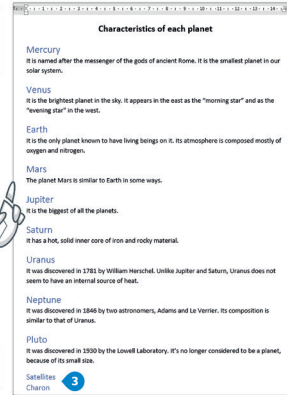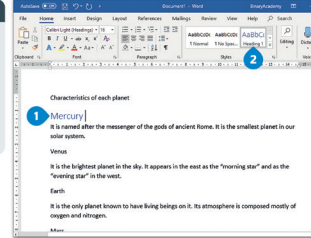
To change the starting number:
- Select the numbered list.
- On the **Home** tab, in the **Paragraph** group, click the arrow next to the **Numbers** button. ❶
- In the list, click **Set Numbering Value**. ❷
- In the **Set Numbering Value** window, in the **Set value to** box, select **II**. ❸
- Click **OK**. ❹
- The numbering will change.

It's also possible to make a second list within the existing list. This is called multilevel list numbering.

Type the following:

The Michigan ECCE has these sections:
Listening
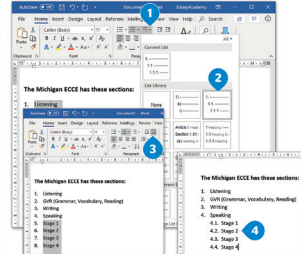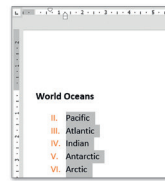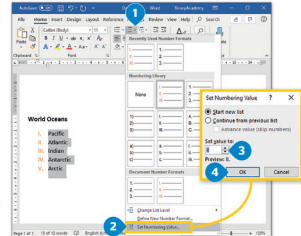***GVR (Grammar, Vocabulary, Reading)***
Writing
Speaking
Stage 1
Stage 2
Stage 3
Stage 4

World Oceans
I. Pacific
II. Atlantic
III. Indian
IV. Antarctic
V. Arctic

World Oceans
II. Pacific
III. Atlantic
IV. Indian
V. Antarctic
VI. Arctic

To apply a multilevel list numbering:
- Select the text from **Listening** to **Stage 4** in the current example.
- On the **Home** tab, in the **Paragraph** group, click the **Multilevel List** button. ❶
- Click the multilevel style you want. ❷
- Select the text from **Stage 1** to **Stage 4**.
- On the **Home** tab, in the **Paragraph** group, click **Increase Indent**. ❸
- Your multilevel list numbering will be applied. ❹

The Michigan ECCE has these sections:
1. Listening
2. GVR (Grammar, Vocabulary, Reading)
3. Writing
4. Speaking
   4.1. Stage 1
   4.2. Stage 2
   4.3. Stage 3
   4.4. Stage 4

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To create your own multilevel list formats:
- On the **Home** tab, in the **Paragraph** group, click the **Multilevel List** button. ❶
- Click **Define new Multilevel list**. ❷
- On the **Define new Multilevel list** window, make the changes you want. ❸
- Click **OK**. ❹

The Michigan ECCE has these sections:
1. Listening
2. GVR (Grammar, Vocabulary, Reading)
3. Writing
4. Speaking
   4.1. Stage 1
   4.2. Stage 2
   4.3. Stage 3
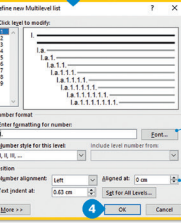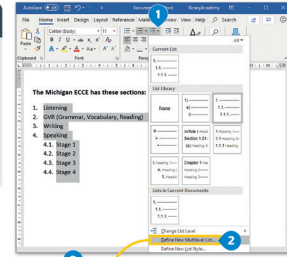   4.4. Stage 4

> Use the **level list** to choose the indentation level you want to change.

> Use **Number style for this level** to choose the style you want.

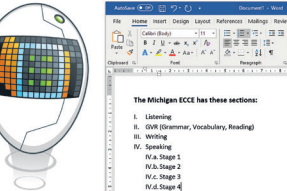> Use **Number alignment** to choose the alignment you want.

> With **Text indent at**, you can set the bullet's indentation.

> With **Font**, you can change the style and color of your font.

> With **Aligned at**, you can choose the number's position alignment.

Define new Multilevel list
Click level to modify:
1.
 1.1.
  1.1.1.
   1.1.1.1.
    1.1.1.1.1.
     1.1.1.1.1.1.
      1.1.1.1.1.1.1.
       1.1.1.1.1.1.1.1.
        1.1.1.1.1.1.1.1.1.

> A multilevel list is not something that you are going to use very often, but it's a good tool if you want to make a structured list, like the contents of a book or project.

The Michigan ECCE has these sections:
I. Listening
II. GVR (Grammar, Vocabulary, Reading)
III. Writing
IV. Speaking
   IV.a. Stage 1
   IV.b. Stage 2
   IV.c. Stage 3
   IV.d. Stage 4

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Create a new document

The first step you have to do when using Scribus is to set the size of the new document, depending on the project that you want to create.
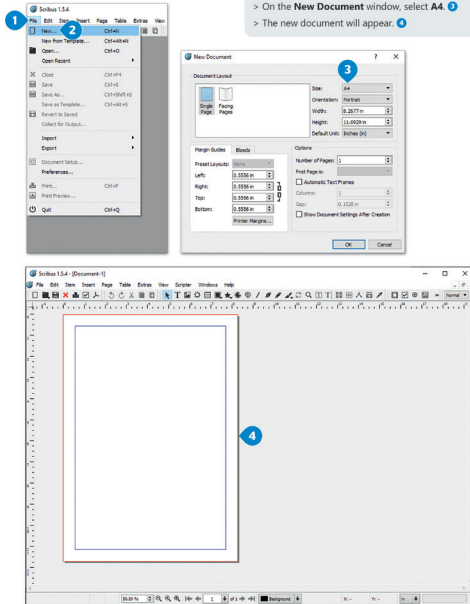
To create a new document:

> Open the Scribus program.
> On the **File** tab, ❶ click **New**. ❷
> On the **New Document** window, select **A4**. ❸
> The new document will appear. ❹

Document setup and preferences

After creating the new document, the next step is to setup some of its elements, like margins and save options, in order for them to function automatically for the whole document. Also, you can set some other preferences, like the language that you will use in your document, and some other guides (like placement and visibility).

To set the language:

> On the **File** tab, ❶ click **Preferences**. ❷
> In the **Preferences** window, click **User Interface**. ❸
> On the **Main Window** tab, ❹ select the language you want. ❺
> Click **OK**. ❻

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To modify the table cells:

> Select a cell. ❶
> On the **Windows** tab, ❷ select **Properties**. ❸
> On the **Table** option, ❹ click the border ❺ and select **Width**, **Type** and **Shade** to style the cell. ❻
> Select **Fill** options to give color and shade to the cells. ❼

Colour Green_1
Shade: 100%

Colour Green_1
Shade: 10%
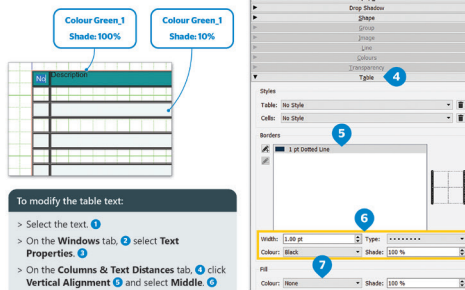
To modify the table text:

> Select the text. ❶
> On the **Windows** tab, ❷ select **Text Properties**. ❸
> On the **Columns & Text Distances** tab, ❹ click **Vertical Alignment** ❺ and select **Middle**. ❻
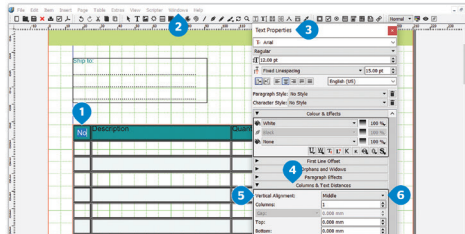
To preview the file:

> On the **View** tab, ❶ select **Preview** and then click **Preview Mode**. ❷
> Now you can see the file, ready without Grids and Guides. ❸
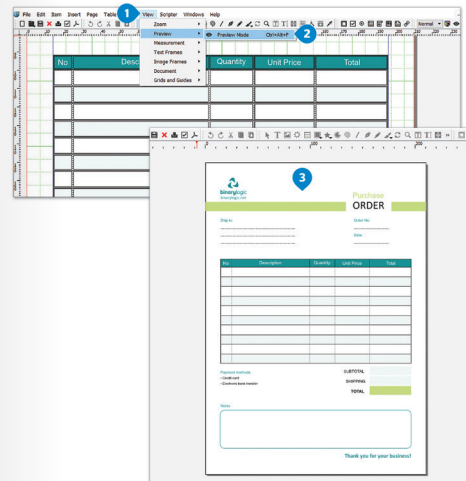
⚙ Hands on!

What are the differences between a printed and a web form? Give an example in which you would use a web form and a case where you would use a printed form. Justify your choices.

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Spreadsheets

Overview

1. Working with numbers
Rows and columns
Advanced formatting
Simple calculations
Logical functions
Create a chart

2. Analyzing data
Complex calculations
Functions
References
Advanced charts
Import and export data

3. Advanced spreadsheets
Tables and data
Advanced worksheets

4. Charts & Modeling
Charts and objects
Modeling and simulation
Options and views

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Spreadsheets

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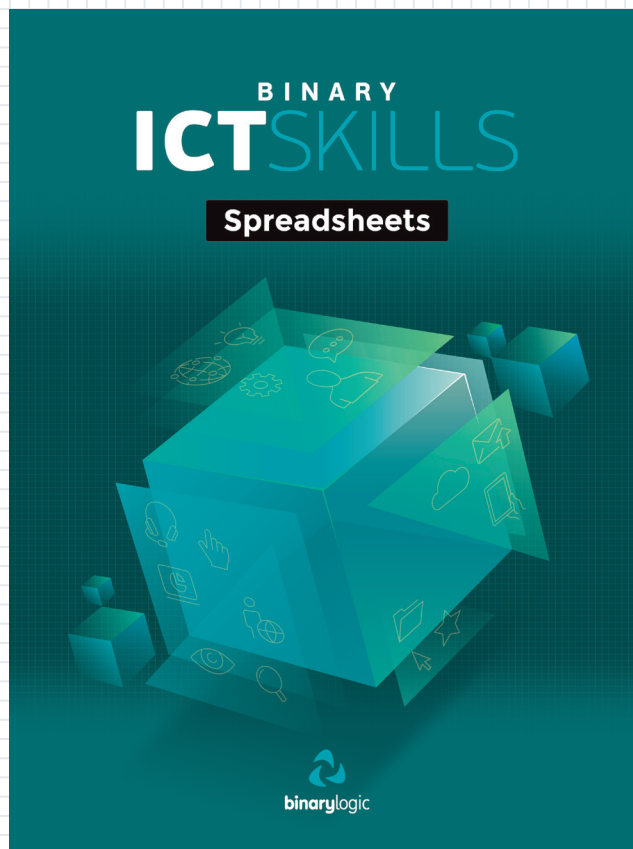
TASK 2
Advanced formatting

So far, you've learned how to make a small table and format it to look nice. Now let's understand the meaning of numbers and do some more formatting. Some issues we'll look at are: What's the difference between a number and a currency? Can you put the date into a cell?

We will make a grocery list. We are going to type what we want to buy from the supermarket, the quantity and how much each product costs. After that, we are going to format it, but we will use advanced options.

Currency

Let's start with the price. A typical use of **Microsoft Excel** is to gather data that has to do with money. In such cases, you need to change the numbers into a currency format.

To apply a currency format:

> Select the cells you want e.g. **C4** to **C9**. ❶
> On the **Home** tab, in the **Number** group, from the **Number Format** list, click **Currency**. ❷
> The format of your cells has changed. ❹

You can choose between Number, Currency, Accounting and Percentage. Accounting aligns the values at the decimal point.

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Date

It's common to use dates in **Microsoft Excel**. That's why the program gives you a variety of date formats to choose from.

To apply Date or Time:

> Select the cell that contains the date you want to format, e.g. **A1**. ❶
> On the **Home** tab, in the **Number** group, click the **Expand** button. ❷
> The **Format Cells** window will appear. Click **Date**. ❸
> In the **Type** list, ❹ click the type you like and then click **OK**. ❺

The date must be in the format that your computer is set to.

Not all countries use the same date format. Some put the day before the month.

Merge cells, wrap text and set alignment

The previous task was about how you can format data. All of these options are included in a single window.

Keep in mind that through the Expand button you have more options like custom text orientation.

To merge cells, wrap the text and align it:

> Select the cells you want to merge, e.g. **A2** to **D2**. ❶
> On the **Home** tab, in the **Number** group, click the **Expand** button.
> In the **Format Cells** window, click the **Alignment** tab. ❷
> Select the **Wrap text** and **Merge cells** check boxes. ❹
> In the **Horizontal** list, click **Center** and in the **Vertical** list, click **Center** again. ❺
> Click **OK**. ❻

You can also change the indentation or the orientation of the text.

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CONCATENATE

To join cell contents, you can use the CONCATENATE function.

To use the CONCATENATE function:

> Click in cell **C2**. ❶
> On the **Formulas** tab, in the **Function Library** group, click **Insert Function**. ❷
> In the **Insert Function** window, in the **Or select a category** list, click **All**. ❸
> Click **CONCATENATE**. ❹
> Click **OK**. ❺
> In the **Function Arguments** window, in **Text1** text box type **A2**, in **Text2** text box type " ", in **Text3** text box type **B2**, and in **Text4** text box type "m". ❻
> Click **OK**. ❼
> Use the **Fill handle** ❽ to copy the function. ❾

LEFT, RIGHT, MID

If you want to extract a part of a string (substring) use the **LEFT**, **RIGHT** and **MID** functions.

To use the MID function:

> Click in cell **B10**. ❶
> On the **Formulas** tab, in the **Function Library** group, click **Text**. ❷
> In the list, click **MID**. ❸
> In the **Function Arguments** window, in the **Text** box type ❹ It's the cell from which you are going to extract characters.
> In the **Start_num** text box, type. ❺ It's the position of the first character you want to extract.
> In the **Num_chars** text box, type . ❻ You are specifying how many characters you want to extract.
> Click **OK**. ❼
> The result of the function is displayed in cell **B10**. ❽

Similarly, you can use the LEFT and RIGHT functions to extract text from the left or right of a text respectively.

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Spreadsheets

TASK 4
# Advanced charts

Chart types

To make your data presentations more lively and interesting, you can use charts. There are various charts you can choose from, but it is essential to understand which type is the most effective for your purpose. Bear in mind that choosing the wrong chart could lead to confusion or an incorrect interpretation of the data.

These are the main charts that you can create with your data in Microsoft Excel:

The **Column or Bar Chart** is used to illustrate comparisons between a series of data. In a column chart, categories appear horizontally (X-axis) and numeric values appear vertically (Y-axis). The opposite happens in a bar chart which is one of the most commonly used chart types.
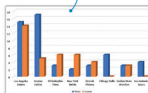
The **Line Chart** is used to display trends. It shows the changes in data over a period of time. Numeric values always appear vertically (Y-axis) and time horizontally (X-axis). It is suitable for showing data for a large number of groups.
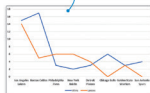
The **Area Chart** is like a Line Chart except that the area below the plotted line is filled in with color. It is used to display trends over time or some other category and it is suitable for showing data for a limited number of groups.
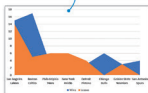
The **Pie Chart** is used to display only one series of data. It shows the relationship of the parts to the whole. You have to pay attention. It is suitable for showing data for one group.
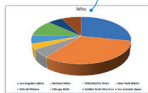
The **Scatter Chart** is used to display the values of two series and to compare them over time. It is like a Line Chart, except that the plotted line shows data points. It is suitable for showing the relationship between two variables.
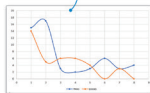
The **Doughnut Chart** is used to display data as doughnut slices and is similar to the Pie Chart.

To add a chart:

> Type this table and select cells **A2** to **C10**. ❶
> On the **Insert** tab, in the **Charts** group, click **Insert Column or Bar Chart**. ❷
> In the list of column chart sub-types, click the one you like. ❸
> The chart will be added to your worksheet. ❹
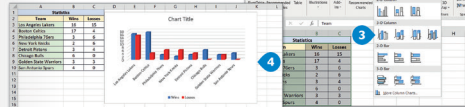
Modify a chart

After you create a chart, you can modify it. For instance, you may want to change its titles or its type.

To move the chart:

> Click on the chart. ❶
> On the **Chart Design** tab in the **Location** group, click **Move Chart**. ❷
> You can move your chart to a new worksheet or wherever you want. ❸

Use **Object in** to move your chart to an existing worksheet.
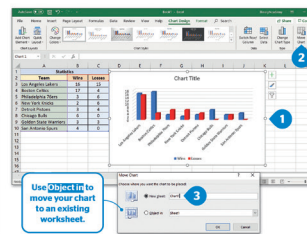
To change the Shape Fill of the chart:

> Click on the shape you want to make changes to. For example select **"Losses"** ❶
> On the **Format** tab, in the **Shape Styles** group, click **Shape Fill**. ❷
> Click on a color of your choice. ❸

52 53
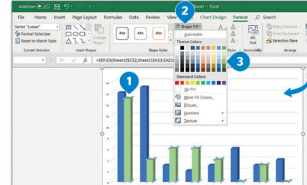
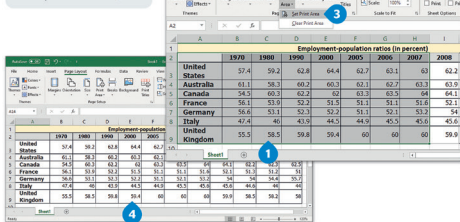
Print a specific area

If you need to print out data that is contained in a worksheet, but not all of it, you can use the **Print Area** option.
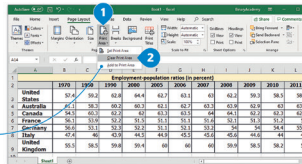
Type the following text:

To select the Print Area:

> Select cells from **A2** to **H9**. ❶
> On the **Page Layout** tab, in the **Page Setup** group, click **Print Area**. ❷
> Click **Set Print Area**. ❸
> Your print area is set. ❹

To deselect the Print Area:

> On the **Page Layout** tab, in the **Pages Setup** group, click **Print Area**. ❶
> Click **Clear Print Area**. ❷

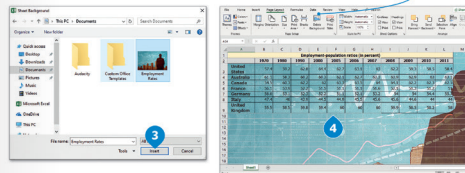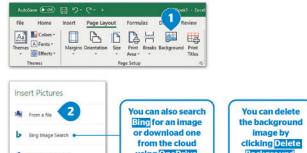You can add more cells to the already existing print area.

Background picture

You can also add a graphic as an image to the background of your cells. Keep in mind that the background image should be very light in color, otherwise your data will be difficult to read.

To set a background picture:

> On the **Page Layout** tab, in the **Pages Setup** group, click **Background**. ❶
> In the **Insert Picture** window, click **From a file**. ❷
> Click the image you want to insert and click **Insert**. ❸
> The selected image will be set as a background. ❹

You can also search **Bing** for an image or download one from the cloud using **OneDrive**.

You can delete the background image by clicking **Delete Background**.

Freeze panes

In case you have too much data, you can use **Freeze Panes** to keep a row or a column visible while you go to another area of your worksheet. For example, let's say you want column **A** and rows **1 & 2** to be visible at all times.

To Freeze certain Panes:

> Click cell **B3**. ❶
> On the **View** tab, in the **Windows** group, click **Freeze Panes**. ❷
> The first column and the first two rows will be always visible on your screen.
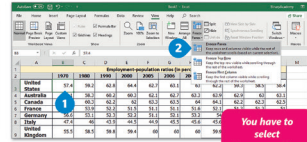
To Freeze a:	Select:
Column	The first cell to the right of the column.
Row	The first cell of the row below.
Row and column	The cell below the row and to the right of the column.

You have to select the row, cell or column that is below or left of the one you want to freeze.

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Switching between rows and columns in a chart

When creating a chart, the data can be grouped on the horizontal axis according to the rows or the columns. So in our chart, on the horizontal axis, the data is grouped according to each student and we are going to switch between the rows and columns to group the data according to the subject.

To switch between rows and columns in a chart:

> Click the chart you want to switch data. ❶
> On the **Design** tab, in the **Data** group, click **Switch Row/Column**. ❷
> The data in the chart is switched between the rows and columns. ❸
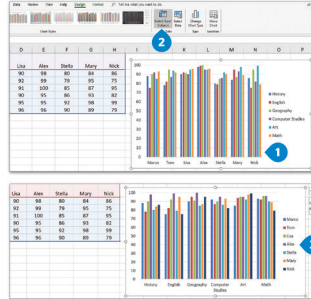
Using Quick Analysis

In a worksheet, you can analyze your data very easily and quickly. You can create different types of charts, including line and column charts, or add sparklines. You can also apply table styles, insert totals and apply conditional formatting.

To use Quick Analysis:

> Select the cells that contain the data you want to analyze. ❶
> Click the **Quick Analysis** button that appears at the bottom right of your selected data. ❷
> Click a tab you want.
> Click the **Formatting** tab ❸ to highlight parts of your data according to rules.
> Click the **Charts** tab ❹ to present your data in different charts.
> Click **Totals** ❺ to select from various formulas to apply to the rows and columns.
> Click **Tables** ❻ to filter and sort your data.
> Click **Sparklines** ❼ to use tiny charts in single cells.

Conditional Formatting uses rules to highlight interesting data.

Recommended Charts help you visualize data.

Formulas automatically calculate totals for you.

Tables help you sort, filter, and summarize data.

Sparklines are mini charts placed in single cells.
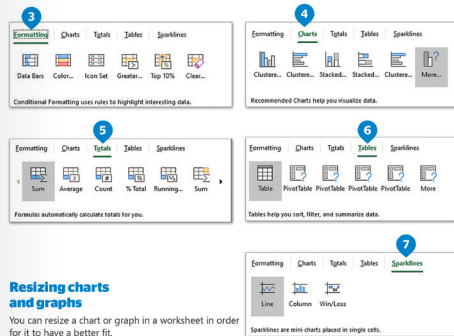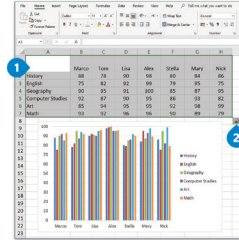
Resizing charts and graphs

You can resize a chart or graph in a worksheet in order for it to have a better fit.

To resize a chart or graph:

> Click the chart you want to resize and position your mouse over any of the "handles" around it. ❶
> Click, hold and drag your mouse until the chart is the desired size.
> You can use specific height and width measurements, on the **Format** tab, in the **Size** group, type the **Shape Height** and **Shape Width** in the text boxes. ❷
> The chart has been resized. ❸
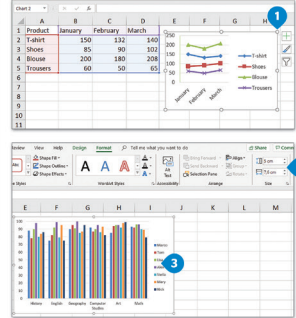
TASK 2

Modeling and simulation

Computer models

Computers and modern software give us the opportunity to analyze, understand and simulate real-world situations through the use of **models**. A model can represent objects, conditions and processes through the mathematical equations and rules that define them. A spreadsheet can be used as a modeling tool.

For example, a company could use a spreadsheet to find out what would happen if they increased the price of their product and the effect it would have on their income from sales. So, if someone raises the value in the price column, the data in the income from sales column will be automatically recalculated.

Simulation

When we input values into the model and get results, we perform a **simulation**. The simulation is the implementation of the model and shows how an object or a process will react based on different input data or on variations in the rules of the model.

Modeling and simulation in everyday life

We use modeling and simulations for almost everything in our lives. This allows people to test a system without having to create the system in real life, to predict what might happen to a system in the future and to train people to use a system without putting them at risk.

Financial and business models

Financial models use mathematical equations to perform financial analyses. These models are usually built in spreadsheet programs for making recommendations and decisions. Also, **business models** are used in the creation of predictions and trends for forecasts and many other related uses to manufacture comparisons.

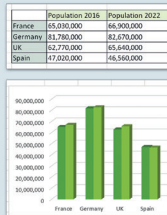**There are many different types of financial models such as:**

1 Macroeconomic modeling
2 Stock exchange modeling
3 Marketing and sales forecasting
4 Investment modeling

Data

Modeling & simulation

Refine models

Prediction

You can place an object anywhere you want. To position an object (chart, SmartArt, text box), and then when the pointer becomes crossed arrows, drag the object to the location you want.

Hands on!

Create the following table and the corresponding chart:

1. *Search, find and insert Italy's population in your table for the years 2016 and 2022. Next, add these new data series to your chart.*

2. *Switch between the rows and columns to group the data according to the population.*

3. *Insert an "Inverted Pyramid" SmartArt, where you should sort the countries' population of 2022 in descending order.*

	Population 2016	Population 2022
France	65,030,000	66,900,000
Germany	81,780,000	82,670,000
UK	62,770,000	65,640,000
Spain	47,020,000	46,560,000

Graphic Design

Overview

1. Image editing

Image essentials
Layers
Image adjustments
Retouch and enhance

2. Vector-based editing

Vector graphics
Coloring and shaping
Adding text and reshaping
Making curves
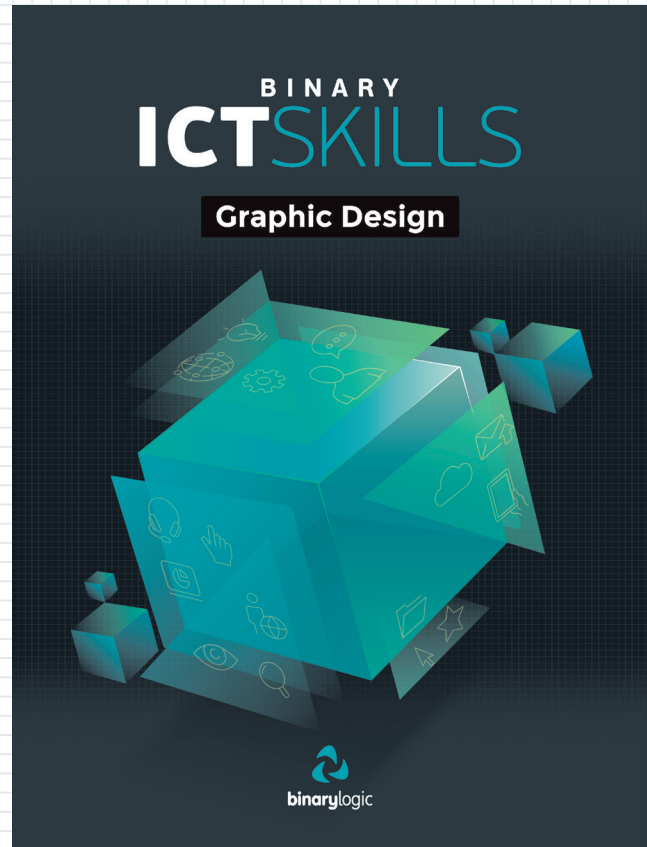More design tools

3. Desktop publishing

From etching to DTP
Basic tools
Single-page design
Multi-page document I
Multi-page document II

TASK 3
Image adjustments

Photoshop allows you to adjust various aspects of your images like the colors, the brightness or the contrast. Let's take a look at how you can tweak those settings.

First of all, one quick thing you can do to any image is to try out Photoshop's auto adjustments. With an image open, click Image from the menu and there they are: **Auto Tone**, **Auto Contrast** and **Auto Color**. Try them out to quickly correct your images. If you don't like the result you can always undo by pressing **Ctrl** + **Z**.

If you are not happy with the automatic results, there are a lot of image adjustment tools that will allow you to tweak your images to your liking. Those tools can be found under **Image** >**Adjustments**. Let's take a look at some of them.
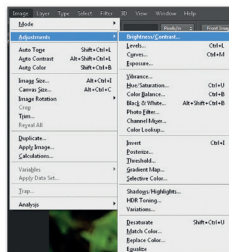
Exposure

This tool allows you to make your image brighter or darker. The difference between exposure and brightness is that exposure brightens or darkens the whole image equally whereas brightness affects only the midtones thus giving a milder result.
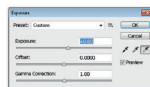
Brightness/Contrast

This tool is pretty basic and allows you to adjust the overall brightness and contrast of your images.
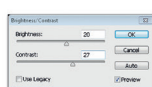
Replace Color

With this tool, you can select a color or a color range in your image and then replace it with another color.

To replace a color:

> Open an image. **1**
> Select **Image** >**Adjustments** >**Replace Color**.
> With the **Eyedropper Tool**, click on the color you want to replace on your image. If you want to add or remove colors to the selection click the + or - picker button. Experiment a little bit. **2**
> Adjust the **Fuzziness** slider **3** to widen or shorten the range of colors to replace.
> Keep an eye on the mask window. The white areas are the colors that will be replaced. **4**
> Adjust the **Hue** slider **5** to change the color of the selected areas.
> Click **OK**. **6**

Hue/Saturation

This tool allows you to change the colors of your image (**Hue**), make the colors rich or dull (**Saturation**) and lighten or darken colors (**Lightness**).

30 | 31
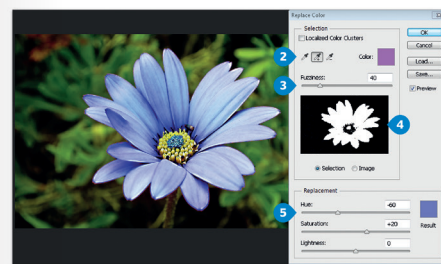
Use the **Dodge Tool** to selectively brighten areas in your image as you paint over them.

Use the **Burn Tool** to darken areas in your image as you paint over them.

Use the **Sponge Tool** to de-saturate (remove color) certain areas of your image.

Fix lighting with Shadows and Highlights

Sometimes, parts of your images are too dark or too bright, while you wanted a more balanced image. You can fix such problems with the **Shadows** and **Highlights** adjustment.

To use Shadows and Highlights:

> Click **Image**. **1**
> Select **Adjustments** and then click **Shadows/Highlights**. **2**
> In the window that appears, increase the **Shadows** slider **3** to brighten the dark areas of your image and the **Highlights** slider **4** to darken the bright ones. You can preview your changes live.
> When done, click **OK**. **5**
> Take a look at the before **6** and after. **7** In this example, we chose to brighten the shadows.
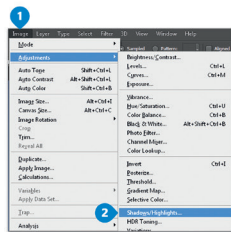
Fix contrast and color problems with the Curves Tool

When your photos appear too hazy, lack contrast or the colors are off, there is no need to worry. After a few quick steps with the **Curves Tool** you can get them to look just right.

To use the Curves Tool:

> Click the **Curves** icon **1** from the **Adjustments** panel to create a new **Curves adjustment layer. 2**
> Click **Auto 3** in the **Properties** panel. This is a quick one step fix. Check if you like the result. **4**
> Alternatively, you can try one of the **Presets** by selecting one from the **Preset** drop-down list. **5**
> If you still think something is missing or you feel creative, you can try playing around and tweaking some points in the curve by hand. **6**
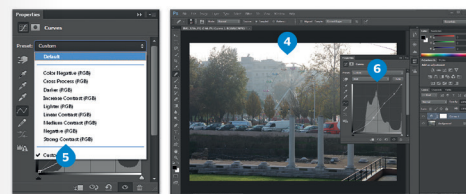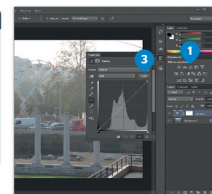
⚙ Hands on!

Now it's time to put your retouching skills to the test. Take a look at this picture of a poppy field.

http://www.publicdomainpictures.net/view-image.php?image=9907&picture=poppy-field

Can you make it look like the picture on the right?

Tip: The image has been straightened, the power lines in the upper-left corner have been removed with the healing brush tool and the overall contrast has been enhanced with the Curves tool.
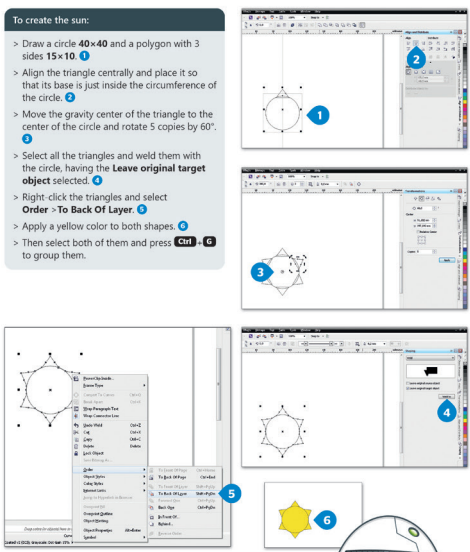
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Graphic Design

Sample pages

Pages 62–63

To create the sun:

> Draw a circle **40×40** and a polygon with 3 sides **15×10**. ❶

> Align the triangle centrally and place it so that its base is just inside the circumference of the circle. ❷

> Move the gravity center of the triangle to the center of the circle and rotate 5 copies by 60°. ❸

> Select all the triangles and weld them with the circle, having the **Leave original target object** selected. ❹

> Right-click the triangles and select **Order** > **To Back Of Layer**. ❺

> Apply a yellow color to both shapes. ❻

> Then select both of them and press **Ctrl** + **G** to group them.
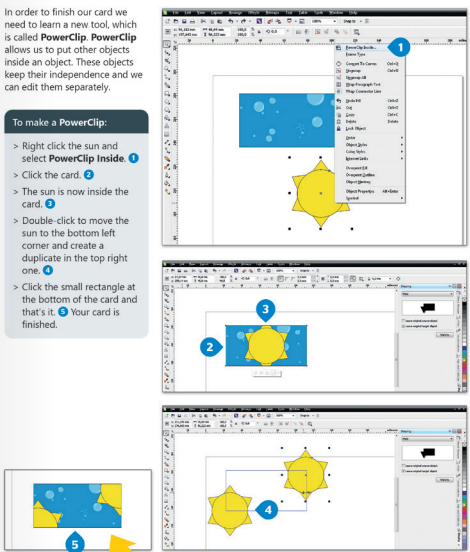
Actually the Back of Layer command refers to the object manager. As we mentioned, you can use object manager to rearrange your objects. Alternatively you can use the Back/Front of Layer or **Shift ⇧** + **Page Up** / **Page Down**.

In order to finish our card we need to learn a new tool, which is called **PowerClip**. **PowerClip** allows us to put other objects inside an object. These objects keep their independence and we can edit them separately.

To make a PowerClip:

> Right click the sun and select **PowerClip Inside**. ❶

> Click the card. ❷

> The sun is now inside the card. ❸

> Double-click to move the sun to the bottom left corner and create a duplicate in the top right one. ❹

> Click the small rectangle at the bottom of the card and that's it. ❺ Your card is finished.

⚙ Hands on!

Your birthday is coming. Why don't you create a cool card to invite your friends!

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Pages 82–83
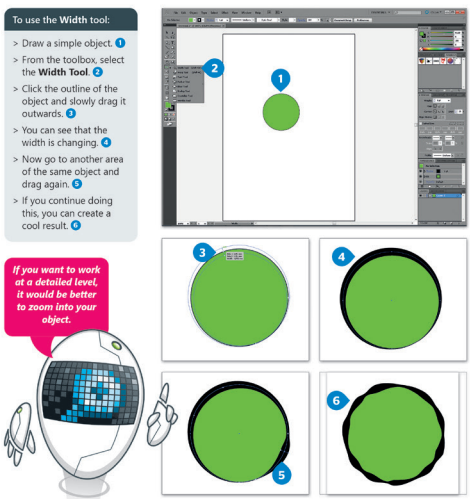
Fun Tools

Adobe Illustrator has some tools that can transform simple objects into complex ones. Some of them are easy to use, but some others need a little effort.

The **Width** tool helps you change the stroke width of an object. But, because it gives you the possibility to change it into a node state just like **Bezier**, you can have different widths in different areas in the same object.

To use the Width tool:

> Draw a simple object. ❶

> From the toolbox, select the **Width Tool**. ❷

> Click the outline of the object and slowly drag it outwards. ❸

> You can see that the width is changing. ❹

> Now go to another area of the same object and drag again. ❺

> If you continue doing this, you can create a cool result. ❻

If you want to work at a detailed level, it would be better to zoom into your object.
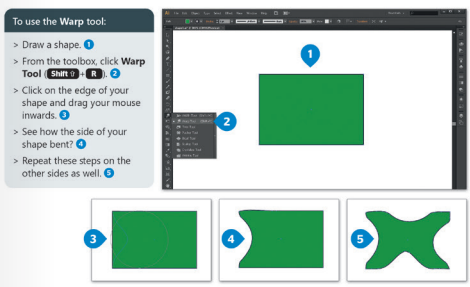
SMART TIP
Because Adobe Photoshop and Adobe Illustrator belong to the same family, a lot of Photoshop tools are used in Illustrator, like gradient. So, if you know Adobe Photoshop, you will not find it difficult to use Adobe Illustrator.

The **Warp** tool is like liquify in **Adobe Photoshop**. It lets you bend paths around to create new shapes.

To use the Warp tool:

> Draw a shape. ❶

> From the toolbox, click **Warp Tool** (**Shift ⇧** + **R**). ❷

> Click on the edge of your shape and drag your mouse inwards. ❸

> See how the side of your shape bent? ❹

> Repeat these steps on the other sides as well. ❺

The **Twirl** tool creates swirling distortions within an object.

To use the Twirl tool:

> Draw a shape. ❶

> From the toolbox, click **Twirl Tool**. ❷

> Hold-click the bottom left side of your shape for about 1 to 2 seconds. ❸

> See how your shape changed? ❹

> Repeat these steps on the other corners as well. ❺

SMART TIP
As you have already figured out, all these tools work in exactly the same way. The only thing that changes is the result.

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Page 94

**To rearrange the panels:**

> Click **Swatches** ❶ and drag it over **Stroke**, a bit below its center.
> **Stroke** and **Swatches** are now in the same workspace group. ❷
> From **Window** menu, click **Object & Layout**, open the **Align** and **Pathfinder** panels. ❹ Click on their top bar ❺ and drag them over the **Text Wrap** panel a bit below its center. Now they're all in the same workspace group. ❻
> From **Window** menu, click **Styles**, open the **Object Styles** panel and place it underneath all the panels.
> Arrange your workspace like in this image. ❼

To save your custom workspace:

> Click the **Workspace** direct menu button ❶ and select **New Workspace**. ❷ Name it, e.g. **My Workspace!** ❸ and click **OK**. That's it! Your custom workspace is set!
> In case you make changes later on, go to **New Workspace** once more. From **Name** drop-down list, select **My Workspace**. ❹ Click **OK** and then confirm the replacement of the original workspace. ❺

> In case you made changes you don't wish to save, from application bar **My Workspace** click **Reset**.

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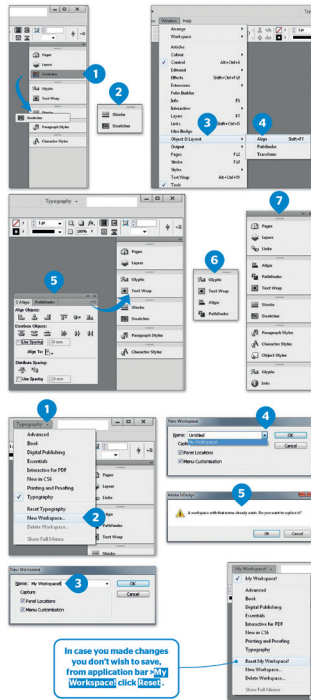
🛠 Hands on!

1. Which are the materials that the builders used to construct each one of the buildings presented in these photos?
2. Which are the tools and instruments needed for each construction?
3. Describe these constructions in terms of their aesthetic qualities.

Below on the left, we see a page from Marcus Pollio Vitruvius and on the right the RayGun #69 issue designed by David Carson.

1. Find information about these designers on the internet.
2. What are the tools and equipment needed for each design?
3. Describe the aesthetic values that each one of these designs carries.

Page 110

Notice that the text has a lot of empty space at the bottom of the last column, while at the same time, it is aligned to the top of the image. We will try to create a more balanced layout between the three text frames.

To balance flowing text inside separate frames:

> Select and unlock the **Text** layer. Lock all other layers. ❶
> Use the **Selection Tool (V)** to select all three text frames. A transform node appears at the top-center of the selection. ❷
> Click this node and drag downwards until just before the text gets "knocked out" of the last frame. ❸
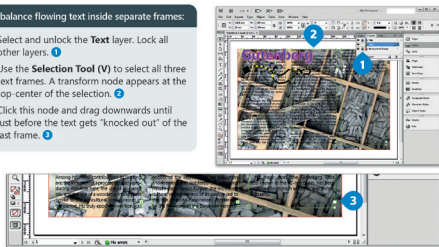
Small letters over a picture are always a big problem. There are, though, some ways to deal with it. Here is a rather "classic" one: placing white rectangle frames behind each of the text frames.

To make a duplicate layer and adjust its content:

> Select **Text layer**, click the layer menu button and click **Duplicate Layer "Text"**. ❶
> Lock **Text** layer and list the Text copy layer under it. ❷
> On the **Text copy** layer select all text (not the frames) and delete it. ❸
> Select all three frames and apply **fill [Paper]** and **stroke [Paper]**, 12pt. ❹
> From **Object** menu, click **Corner Options** ❺ and from the drop-down list select **Rounded**, ❻ set value to **8pt** and click **OK**.
> Much better, huh?

Page 111
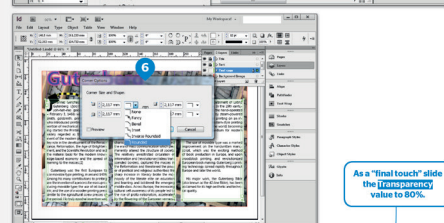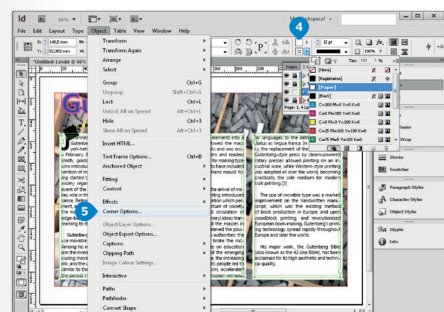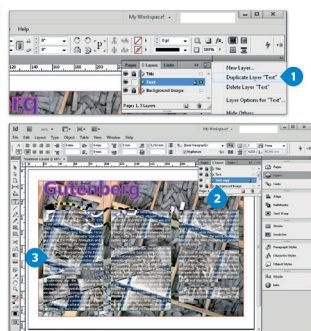
> As a "final touch" slide the **Transparency** value to 80%.
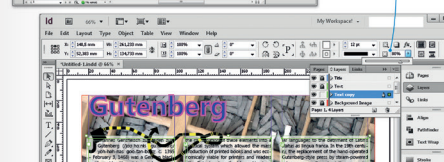
Modern Computing

Overview

BINARY
ICTSKILLS
Modern Computing

binarylogic
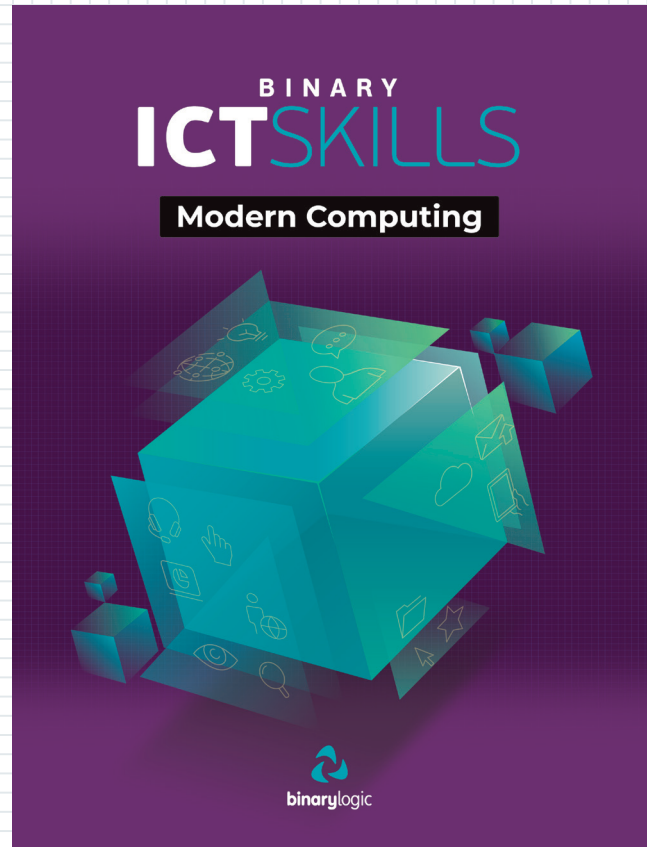
The main memory of the computer is called **RAM (Random Access Memory)**. RAM is used for the information (data) that is being processed by the CPU. This data is stored for a very short period of time. The amount of memory is very important for a computer's functionality and speed. Even if a computer has a fast CPU, not having enough RAM can slow all processes down.

> *Apart from RAM, computers have other types of memory, like ROM or CPU cache memory. ROM is read-only memory that stores data, but you cannot change it. CPU cache memory is high speed memory that's inside the CPU and deals with the most frequently used data.*

RAM

Video Card

The "tower"

The **Hard Disk Drive (HDD)** is the main storage device of your computer. You use it to store and retrieve information. All the programs, including the operating system, and all the files that you have created by yourself or copied from other devices are stored inside the hard disk drive. The main characteristic of a hard disk drive is that it can hold a lot of information. Its storage size, as we say in computer language, is very big. Nowadays, a single hard disk drive can be up to 20TB. It can hold 20,000 movies and millions of songs, pictures and documents.

The **Video Card (graphics card or display adapter)** turns the data that is processed by the CPU into images on the monitor. The better the video card, the better the quality of the images. This is especially evident in computer games. Modern video cards are like small computers, and they have their own CPU and fast memory, in order to offload the main CPU.

> *Sometimes, the video card is integrated into the motherboard. If you don't especially need a powerful video card for gaming or video editing, a computer with an integrated video card will cost you less money.*

Peripheral devices

Peripheral devices are devices that are connected to a computer, but they are not part of it. In other words, they extend the computer's capabilities, but they are not necessary for a computer to function. These devices are divided in 4 categories: input devices, output devices, input/output devices and storage devices.

Input Devices

Input devices are devices that help the user input data, such as text, photos, songs and movies, or control the computer.

The **keyboard** is one of the main input devices. Through the keyboard, the user can input text and give commands to a computer. It's like a typewriter, but you type on screen and not on paper.

The **mouse** is a pointing device that helps the user point to objects on the screen and execute commands by clicking on them. A typical mouse has two main buttons, but modern mice have more buttons that help you execute frequently used commands with one click.

A **gamepad** is a game controller that helps you give commands and move on the screen. If you play video games, you already know it. Usually, a gamepad has a cross pad or a controller stick and some action buttons.

A **microphone** helps you record your voice, save it in digital form and then make changes with audio editing programs.

The **Surface Dial** is a brand new kind of peripheral that serves as a tool for the creative process. A surface Dial optimizes your digital work by bringing the most used shortcuts and tools directly to your screen by simply pressing and rotating the Dial.

Kinect 2019 was designed by Microsoft to be used as a sensor with a lot of capabilities.

> *Gamepads have evolved in recent years. Some are wireless, like Nintendo's Wii controller, which allows you to control your player through a stick. If you want to play a game that involves a racket, you wave your controller as if it were a real racket. But there are also controllers like Microsoft Kinect, which allow you to interact with the game console or computer without holding or touching anything. Microsoft Kinect works by "watching" your body movements and "listening" to your oral commands.*

HISTORY

In the past, there used to be separate computer monitors and monitors for entertainment, like televisions. Today, we tend to combine these technologies. For example, a computer monitor can be used for data processing and entertainment, and televisions allow computer functions like surfing the Internet, etc.

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Shortcuts

Sometimes you may need to work on a file or use a program very often and you don't want to waste time looking for it every time you want to use it. That's why we create shortcuts.

A shortcut is a "link" to a folder, file or program. If there's a file or program you use very often, you can create a shortcut that takes you directly there. Let's see how you can do it.

To create a shortcut:
> Open the location of the item you want to create a shortcut to. ❶
> Right-click it and click **Create shortcut**. ❷
> A shortcut will be created in the same location as the original item. ❸
> Move the shortcut to a new location using your mouse (drag and drop the icon).

To create a shortcut directly on the Desktop:
> Right-click the file you want to create a shortcut to ❶ and point to **Send to**. ❷
> Click **Desktop (create shortcut)** ❸ and a shortcut will be created on the desktop.

> *When you right-click a shortcut, you can see a list of options. One of them is the option Delete. Click it and you will delete the shortcut you have created. But remember: when you delete a shortcut, only the shortcut disappears. The original file, folder or program is not deleted.*

SMART TIP

The icon of a shortcut has a small arrow in its bottom left corner. But not always. For example, the icons on the Taskbar at the bottom of your screen are shortcuts, but there aren't small arrows to let you know! You can pin programs and files on the Taskbar when you drag and drop their icons onto the Taskbar. To delete shortcuts from the Taskbar, just right-click them and click Unpin.

Compressed files or folders

Sometimes files or folders take up too much space on your computer and you may want to make them smaller. A compressed file takes up less storage space and you can easily copy it to another computer or send it by email. Compressed files or folders can be copied and moved as files. You can also use them as a folder. You can add more files to them or you can delete files from them.

To compress (zip) a file or folder:
> Find the file or the folder that you want to compress, right-click it ❶ and point to **Send to**.
> Click **Compressed (zipped) folder**. ❷
> A new compressed file is created in the same location and has the same name. ❸

To rename a compressed folder:
> Right-click it and click **Rename**. ❶
> Type a new name and press **Enter** ↵.

> *Another way to rename a file is to select the file and press F2 on your keyboard.*

> *If you double-click the compressed folder to open it, you will see a detailed view of how the size of the files have changed. In this example, the original file was 41KB and became only 36KB after the compression.*

This PC > Documents > My folder > My folder				Search My folder
Name	Type	Compressed size	Size	
Animals	Microsoft Word Document	36 KB	41 KB	13%

SMART TIP

The amount of compression is not always the same and depends on the file type. For example, an image cannot be compressed as much as a text file. Image files like JPEG are usually already highly compressed, so you won't see much difference if you compress them.

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Modern Computing

Sample pages

MODULE 2

2 Getting online

It's time to explore one of the modern wonders, the Internet. We'll find out what it is, how it came into our lives and why it is so important. Let's find out how we can use it to gather information and communicate with our friends. We'll talk about what tools we can use and how to use them. You will see that there is more to the Internet than you can imagine and learn how it can make our lives easier. One of the Internet tools that we are going to explore is email. We'll discover why so many people use it and how we can communicate with our friends through it.

Learning Objectives

In this module you will learn:
> what the Internet is.
> how to use it to gather information.
> how you can expand your knowledge through the Internet.
> how to send an email to your friends.
> how to send photos and other files to your friends.
> how to send the same message to more than one user.
> the safety rules for the Internet and email.

Skills

After this module you will be able to:
> use a web browser.
> search the Web for information.
> use wikis.
> copy a text or an image from the Internet.
> create a new email message.
> reply through email.
> forward an email message.
> attach a file.
> create a photo album.
> check your messages for mistakes

Tools

> Outlook
> Google Gmail
> Outlook.com
> Apple Mail
> Google Android Mail

TASK 1

Surfing the Web

Internet… a word that dominates most computer-related conversations. For good reason, too: Since its appearance in the 90s, it has become an integral part of our lives.

But what exactly is the Internet? It's a global network of millions of computers that exchange information. It's the largest computer network today and it connects thousands of private, governmental and academic networks. On the Internet, you can find a huge amount of information, photos, videos and music. What's more, you can call your friends, send emails, instant messages, etc.

How do I get online?

Accessing the Internet is very easy and anyone can do it. First, you need to have a computer that can connect to a network either with a cable or a wireless connection. Then you need to have a phone line. Don't forget the router: the networking device that will connect your computer with the phone line. And finally, you also need an ISP (Internet Service Provider) that will provide you with access to the Internet.
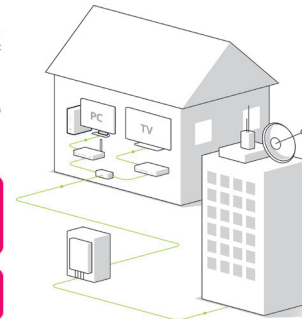
An ISP (Internet Service Provider) is the telecommunications company that will provide you with access to the Internet.

You can connect a computer, a smartphone, a "smart" TV or even a car to the Internet.

To insert a video from YouTube in your post:

> On the **Toolbar**, click the **Insert video** button. ❶
> From the drop down menu, click **Youtube**. ❷
> In the **Add a Video** window, click the **Search** tab, ❸ type your search query in the search box ❹ and click the **Search** button. ❺
> Choose the video you want ❻ and click **Select**. ❼
> The video is added to your post. ❽

To remove a video, just click it and press Delete
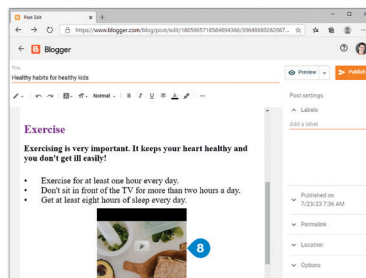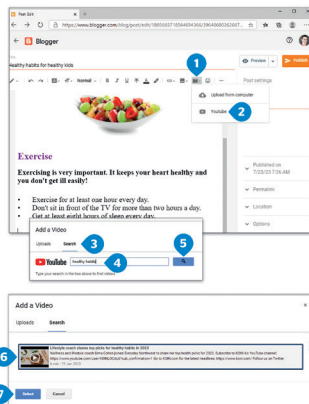
Publish your post

After you finish writing and editing your post, you are ready to publish it. Before that, you can choose the Preview option to check what your post will look like and decide if you want to make some final changes before publishing it.

To publish your post:

> From the main window, click the **Publish button.** ❶
> In the **Publish post?** window, click **CONFIRM.** ❷
> In the main page, click the **View button.** ❸
> The post will be published into your blog. ❹

*In Preview mode, you can choose to see how the post will look on a Tablet screen or on a Smartphone screen.*

Receiving files

All media files sent by your contacts are automatically saved in your WhatsApp Media folder that was automatically created on your phone when WhatsApp was installed. You can access these files from your phone's photo gallery or from the application.

To access an image file:

> In the **Home** screen of your phone, tap **Photos**. ❶
> You can access your files through the **WhatsApp Images** folder. ❷

WhatsApp Images
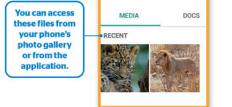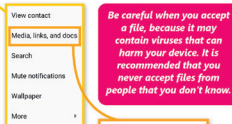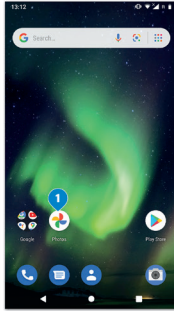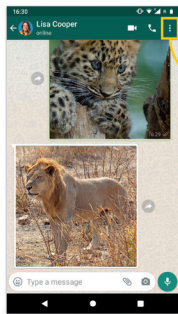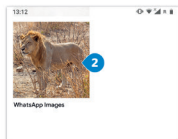
Be careful when you accept a file, because it may contain viruses that can harm your device. It is recommended that you never accept files from people that you don't know.

View contact
Media, links, and docs
Search
Mute notifications
Wallpaper
More

You can access these files from your phone's photo gallery or from the application.

Lisa Cooper
MEDIA   DOCS
RECENT

Voice and video call

WhatsApp offers you the opportunity to call a friend and talk in the same way you would on a telephone, but free of charge. You can also make a video call if you and your friend have a camera, and see each other while talking.

To make a call:

> Select the contact you want to call and tap the **Call icon**. ❶
> In the **Start voice call** window, tap **CALL**. ❷
> The call is established once it is accepted by your friend. ❸

Start voice call?   CANCEL   CALL

Lisa Cooper
Ringing
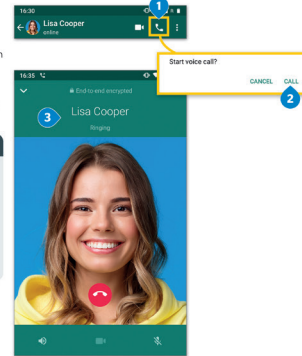
To make a video call:

> Select the contact you want to call and tap the **Video Call icon**. ❶
> In the **Start video call** window, tap **CALL**. ❷
> The call is established once it is accepted by your friend. ❸

Start video call?   CANCEL   CALL

Lisa Cooper
Ringing
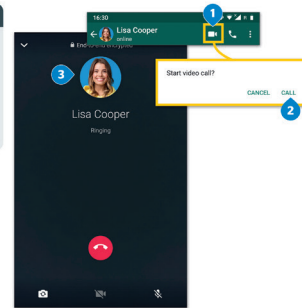
116

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TASK 4
Notes management

Microsoft OneNote is a digital notebook that provides a single place where you can gather all of your notes and information. It also has the added benefit of powerful search capabilities to quickly find what you are looking for. OneNote offers the flexibility to gather and organize text, pictures, digital handwriting, audio and video recordings, and more – all in one digital notebook on your computer. Furthermore, powerful search capabilities can help you locate information from text within pictures or from spoken words in audio and video recordings.

So, let's see how your notes are organized in OneNote. It's very easy to get the hang of it when you think of it as one of your school notebooks. Different **notebooks** appear as a list on the main OneNote window. Each notebook has sections which appear as tabs at the top. Finally, each section consists of **pages** which appear on the right with their titles.

To create a new notebook:

> At the top left of your screen, click **Notebooks**. ❶
> From the drop-down list, click **Add Notebook**. ❷
> In the **New Notebook** window, click **This Pc**. ❸
> Type a **Notebook Name** ❹ and then click **Create Notebook**. ❺

New Notebook

This PC
Recent
OneDrive - Personal
This PC
Add a Place
Browse

Notebook Name:
My class
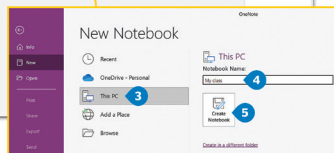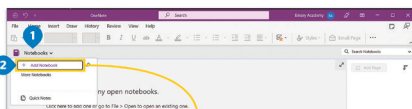
Create Notebook

Add sections and pages

Once you create a new notebook, you can add as many sections as you want. Each section can contain a collection of related pages where you can write down your notes.

To rename a section of your notebook:

> Right-click the section tab you wish to rename. ❶
> Click **Rename** ❷ and type the new section name.
> Press **Enter** or click anywhere else and the name changes. ❸
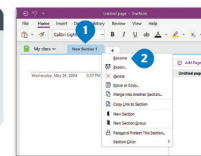
OneNote automatically and continuously saves your work while you make notes. It also saves your work whenever you switch to another page or section and whenever you close sections and notebooks.
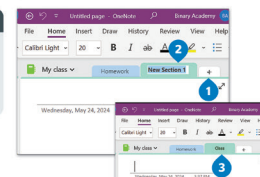
To create a new section:

> Click the **Create a New Section** tab, at the top of your screen. ❶
> Type a name for your new section and press **Enter**. ❷
> The new section has been created. ❸
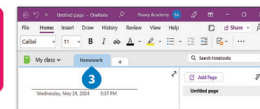
To insert a new page:

> Open the notebook or click the section where you want to insert a page. ❶
> Click the **Add Page** button. ❷
> Type a title for the page. ❸
> A new page has been inserted into the section. ❹

Every page has a title which you can change.

You can drag and drop any page up and down to change the order within the section.

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Presentations

1. Presenting your ideas

Slides, text and images

Transitions and animations

Sound, video and 3D models

Charts and graphs

Tips and tricks

2. Multimedia presentations

Storyboarding

Capture and edit multimedia

Record your voice

Fix photos and add effects

Create an animated story

3. Advanced imaging

Image essentials

Layers

Image adjustments

Retouch and enhance

2D animation creation

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Presentations

binarylogic
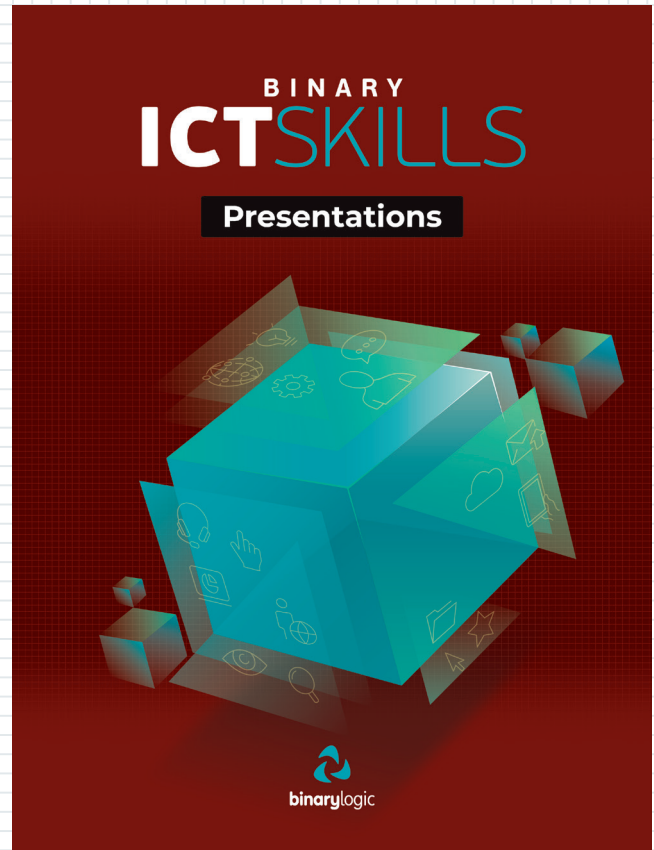
Start typing

Now it's time to create a small presentation about a campus cafeteria. Let's find out how you can type text onto a slide.

To add text:

> Click the text box which says **Click to add a title** and type your text, e.g. *Our café*. ❶

> Click the text box which says **Click to add subtitle** and type *Business plan*. ❷

❶ Our café
Click to add subtitle

When you see an object with this outline and dots, it means that you can resize or rotate it. You can do this in all Microsoft programs and most others.

Our café
Business plan ❷

How to insert a slide

To give your presentation, you need more slides.

To insert a slide:

> On the **Home** tab, in the **Slides** group, click **New Slide**. ❶

> A new slide will appear below the first one. ❷

Office Theme

Title Slide   Title and Content   Section Header

Two Content   Comparison   Title Only

Blank   Content with Caption   Picture with Caption

Duplicate Selected Slides
Slides from Outline...
Reuse Slides

❷ Click to add title
> Click to add text

You can jump from one slide to another by clicking them, in the thumbnail pane.

If you click the New Slide arrow, a list with different styles of slides will appear. Choose the one you like.

SMART TIP

Guy Kawasaki, who is considered to be a presentation guru, has suggested the Rule: a PowerPoint presentation should have ten slides, last no more than twenty minutes, and contain no font smaller than thirty points. He believes that this rule is applicable to presentations for raising funds, making a sale, creating a partnership, etc.

8

Insert images

Now it's time to see how you can add an image to your presentation. First, type your slide title.

To add an image:

> Click the **Online Pictures** icon in the center of the slide. ❶

> In the **Online Pictures** window, type a keyword or phrase in the search box and press **Enter**. ❷

> Select one of the images and click **Insert**. ❹

> The image you chose will be automatically inserted in your slide. ❺

• Click to add text

If you click the Pictures icon, you can insert an image from your computer.

❶

Online Pictures
❷ juice
Powered by Bing
☐ Creative Commons only

❸

❹
including copyright. Learn more   Insert (1)   Cancel

Microsoft PowerPoint will display some ideas on the right to design your presentation.

Our logo

❺
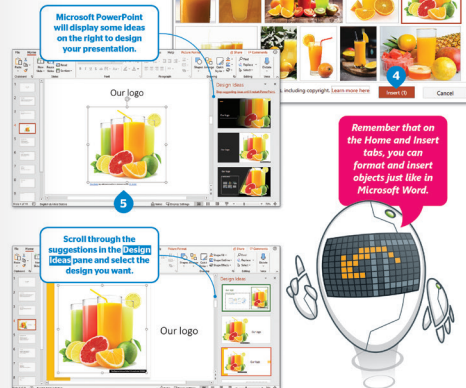
Remember that on the Home and Insert tabs, you can format and insert objects just like in Microsoft Word.

Scroll through the suggestions in the Design Ideas pane and select the design you want.

Design Ideas

Our logo

9

3D Models

A 3D model is a three-dimensional view of an object or picture which you can insert into your presentation to illustrate a point. You can add a 3D model from a file on your computer or from online sources.

To insert a 3D model:

> Click the slide of your presentation to which you want to add a 3D model. ❶

> On the **Insert** tab, in the **Illustrations** group, click **3D Models** ❷ and from the drop-down list, click **From Online Sources**. ❸

> In the **Online 3D Models** window, choose a category ❹ and find a model that you like. ❺

> Click **Insert**. ❻

> The 3D model will be inserted into the slide. ❼

❷
❸
❶

The magic

Run a cafeteria for students operated by st
• Knowledge – we know what students lik
• Hard work – we have to satisfy our class

Online 3D Models

Fantasy   Characters   Monsters   Plan a Landscaping Project   Develop a Lily Plan

Outdoor Adventures   Seasonal   Fall   Spring   Winter

Buildings   Phone Diner   Cats and Dogs   Meet and Book   Food and Plants

❹

Using 3D models in PowerPoint, you enhance your presentation by adding depth, realism, and interactivity to your content.

Instead of searching by category, you can also search for a model through the search bar, by entering a keyword.

❺

❻
Insert (1)   Cancel

Run a cafeteria for students operated by students
• Knowledge – we know what students like
• Hard work – we have to satisfy our classmates
• Expertise – with time... ☺

❼

24
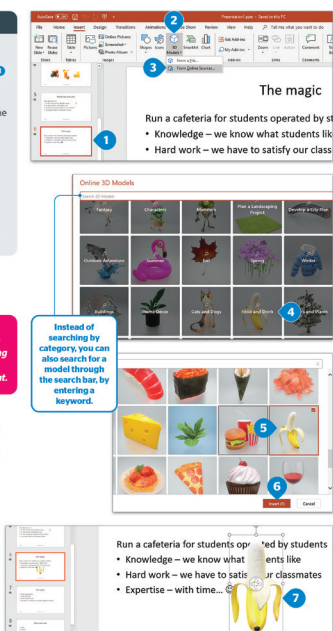
Once you have inserted a 3D model into your presentation, you can modify it by rotating it, tilting it up and down or by choosing a preset view. This enables you to highlight specific features or aspects of this object in your presentation.

To modify a 3D model:

> Right-click the 3D model and then click **Views**. ❶

> Choose the view that you prefer to show the 3D model. ❷

> Drag the 3D model to position it in the place you prefer. ❸

3D Model Views

❶

The magic

Run a cafeteria for students operated by students
• Knowledge – we know what
• Hard work – we have to satis
• Expertise – with time... ☺

The magic

ents op...   students
w what
to satis...

❷

The magic

Run a cafeteria for students operated by students
• Knowledge – we know what students like
• Hard work – we have to satisfy our classmates
• Expertise – with time... ☺

❸
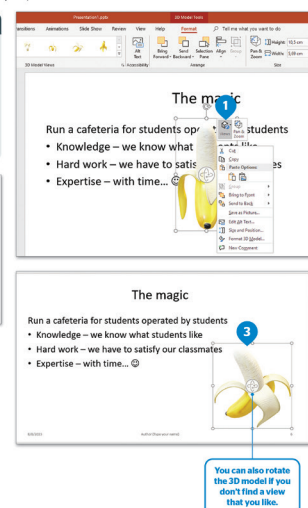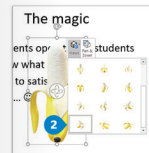
You can also rotate the 3D model if you don't find a view that you like.

⚙ Hands on!

After this lesson, you can start creating a real presentation. Search the Web for videos, audio and 3D models that you like to put in your presentation. Don't use long videos, because the audience might get bored.

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2 MODULE 2
Multimedia presentations

In this module, you are going to explore the magic of movies and pictures. You will learn how to create an animated story or a short movie step-by-step. You will learn what directors do before they start filming and how they use sounds and voices in their movies. You will learn how to combine multimedia material into a movie and how you can publish your work on the Internet for your family and friends to see.

Learning Objectives

In this module you will learn:
> what script, découpage and storyboard are.
> what you need to do before you start shooting a movie.
> the various types of media files for the Internet and your computer.
> how to record your voice.
> how to work with music and sounds.
> how to edit photos that you take.
> how to create a short animated story or movie.

Skills

After this module you will be able to:
> create your own script.
> use different types of media files for specific purposes.
> copy your video clips onto your computer.
> edit sound and apply effects.
> edit photos or other images and correct them.
> use a video editing program to create a movie.

Tools
> Audacity
> Photos
> Clipchamp
> WavePad
> Adobe PS Express
> AndroVid

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TASK 1
Storyboarding

You have all seen movies at the movie theater and some of you may have made your own home movies of family vacations, celebrations, etc. You may have noticed that these home movies usually have some things in common:

> The image is shaking in all possible directions.
> The shots are either long and boring or very short.

The angle of the camera is rarely anything but the cameraman's shoulder height (which is also boring).

...and so on.

Well, it doesn't have to be like this! As a matter of fact, every video you make and even your other media creations can be made to look a lot better if you take the time to plan some things first.

OK, so let's see how the professionals do it, to get some inspiration and maybe to borrow some of their tools to help plan our own creations.
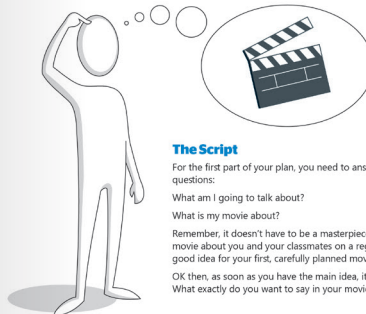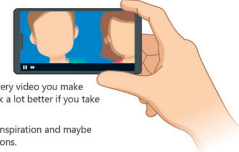
The Script

For the first part of your plan, you need to answer two very important questions:

What am I going to talk about?

What is my movie about?

Remember, it doesn't have to be a masterpiece just yet! Even a simple movie about you and your classmates on a regular day at school is a very good idea for your first, carefully planned movie.

OK then, as soon as you have the main idea, it's time for the story. What exactly do you want to say in your movie about a day at your school?

HISTORY
The first portable camera that was small enough to be practical for photography, was envisioned by Johann Zahn in 1685.

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It's time to write your script!

A **script** has three important components: **heroes**, **action** and **dialogue**. The "action" is written in the present tense and is a description of what is happening at a particular moment or what your characters are doing. The "dialogue" is all the things your characters say. The "heroes" are the main characters of your movie. For example, a very small part of a script, containing both action and dialogue, could be something like this:

Scene 1: People are inside the classroom. It is sunny outside and light is coming in through the window. All the students are in the classroom paying attention.

Mike leans towards his desk mate Jim and whispers:

- Have you done yesterday's homework?

One more thing you need to know is that in a script, the story is divided into **scenes**.

A **scene** is the action happening in a specific place at a specific time. For example, when you are in the classroom during a lesson, this could be the "lesson scene" but when the bell rings and you go out to recess, the scene changes because the location has now changed.

You don't have to write every detail about the environment where the scene is taking place. This is a job for the director. He has the final word, after he discusses all the details with the rest of the crew (director of photography, sound engineer, set designer, etc.).

Découpage

Once you have your script, the next stage is to plan how your scenes are going to look in more detail. This is called découpage. In découpage, you break every scene down into "shots". A **shot** starts from the time you press the record button on the camera and ends when you press it again to stop recording. As you can imagine, a scene typically consists of multiple shots, but sometimes a director can choose to shoot a whole scene in a single shot, without stopping and relocating the camera.

So, you break your scenes down into shots and you also plan and write down how each shot is going to be. For example, for each shot, you note down how far or close the camera is going to be to each character, the angle of the camera, e.g. if it is going to be somewhere high, looking down on the character, the movement of the camera and details about what we see and hear in each shot.

BE SAFE
When you are typing or writing for many hours, take a break once in a while. You need to rest your wrists or you might suffer from CTS (Carpal Tunnel Syndrome).

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Storyboard

For the final part of your film planning, you are going to create your movie's **storyboard**. Don't worry, though; it's not that difficult, although it does require some drawing skills. The **storyboard** is like a comic of your whole movie. You have already done most of the work during découpage. Now, you are just going to draw what each shot should look like.

Essentially, you put all the details you have written for each shot into a picture. You can also include arrows or instructions that indicate movement.

Once you finish your storyboard, you are done with all the hard work. You can now go out and shoot your movie. It will be easy, if you have planned it carefully and follow your storyboard.

Enjoy your movie making!
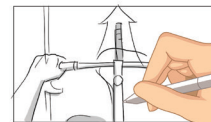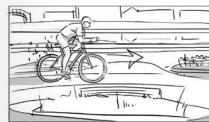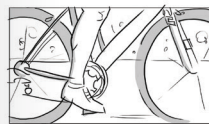
⚙ Hands on!

Think of a short story you want to tell.

Write the script for that story (remember to divide your story into scenes).

Imagine your story on the screen, draw a detailed storyboard for each shot of your movie and present it in class.

Remember: Your storyboard drawing doesn't need to be a masterpiece. If you can't draw well, you can just use stick figures for your characters and simple scribbling for a background.

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Lens correction

Sometimes our cameras distort our pictures. Have you noticed that sometimes when we photograph a tall building and tilt our camera upwards in order for it to fit in our frame, the building then appears as if it leans backwards or as if it is smaller at the top? This is a common problem called perspective distortion caused by the lens of the camera but we can correct it in GIMP along with other common distortion problems. There is an example of this problem in the picture to the right.

To correct lens distortions:

> Click **Filters**. ❶
> Click **Distorts** ❷ and then **Lens Distortion**. ❸
> The **Lens Distortion** window appears. ❹
> After making the adjustments that suit your needs click **OK**. ❺
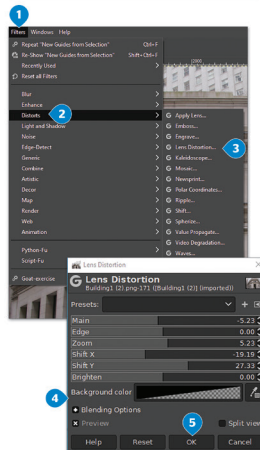
Note that the Lens Distortion Tool may leave transparent areas at the edges of your image. You may want to crop these out and keep only the important parts of your picture. Take a look at the final result.

Perspective and Crop Tool

> A much easier and faster way to correct images that suffer only from perspective distortion is to use the **Perspective Tool**.

To correct an image with the Perspective Tool:

> Click **Transform Tools** ❶ from **Tools**.
> Select **Perspective** from **Transform Tools**. ❷
> Drag the corner handles so that the horizontal and vertical lines of the grid align with the respective lines of your subject. In this case, with the edges of the building. ❸
> Click **Transform**. ❹
> Select the **Crop** tool ❺ from the toolbox and crop out the unwanted areas.
> Press [Enter ↵] to crop. Now your image has corrected perspective. ❻
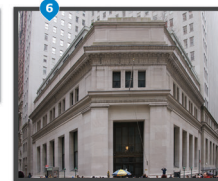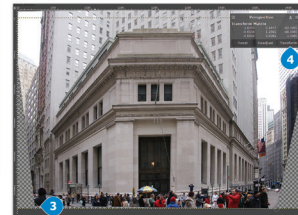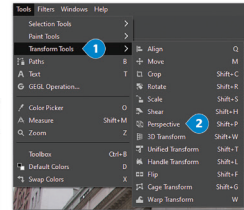
HISTORY

Did you know that perspective corrections can also be achieved while taking a picture? Architectural photographers use special lenses called Tilt-Shift lenses, which can be tilted sideways and shifted up or down in front of the camera to correct any perspective distortions.

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The next step is to add some colors. Select the **Fill** tool and select a color from the **Colors** panel. You can either pick one of the preset colors or click the black square to open a color picker window.
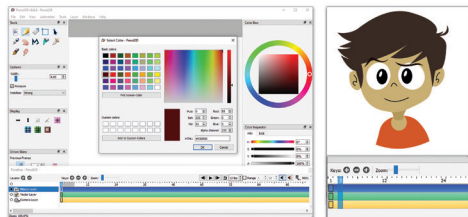
Import hand-drawn sketches

If you feel more comfortable drawing sketches on real paper, you might want to import existing drawings using Pencil. You can import a bitmap image to a particular frame in a bitmap layer.
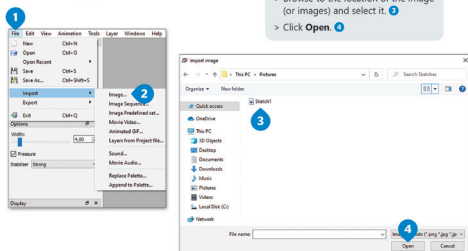
To import your images:

> Click **File**. ❶
> Click **Import** and then **Image**. ❷
> Browse to the location of the image (or images) and select it. ❸
> Click **Open**. ❹

Alternatively, you can drag and drop bitmap images from an external window onto the canvas. A key is created for each imported image. This is particularly useful when you have a lot of images.

Use a Camera Layer

A **Camera Layer** lets you define a particular view, with a certain aspect ratio, within your unlimited canvas. What's more, you can define a view for each key of the camera track, for example, move your character in one direction. To do so, simply create a camera layer, move the red scrub to the desired frame and use the hand tool to adjust the view inside the camera viewing frame. By double-clicking on the camera name, you can set the resolution of the camera viewing frame.
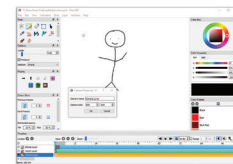
Export your animation

You can export your animation as a sequence of PNG images. Note that the current view is used for the export, i.e. either the working view or the camera view if a camera layer is selected.

To export an animation:

> Click **File**, ❶ point to **Export** ❷ and then click **Image Sequence**. ❸
> Browse to the location you want to save the images. ❹
> Type a name for your image sequence. ❺
> Click **Save**. ❻
> Set a resolution, or leave it if you have already set it in a camera layer. ❼
> Click **OK**. ❽
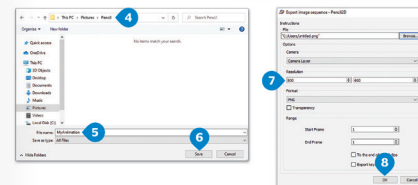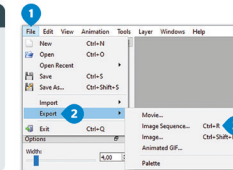
🛠 Hands on!

It's time to practice your skills as an animator! Use Pencil to create a short animated cartoon and show it to your classmates. Don't worry if your drawing skills are not that great. If so, compensate with a cool storyline and just use basic shapes or stick figures for your characters.

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Computer Science

Overview

1. Computer science basics
Data manipulation
Computer architecture
Operating systems
Network fundamentals
Computers in society

2. Networking
Wired networks
Wireless networks
Mobile networks
Satellite networks

3. Technology in life
Monitoring and control
Artificial intelligence
Emerging technologies
Environment and health

4. Deep diving
Advanced networking
Servers and storage
I'm an IT administrator
Data and network security
Cloud storage

5. Project planning
What is a project?
Organizing tasks
Create a Gantt chart
Create a diagram
Changing colors and fonts
System life cycle

BINARY
ICT SKILLS
Computer Science

binarylogic
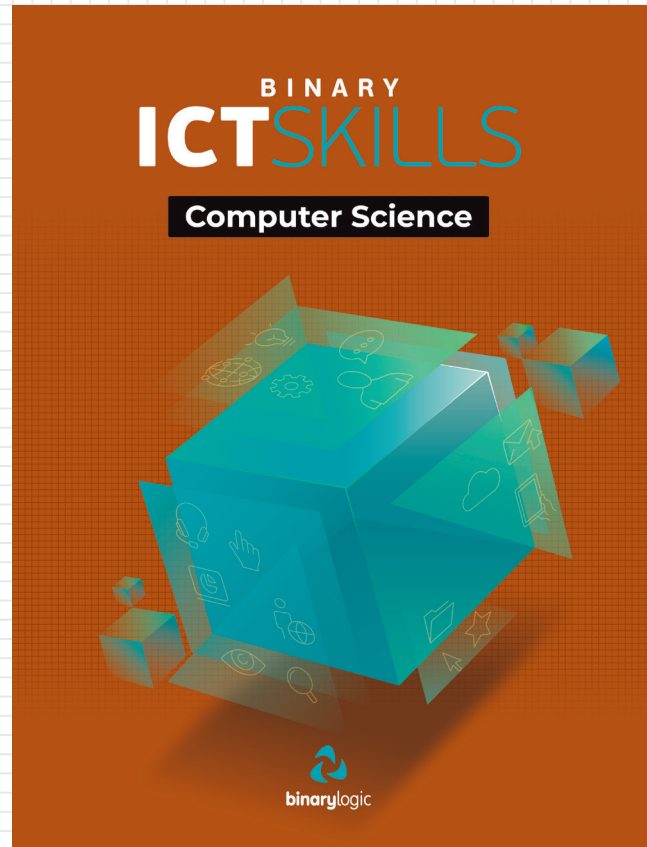
1 MODULE 1
Computer science basics

Welcome! In this module, you are going to learn how a computer really works. We will discuss its architecture and how it stores and processes data. We will also explore how networks work and how computers have changed the way we live and work.

Learning Objectives

In this module you will learn:
> how data is represented in a computer system.
> how data is stored and processed by a computer.
> how computers can make decisions with Boolean logic.
> how computers manage memory, processes and files.
> how networks transfer data.
> why online privacy is very important.
> how technology affects modern life and society.
> how the digital divide affects different factors.

Skills

After this module you will be able to:
> understand the binary and hexadecimal numeral systems.
> convert numbers between the different numeral systems.
> understand how logic gates work.
> understand why we need the operating system.
> enable a network firewall.
> use technology for personal and social benefit.

Tools

> Microsoft Windows

TASK 1
Data manipulation

Modern digital computers can be found practically anywhere around us nowadays. We have desktop computers at home, at school and at work, powerful laptops that are easily transported from place to place and even smartphones, which are fully fledged computers that we can carry around in our pockets.

Decimal system - Binary system

Since computers run on electricity, all of the internal components can only "understand" two states: they are either in a **low-voltage state** or in a **high-voltage state**. All modern computers are what we call binary machines. This means that the "language" that they use internally in order to function is the binary numeral system, which is a way to write numbers using only two digits: **0** (low-voltage state) and **1** (high-voltage state).

By using a series of 0s and 1s, we can create all the other numbers. In the decimal system, which people normally use, each digit can take one of ten values (0-9). When digits are put together to form a number, the place of each digit has a different place value, increasing by a power of ten.

To represent the number 131 in the decimal system:

Digits	1	3	1
Place value	$10^2 = 100$	$10^1 = 10$	$10^0 = 1$
	$1 \times 100 +$	$3 \times 10 +$	$1 \times 1 =$	131

The same principle is used in the binary system. The difference is that, each digit can take one of two values (0, 1) and each place value increases by a power of two (ones, twos, fours, eights, etc.).

131, for example, is 10000011 in the binary system:

Digits	1	0	0	0	0	0	1	1
Place value	$2^7 = 128$	$2^6 = 64$	$2^5 = 32$	$2^4 = 16$	$2^3 = 8$	$2^2 = 4$	$2^1 = 2$	$2^0 = 1$
	$1 \times 128 +$	$0 \times 64 +$	$0 \times 32 +$	$0 \times 16 +$	$0 \times 8 +$	$0 \times 4 +$	$1 \times 2 +$	$1 \times 1 =$	131

Notice that the place value of the rightmost digit in either system is **1**. Any number (except zero) to the zero power equals one. Consequently, $10^0 = 2^0 = 1$.
You can now read and understand any number in the binary system!

> **SMART TIP**
> In computers, the basic unit of information is called a bit and it can either be 0 or 1. The word comes from a contraction of "binary digit".

To store **images**, we need to represent the color of each pixel in an image. The most common way is to use the **RGB model** in which each color is the sum of the different shades of the three primary colors (Red, Green and Blue). So, for each pixel we actually store three values, one for each color, each ranging from 0 to 255 which indicates the shade of each color from black to pure red for example. Thus, an image is the binary representation of three colors that make up the pixels of the picture.

Monitor color analysis

Monitor color	R	G	B
White	255	255	255
Red	255	0	0
Green	0	255	0
Blue	0	0	255
Cyan	0	255	255
Magenta	255	0	255
Yellow	255	255	0
Black	0	0	0

Video is the most complex data type to represent but generally it can be thought of as a series of images, saved in binary and played back one after the other. These images are usually compressed in order to save storage space and process the images as fast as possible.

Boolean logic and logic gates

The data is in binary format, but computers have to convert the data for it to do something useful.

Boolean logic, named after its creator, mathematician George Boole, provides us with a set of operators that do simple transformations and comparisons of data. Just like in decimal arithmetic that humans use, where we have operations like addition, subtraction, multiplication and division, in Boolean logic, we have NOT, AND, OR and XOR. With these simple operators, we can build complex systems, as complex as a computer CPU!

In computers, each basic Boolean operation is implemented by a **logic gate**, which is a device that accepts one or more input signals and produces a single output signal.

Each gate is associated with what is called a truth table. A truth table shows all possible input values and the corresponding output values for a specific gate.

Let's get to know the Boolean operators and the corresponding logic gates.

Logic Gate NOT

A **NOT** gate accepts one input value and produces one output value. The NOT operator inverts the input. If the input is 0, the output is 1 and if it is 1, the output is 0.

Input	Output
A	NOT A
0	1
1	0

Input A → Output

Logic Gate AND

An **AND** gate accepts two input values, which both determine the output. If the two input values are both 1, the output is 1; otherwise, the output is 0.

Input		Output
A	B	A AND B
0	0	0
0	1	0
1	0	0
1	1	1
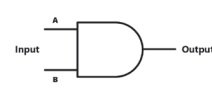
Input A, B → Output

Logic Gate OR

Like the AND gate, an **OR** gate has two inputs. If the two input values are both 0, the output value is 0; otherwise, the output is 1.

Input		Output
A	B	A OR B
0	0	0
0	1	1
1	0	1
1	1	1
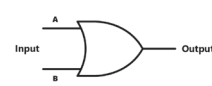
Input A, B → Output

Logic Gate XOR

An **XOR**, or exclusive OR, gate produces 0 if both inputs are the same, and 1 if they are different.

Input		Output
A	B	A XOR B
0	0	0
0	1	1
1	0	1
1	1	0

Input A, B → Output
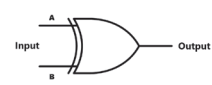
> **SMART TIP**
> Did you know that you can use Boolean operators to refine your web searches? Using the NOT operator (-) you can exclude results that contain a particular word. For example, searching [jaguar speed -car] will give you the speed of the animal excluding references to the car with the same name. Also, by default every space in your search query is considered to be an AND operator, meaning that you want the results to contain all the words of your query.

Computer Science

Sample pages

Life-long learning

Life-long learning is the process of gaining knowledge and skills throughout your life, often to help you do your job properly.

> Lifelong learning requires self-motivation. You must feel good about learning and your ability to learn.

> Effective learning requires that you obtain information through reading, listening, observing, practice and experience. Information is all around you, so you should strive to obtain relevant and meaningful information, and develop this into knowledge and skills.

> Learning is successful when we find personal meaning in the information we gain.

> You can take notes and practice, discuss and try new ideas and skills to help you learn and develop.

> You have to think about your own learning. Think about how and why you learn, including how you feel about a specific topic or situation before and after developing your knowledge.

> You should check your knowledge regularly to help reinforce what you have learned in your mind. You should always try to maintain an open mind, question your knowledge and be ready to consider new information.

The evolution of cash payments

The great development in technology has provided an important drive to adopt new payment methods on the Internet, and these methods have become comfortable and easy to use. For example, consumers can use the new payment methods in many applications to pay purchase costs, such as **Alipay** and **WeChat**.

The e-wallets supported by such applications are constantly evolving, so we must be ready to accept new payment methods soon.

As for cryptocurrencies such as **Bitcoin**, it is still not clear whether these currencies will affect electronic payment methods in the near future due to many lawsuits and legal restrictions around the world, however it is certain that the technology used in those currencies can allow faster processing for financial operations.

Cloud storage

Cloud storage services allow us to keep backup copies of our files online and access everything from anywhere with just an Internet connection. One might think that since we are not sharing anything or making our content publicly available, then our privacy is secured. While this might be true in most cases, you should never forget that you essentially entrust private companies with your personal files. They say that they won't violate your privacy by looking at your files, but if they want, they can, so it is a matter of trust. Also, you should be aware that many major providers of cloud storage automatically scan your files to detect illegal content like songs or movies downloaded from the Internet and remove it or notify the authorities. So, concerning cloud storage, avoid uploading extremely sensitive personal information and always keep a copy of your files in a physical hard disk drive at home.
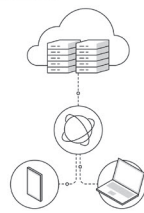
What is the Digital Divide?

The Digital Divide, or the technology gap, is a social issue referring to the difference in the amount of information available to those who have access to computers and the Internet and those who do not have access. The term became popular in the late 1990s and while this gap should have been closed by now, it is just getting worse. It's simple. Not everyone has access to the latest technology, or any at all.

Broadly speaking, the gap is not necessarily determined by the access to the Internet, but by the general access to ICT (Information and Communications Technologies) and to the media that the different segments of society can use. Today the most discussed issue is the availability of high speed access to the Internet at an affordable cost and quality. But, the problem should also be examined in an international context, where specific countries are far more equipped than other developing countries to exploit the benefits from the rapidly evolving technology. The idea that some information and communication technologies are vital to quality of life is not new. Some suggest that the Internet and other ICTs are somehow transforming society, improving our mutual understanding, eliminating power disparities, and allowing us to live in a truly world society.

The digital divide is not a clear single gap which divides a society into two groups. Research shows that disadvantages can be lower-performance computers, lower-quality or high price connections, difficulty in obtaining technical assistance or training, and lower access to high quality online content. And of course, the term doesn't have the same meaning for everybody. For example, in the USA people talk about the digital divide and the main talking point is that a quarter of the country doesn't have high speed Internet at home. It is not that a quarter of the people do not have smartphones or access to a connected computer in their local community.
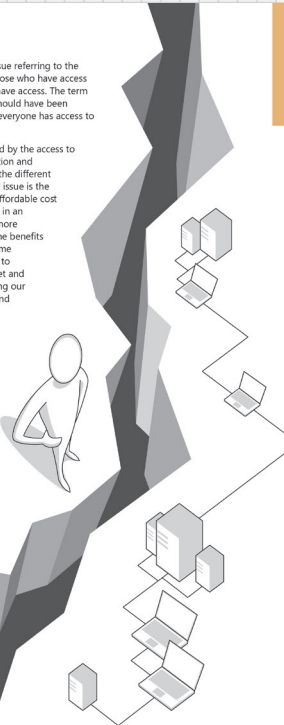
Text generation

ChatGPT is an example of an open-source language generation model developed by OpenAI. It is part of a larger category of AI technologies known as natural language processing (NLP) which involves teaching machines to understand, interpret, and generate human language. ChatGPT is trained on massive amounts of text data and can generate text in response to a prompt, allowing it to answer questions, complete sentences, or even write articles and poems.

List and explain Newton's Laws

Sir Isaac Newton, a renowned English mathematician, physicist, and astronomer, formulated three fundamental laws that describe the motion of objects. These laws, known as Newton's Laws of Motion, laid the groundwork for classical mechanics and have been essential to understanding how objects move and interact. The laws are as follows:

1. Newton's First Law (Law of Inertia):
   An object at rest will stay at rest, and an object in motion will stay in motion with the same speed and direction, unless acted upon by an external force. This law states that an object's natural state is to maintain a constant velocity, which could be zero (at rest) or a

Image and video generation

An image generation model is capable of generating unique and diverse images from textual descriptions, such as "a three-story castle made of ice with a unicorn statue on top" or "a toaster that looks like a spaceship." It is trained on a diverse range of images, allowing it to generate a wide variety of creative and imaginative outputs. This technology has the ability to generate detailed and high-quality images, which can have potential applications in fields such as video game design, film and animation, and advertising.

AI can create videos. AI algorithms can generate animations, insert computer-generated graphics, and even create videos from still images. However, the quality of the output depends on the sophistication of the AI model and the amount of data it was trained on. Currently, AI-generated videos are often used for special effects in movies and video games, as well as for creating realistic simulations for research and training purposes. Some companies have also developed AI-powered video editing tools that can automatically trim, stabilize, and enhance footage.

Music generation

AI can create music using various techniques, such as machine learning algorithms, generative models, and other computational methods. An AI system, like MusicLM from Google, can analyze existing musical patterns and generate new compositions based on that information. Some AI systems can also generate music in real-time, responding to specific parameters or user input. However, the quality and originality of AI-generated music is still a matter of debate, and many experts believe that human creativity and musical expression cannot be fully replicated by machines.

Games are intelligent

AI has been used in gaming for many years to enhance player experience and improve game design. Now, the evolution of machine learning systems is radically changing the gaming industry. AI improved the visual quality and now game environments have become more realistic than ever before. Game characters move and express themselves in a natural way.

Here are a few examples of applications of AI in gaming:

1. **Non-player character (NPC) behavior**: AI is often used to create more realistic NPC behavior, such as more intelligent opponent AI, which can make the game more challenging for the player.

2. **Procedural content generation**: AI algorithms can be used to generate game content, such as levels, terrain, or random encounters, based on predefined rules and player behavior.

3. **Personalization**: AI can be used to tailor the game experience to individual players based on their playing style, skill level, and preferences.

4. **Real-time strategy**: AI can be used to create more intelligent and dynamic game environments, such as intelligent resource management and adaptive difficulty levels.

5. **Natural Language Processing**: AI can be used to enable voice recognition and natural language processing, allowing players to interact with NPCs and the game world in more immersive and realistic ways.

Weather forecasting

AI can provide more accurate and up-to-date weather forecasting information than traditional methods by analyzing large amounts of data from various sources such as satellites, radar, and weather stations. AI algorithms can create highly detailed and localized weather forecasts, taking into account specific geographic and environmental factors. The faster and more frequent updates can help in providing early warnings for severe weather conditions and improving disaster response and planning. Additionally, AI-powered weather forecasting systems can automate many manual tasks, freeing up meteorologists to focus on analysis and interpretation.

TASK 3
I'm an IT administrator

When working with computers and other electronic devices, problems are bound to occur at one point or another. Wouldn't it be great to know how to deal with them? Here are some of the most common problems for most home users' setups and ways to deal with them.

The computer freezes or is acting weird

When something appears to be frozen, first find out if only the current program is frozen or Windows is entirely unresponsive.

If the mouse pointer is present and is moving when you move the mouse, then the problem is just with the program you are working on. Right-click a blank area of the taskbar and click **Start Task Manager**. Click the program in the list and click **End Task**. Windows should now run normally. If the mouse pointer doesn't move, Windows must be restarted. Press and hold down both the **Ctrl** + **Alt** keys. While holding them down, press the **Delete** key twice. Windows will shut down and restart.

If the computer is acting weird, reboot it. The majority of the problems that occur can be fixed by rebooting. When you reboot, the computer's memory is cleared and almost everything is reset. This fixes a lot of problems.

Nothing is displayed on the monitor

Check all the connections, the cables between the main unit and the monitor and all the electrical cables. If there is a green light on your monitor but not on your main unit, then there is a problem with your main unit. If there is a green light on your main unit but not your monitor, then you may have a problem with your monitor. Try with another monitor. If you have a light on both the monitor and the main unit, check the pins of the video cable. A single bent pin can cause a problem.

The keyboard doesn't work

> Press **Ctrl** + **Alt** + **Delete** (all three keys at the same time) to bring up the Task Manager. Select any program that says *Not responding* and click **End Task**.
> Check to make sure the keyboard is still properly connected to the computer.
> Try plugging it into a different USB port.
> Shut down your computer. Unplug and replug your keyboard. Turn the computer back on.

When you turn your computer on you may get a message that no keyboard was detected or you get into Windows but you are not able to type. Unplug and plug again the keyboard. Use a different USB port. If it still doesn't work, try another keyboard that you know is working.
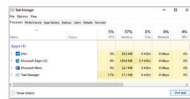
Clean your keyboard! One of the dirtiest parts of your computer is the keyboard. You have to clean it regularly and this will also help in working properly.

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The mouse doesn't work

Make sure the mouse is properly connected to the computer. Plug it into a different USB port.

If you use an optical mouse, make sure that the desk surface can reflect the red or blue beam of the mouse. A shiny surface or glass may cause problems.

If your keyboard or mouse are wireless check the batteries.

The computer is running slow

Hard drive fragmentation may slow down your computer. When was the last time you defragmented your hard drive? In your hard disk properties, in **Optimize and defragment** drive section, click **Optimize**. ❶ In the **Optimize Drives** window, choose the disk you want to defragment and click **Optimize**. ❷

If you are running low on hard disk space, your computer will also run slowly. Use **Disk Cleanup** to empty the **Recycle Bin** and delete unnecessary files that the system keeps on the hard disk drive.

The computer does not boot/start up

> Check for forgotten USB flash drives plugged into the computer or DVD disks in the drive. Remove and try again.
> Try turning the computer off and then on again to see if the problem persists.
> A peripheral device might be causing the problem. Try disconnecting all devices (except the mouse and keyboard) and try again. If the computer starts normally, you have to isolate the device that is causing the problem. Shut down, plug one device at a time and restart to find out the faulty device.
> Check to see if your computer is overheated. If it is, shut it down and wait for it to cool down before trying again.
> If the messages "A hard drive is missing" or "Operating system is missing" appear, don't do anything. Call for a PC technician to take care of the problem. You may cause a bigger problem by trying to solve it by yourself!

There is no sound

> Check that the speaker or headphones cable is plugged in correctly. All audio ports and cables are color coded to help you.
> Check the mute button (both on speakers and Windows taskbar).
> Check volume sliders (both application and Windows master volume).
> Check the volume knob on your speakers.
> Check if any forgotten headphones are plugged in.
> Bluetooth speakers are connected to the computers.
> The computer has recognized your monitor as a speaker. Switch to the normal speaker.

If your mouse doesn't work, use **Ctrl** +**S** *to save your work and* **Alt** + **F4** *to close the application.*

Remember to use the Optimize and defragment tool only for Hard disk drives (HDD) and not for Solid state drives (SSD).

Blue	Line In
Pink	Microphone In
Green	Main/Front Speakers Out (or Headphones)
Black	Rear Speakers Out
Orange	Center Speaker / Subwoofer
Gray	Side Speakers Out

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Computer viruses

Let's learn some more things about viruses so we know what we are up against. A computer virus is a set of computer instructions that self replicate. A virus can be a complete program (a file in itself) or a piece of code –just part of a computer program file. In its most basic form, a virus makes copies of itself.

Through the process of making copies of itself, a virus can quickly use up all available memory in your computer. This can slow your computer down significantly and sometimes prevent other programs from running at all.

Most viruses also contain code that does something destructive to your computer, or someone else's. It can destroy or change your data, change your system settings, or send out confidential information.

How viruses spread

Most viruses require human intervention to start replicating. You may trigger a virus to begin replicating when you click on an infected email attachment. Once a virus is activated, it can create and distribute copies of itself through email or other programs.

Your machine can be infected by a virus if you:

1	Share infected CD-ROMs or DVD-ROMs.
2	Download and run infected software from the Internet.
3	Open infected email attachments.
4	Open infected files on a USB drive.
5	Plug in an infected USB stick.
6	Visit a malicious website.

It is important for you to understand that, once a virus infects a file on your computer, it replicates and spreads to other files on that computer. If, however, this particular machine is part of a home or business network, it can also infect other computers on that network.

Worms

Worms are often confused with viruses, but a worm has the ability to travel alone. Viruses require human intervention to start replicating. A worm can make copies of itself on a network or move by itself using email without your help.

A worm is usually a standalone program. A worm transmits itself between machines across a network.
A virus attaches itself to files. When a virus copies itself, it is copying itself to other files on the same machine.

Ransomware

Ransomware is a form of a malware that encrypts a user's files. The attacker then demands a large amount of money as a ransom from the victim to restore access to the data.

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Protection measures

To protect your computers and your home network against these threats, you should make sure:

> You have an antivirus program installed on every computer on your network. **Windows Security** is a highly efficient and lightweight choice that protects you silently with no annoying pop-ups. Plus, it's free.
> Your antivirus program is configured to download updates automatically so that you are always protected against newest threats.
> **Windows Firewall** is enabled.
> Your computers are updated with the latest security fixes through **Windows Update**.

Why do you think you have a virus?

If your antivirus software found a virus in your computer, it might be a false alarm.

If you have one of the following problems in your computer and you think it is a virus, then you may be wrong! You may have just problems caused by your computer hardware, software, or just errors that you have made.

Listed below are some common false alarms:

1	The virus is not in a list of common viruses.
2	Virus is found in memory only and not in any other file.
3	You have more than one antivirus software in your computer.
4	The antivirus doesn't name the virus it found.

1	The computer is very slow.
2	The hard disk drive light seems to blink for no particular reason.
3	USB Flash disks can't be written or read.
4	Strange web pages appear on the screen by themselves.

⚙ Hands on!

Match the terms with their meanings:

TERM	MEANING
WEP	*A user with limited access rights*
WPA2	*An unsafe wireless encryption protocol*
Standard user	*A malicious program that transmits itself through networks*
Administrator	*A user with full access rights*
Virus	*A strong wireless encryption protocol*
Worm	*A self-replicating piece of code*

Databases

MODULE 2
2 Collecting information

Hi and welcome back! It's time to explore a really big topic in computers, which is called databases. What is more, you will learn the real meaning of the words "information" and "data."

Learning Objectives

In this module you will learn:

> what the meaning of collecting information is.
> how to gather information.
> how to import data onto a database.
> how to extract certain information from a database.
> how to identify certain information in a database.
> how to relate different data.
> what the meaning of personal information is.
> how to extract data that contain personal information.
> how to use databases in labs and experiments.

Skills

After this module you will be able to:

> create and use your own database.
> organize your information into tables.
> use filters and sorting.
> understand the importance of primary keys and relationships.
> import and export personal information from your contacts.
> use a data logger for lab experiments..

Tools

> Microsoft Excel
> Outlook.com
> HanDBase
> Memento
> Obvibase and Caspio

TASK 1
Introduction to databases

Do you know exactly what data is?
Data is any kind of information around us!
Information is facts or details about somebody or something and which you know or can learn about from different sources.

Let's explore some different types of data:

> In the fall, most trees have yellow leaves.
> Kim's eyes are blue.
> A car has 4 wheels.
> Today is Sunday.
> Anna's favorite food is spaghetti.

On a student card, you can see information such as the student's name, home address, telephone, email and date of birth.

STUDENT CARD No 214
NAME *Lisa*
HOME ADDRESS *36 Cambridge Court*
TELEPHONE *212 500 2020*
EMAIL *lisa@digital-kids.com*
DATE OF BIRTH *17th May*
SIGNATURE

When a set of data is gathered, it can provide organized information about something specific!

For example, the data a school gathers about its students makes up an organized set of information. Before computers, this type of data was usually kept in filing cabinets.

HISTORY
People who use computers often use the words "information" and "data" in the same way. In the 1970s, computer scientists gave a new meaning to these words. "Data" means information that has not been checked. "Information" means data that has been checked and therefore can be trusted.

---

contacts - Power Query Editor

Now that you know how to export your data from Outlook.com, why don't you try the other way around? Try to import data from a worksheet which contains contact information to Outlook.com.

Now you can apply the things you learned about databases to make your contacts database look better, sort it, apply filters, etc.

	First Name	Email Address	Mobile Phone	Home Street	E
2	Lisa	lisa@digital-kids.com	2125004412	22 Alfred Drive	
3	Kim	kim@digital-kids.com	2125002020	36 Cambridge Court	
4	Marco	marco@binary-kids.com	2125004321	44 Woodrow Way	
5	Stella	stella@binary-kids.com	2125001234	2048 Central Avenue	
6	Tom	tom@binary-kids.com	2125002020	36 Cambridge Court	

⚙ Hands on!

Use the things you learned in this task to create your own contacts database in Microsoft Excel. Export your contacts from your email program and import them to Microsoft Excel, just like we demonstrated. You can use more fields than we did in the examples if you want. Then, sort your contacts by name and save your database.

TASK 5
Lab data collection

In your school's science lab, you can work on many different experiments. Some of these experiments involve taking measurements. Data loggers are designed to do just that: they are devices with sensors that help you measure and record data, such as light, sound and temperature measurements.

A data logger can take repeated measurements and then transfer the data to your computer for analysis. Just connect your data logger to the USB port of the computer and download the recorded data.

With a data logger, you can capture and display data as it happens, collect data continuously or at regular intervals over long periods of time. One kind of data logger is a weather station, which records everything about the current weather conditions. Scientists can then use this data to predict changes in the weather.

Using data logging software, you can display the data as a chart.

21.7   745   75

After you take your measurements with a data logger, you can download the data to the data logger's software on your computer.

What you can do with a data logger:
Accurately measure sound and light as well as temperature.
Take measurements that are too slow or too fast to record by traditional means.
Collect data anywhere and then download the data to a computer for analysis.
Get visual feedback of your measurements.

Databases

Sample pages

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To insert records in your form:

> Simply fill in the form you have already created. ❶
> When you are done, on the **Home** tab, in the **Records** group, click **Save**. ❷

Use this button to go to the **First** record.

Use this button to go to the **Last** record.

Create a **New** record with this button.

Record: 1 of 1

This button takes you to the **Previous** record.

This area shows the **Current** record.

This button takes you to the **Next** record.

In the same way you enter data into a form, you can also enter data into a table. Open the Students table and type these records.

StudentID	Name	Address	City	Postal Code	Telephone number	Class No
1	Marco	44, Woodrow Way	London	12345	2125004321	2
2	Lisa	36, Cambridge Court	Stratford	12346	2125002020	1
3	Kim	22, Alfred Drive	London	12347	2125004412	2
4	Tom	36, Cambridge Court	Stratford	12346	2125002020	1
5	Alex	202, Newport Lane	London	12348	2125005162	3
6	Stella	2048, Central Avenue	London	12349	2125001234	3
7	Paul	43, Oxford Street	London	12341	2125005263	1

To delete a record:

> Navigate to the record you want to delete e.g. the **7th** and click the **record selector** next to the record. ❶
> On the **Home** tab, in the **Records** group, click the down arrow next to **Delete** and then click **Delete Record**. ❷
> In the warning message box that appears, click **Yes**. ❸

Because the Student ID field is auto-numbered, when you delete a record, its Student ID number is not replaced. If you delete the last record e.g. No 6, the next new one will be No 7.

SMART TIP

To fill in a form faster, you can press **Tab** after typing each field to move to the next one. If you press **Tab** while working on the last field of a form, you move to the next page to insert another record!

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Personalize your forms

If you want, you can customize your form in various ways. For instance, you can add or change fields and labels.

To change the layout of your form:

> On the **Home** tab, in the **Views** group, click **Layout View**. ❶
> In **Layout View**, you can resize and drag all the fields and put them in the order you prefer. ❷

Form View
Layout View
Design View

Change Data Source

You can also change the **Data Source** of your **text boxes**. This means that you can choose a specific field in your table, so that the text you type in the **text box** is saved in it.

To change the data source of a text box:

> Click a text box to select it, e.g. the text box that contains the name **Marco**. ❶
> On the **Design** tab, in the **Tools** group, click **Property Sheet**. ❷
> In the **Property Sheet** pane, on the **All** tab, click the **Control Source** list and click a field to link to that **text box** e.g. **Name**. ❸

Now, whatever you write in that text box will be saved in the field you selected.

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TASK 5

Import and export data

Import and **export** data are very important operations for any program and especially for databases. Thanks to this feature, you can transfer your data from one program to another for more processing. For example, you can export your data from a database to a spreadsheet for analysis, or export an old database you kept as a spreadsheet to a powerful database program for easier updating and maintenance.

To export data to Microsoft Excel:

> In the **Navigation** pane, click the object you want to export data from e.g. the **Students** table. ❶ You can export data *from any table, query, form, and report objects*.
> On the **External Data** tab, in the **Export** group, click **Excel**. ❷
> In the **Export - Excel Spreadsheet** window, type a file name for your **Microsoft Excel** file e.g. **Students. xlsx** ❸ or **Browse** to select another location for your file. ❹
> Click **OK**. ❺
> That's it! Click **Close** on the next window. ❻
> Your data has been exported to Microsoft Excel. ❼

Open the final file to see your results.

Select and export specific records from your table.

With this option, you can preserve most of your formatting.

Save the steps you want to repeat every time.

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To export data to a text file using Comma Separated Values (CSV):

> In the **Navigation** pane, click an object which you want to extract data from e.g. the **Students**. ❶
> On the **External Data** tab, in the **Export** group, click **Text File**. ❷
> In the **Export - Text File** window, type a file name for your **text** file e.g. **Students.txt** ❸ and click OK. ❹
> In the next window, leave **Delimited** selected and click **Next**. ❺
> In the next window, click **Include Field Names on First Row**, ❻ and then click **Next**. ❼
> In the next window, change the name of the file if you want and then click **Finish**. ❽
> In the next window, click **Close**. ❾

Browse to select another location for your file.

With this option, you can preserve most of your formatting.

Do these steps look familiar? Remember when you exported a CSV file from Microsoft Excel? These steps are very similar.

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Modifying Tab order in forms

When you use a form in an Access database, you can switch between controls by pressing the **Tab ⇆** key. Usually, the controls respond to the **Tab ⇆** key logically, from top to bottom and from left to right, so the form is easier to use. If necessary, you can specify the order in which the controls on a form respond to the **Tab ⇆** key.

In this form, pressing Tab ⇆ selects the controls in the following order: StudentID, Name, Address, City, Postal Code, Telephone number, Class No.

To modify the Tab order in a form:

> Open the form in **Design View**. ❶
> On the **Form Design** tab, in the **Tools** group, click **Tab Order**. ❷
> In the **Tab Order** window, under **Section**, click the section you want to change, e.g. **Detail**. ❸
> On the **Custom Order** list, place the cursor above the square next to one of the fields on the list. When the cursor becomes a black arrow, click to select a field, e.g. **Name**, and drag the field to the desired location in the list, e.g. first. ❹
> If you want Microsoft Access to create a top-to-bottom and left-to-right tab order, click **Auto Order**. ❺
> Click **OK**. ❻
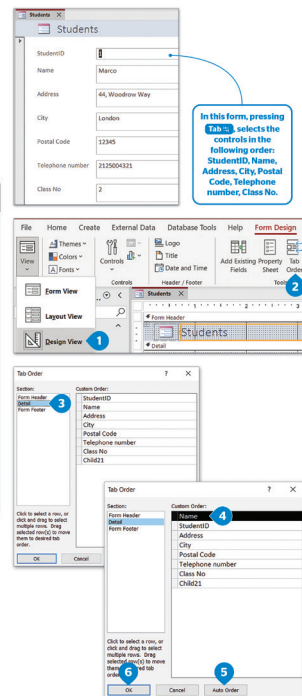
Sorting records in a form

In a form in Microsoft Access, you can navigate through your records using the navigation buttons at the bottom left. Microsoft Access allows you to navigate through your records in a specific order. You can sort them according to a chosen field in ascending or descending order.

To sort records in a form:

> Open the form and click the field you want to sort by, e.g. **Name**. ❶
> On the **Home** tab, in the **Sort & Filter** group, click **Ascending**. ❷
> The records are now sorted alphabetically according to the **Name** field. ❸
> To navigate through your records, click the navigation buttons at the bottom left of the form. ❹
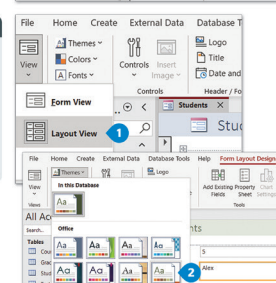> If you want to remove the sorting, on the Home tab, in the **Sort & Filter** group, click **Remove Sort**. ❺
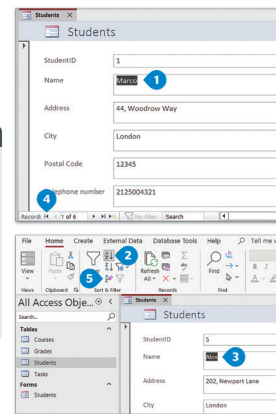
Applying themes

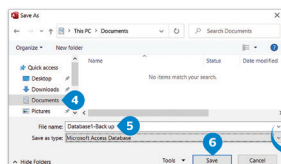A theme is a collection of colors and font formatting that you can apply to forms in Access as you like.

To apply a theme:

> Open the form you want to format in Layout View, e.g. **Students**. ❶
> On the **Form Layout Design** tab, in the **Themes** group, click **Themes** and then click the one you like, e.g. **Retrospect**. ❷
> Also in the **Themes** group, you can edit the theme you applied, changing the **Colors** ❸ or the **Fonts** ❹ of the theme.

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Splitting databases

One way of improving the performance of a database and reducing the chance of file corruption is splitting the database. When you split a database, you reorganize it into two files. The back-end database contains the data tables, and the front-end database contains all the other database objects, such as queries, forms, and reports. Each user interacts with the data using a local copy of the front-end database.
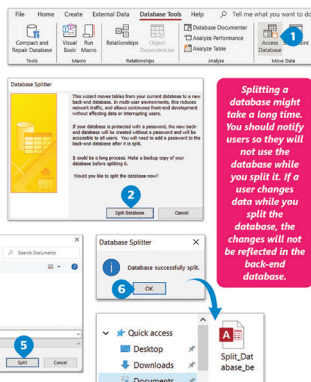
When you restore data from a backup, you want to know which database the backup came from and when the backup was made. Using the default file name when you create the backup file is a good idea.

It would be best to always back up a database before splitting it. If you split a database and then decide that you do not want a split database, you can restore the original from your backup copy.

To split a database:

> On the **Database Tools** tab, in the **Move Data** group, click **Access Database**. ❶
> Click **Split Database**. ❷
> In the Create Back-end Database window, click **Documents**, ❸ and type a **File name**, e.g. **Split_Database_be**. ❹
> Click **Split**. ❺
> Click **OK**. ❻
> Your database is now split.

Splitting a database might take a long time. You should notify users so they will not use the database while you split it. If a user changes data while you split the database, the changes will not be reflected in the back-end database.

Encrypting databases with a password

In Microsoft Access, as in all Microsoft Office programs, you can use passwords to prevent others from opening or modifying your database.

To encrypt a database with a password:

> To set a password in a database, you should open it in **Exclusive** mode. So, open Microsoft Access and on the **File** tab, click **Open** ❶ and then **Browse**. ❷
> In the **Open** window, click **Documents**, ❸ select the database you want to set a password to, e.g. **Database 1-Backup**, ❹ click the arrow next to the **Open** button, and click **Open Exclusive**. ❺
> On the **File** tab, click **Info**. ❻
> Click **Encrypt with Password**. ❼
> In the **Set Database Password** window, type the password in the **Password** box, retype it in the **Verify** box, ❽ and click **OK**. ❾
> Microsoft Access will ask you for the password whenever you want to open the database again. ❿
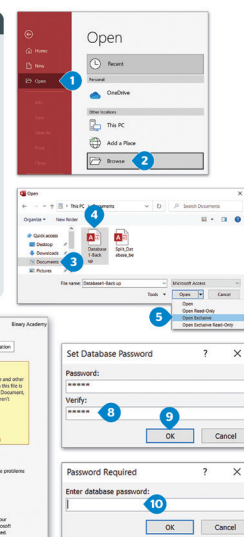
If you forget your password, Microsoft cannot retrieve it. Store the passwords to your documents in a secure place.

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Digital Business

Overview

1. E-commerce & Cybersecurity
- E-commerce
- Online transactions
- Information security
- Personal and computer security
- Digital footprint and Internet security

2. Web design essentials
- Design your website
- Publish your website
- Introduction to infographic design
- Creating custom infographics

3. Video production
- Video shooting
- Video editing
- Visual effects
- The final touch
- 3D animation

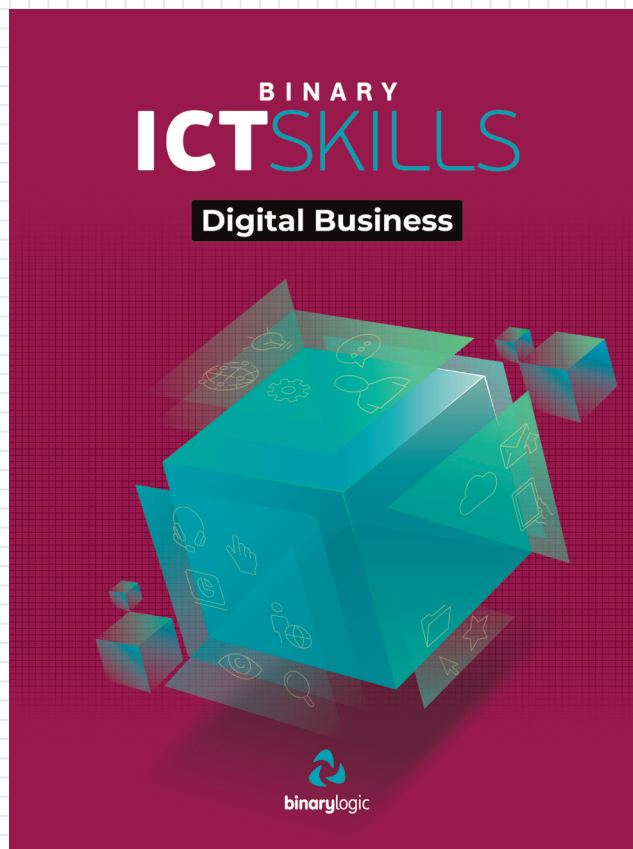### 4. Digital marketing
- Plan your marketing strategy
- Email marketing campaign
- A brand blog
- Create blog content
- Blogging and social media
- Social media audit

BINARY ICTSKILLS

Digital Business

binarylogic

MODULE 1

1 E-commerce and Cybersecurity

In this module, you are going to learn the importance of e-commerce and its various models. You will learn about the different technologies used in e-commerce and how you can perform financial transactions safely on the Internet. You will also be able to protect the information you enter online from unauthorized access, by distinguishing between the different types of attacks. You will also be able to assess the impact of your digital fingerprint over the Internet and understand the use of operating system functions for safe browsing of the Web.

Learning Objectives

In this module you will learn:

> What e-commerce is and its basic models.
> What virtual goods are and how you shop online through the Amazon platform.
> What the e-commerce technologies are and by which methods you can pay online safely.
> Which fraudulent operations to look out for and their warning signs.
> What information security is.
> What cybercrime and security breaches are.
> How to follow personal security precautions.
> What kind of personal information you share online.
> What a digital footprint and digital traces are.
> What kinds of personal data a browser collects.

Skills

After this module you will be able to:

> recognize the basic models of e-commerce.
> use Amazon platform for online shopping.
> pay safely online.
> understand what is cybercrime and security breach.
> understand what kind of information can you share online.
> protect yourself from internet frauds.

Tools

> Amazon
> Microsoft Windows

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TASK 1

E-commerce

E-commerce is a term that refers to all forms of commercial transactions that take place over the Internet. Usually, e-commerce uses the World Wide Web in order to complete commercial transactions.

One of the most famous examples of e-commerce is online shopping, which includes the processes of buying and selling products as well as transferring money and data to carry out commercial transactions using various devices. E-commerce often includes procedures like the sale of physical products over the Internet, but it can also be used to describe any type of procedures and business transactions that are completed over the Internet.

E-commerce depends on many technology systems and tools such as:

Email

Company content management systems.

Instant message exchange systems.

Newsgroups.

Online shopping systems.

Product delivery tracking services.

Online banking services.

Electronic payment gateways and online tickets.

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TASK 3

Information security

The concept of digital security relates to protecting computer hardware, networks, programs and data from unauthorized access, which may aim to obtain or extort money from users, alter programs or destroy data, and sometimes even disrupt an organization's operations in general.

Information security

The term information security expresses all practices that are carried out to protect information from risks and attacks that result from unauthorized access for the purpose of unlawful use, modification, destruction, copying or falsification of information. Digital security competencies can be summarized in the following points:

> Protect enterprise data and everything related to the preservation and use of that data.
> Protect the business continuity of the organization.
> Enabling the safe operation of applications built on the enterprise's IT systems.

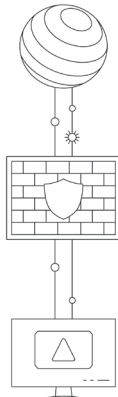### The importance of information security

The importance of information security increases with the increasing importance of data and information available on the network and the necessity for its availability to users without interruption, in addition to the number of users who need to access that data and information on an ongoing basis. The more important the information, the more it is vulnerable to computer piracy attacks that aim to steal it or block it from users, etc.

The important role of information security is to prevent, detect and respond appropriately to internal and external threats as necessary.

The IT departments in the various institutions are concerned with developing the information security strategy for the enterprises through:

a) Improving awareness of information security issues through training and various initiatives related to information security.

b) Improving information security policies with continuous reviews to meet ever changing security requirements.

c) Regularly assessing and analyzing threats and vulnerabilities.

d) Establishing and implementing necessary control measures and procedures to reduce risks.

e) Monitoring to measure the performance of controls and control methods.

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Protection triangle

The primary goal of information security is to focus on providing balanced data protection in terms of its confidentiality, integrity, and availability (this is known as the CIA Triangle), with a focus on effectively implementing information security policies, and we will now look into the details of each of these elements.

Confidentiality

Confidentiality is the provision of data and information only to persons concerned with it and who are allowed to see it, and to achieve this, various methods are used such as username and password, lists of persons with authority, and other methods of maintaining the confidentiality of data.

Integrity

The term integrity refers to preserving the accuracy and authenticity of information, ensuring that it can only be modified by persons authorized to do so, and methods of maintaining the integrity of data and information: specifying permissions, encryption, etc.

Availability

Availability means ensuring access to information in a timely and reliable manner for its use, as it is taken for granted that any information system has to provide information when needed in order to fulfill its primary purpose.

Examples of measures taken to ensure the availability of data and information include maintaining the integrity of the devices hosting the data, backups, system updates, and improving network efficiency to facilitate access to users whenever possible.

CIA Triad

Integrity — Confidentiality — Availability

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## Using search engines and social networks to search for personal information

One of the important benefits of the Internet is the presence of a large amount of information, but there is a downside which is that anyone can put information on this network.

The biggest challenge when using the Internet is not only in finding the appropriate website that contains the required information, but also in the need to verify the correctness of the information that you find.

There are many ways to find personal information about people, and all you have to do is define the scope of the person's search, or in other words, know where to look.
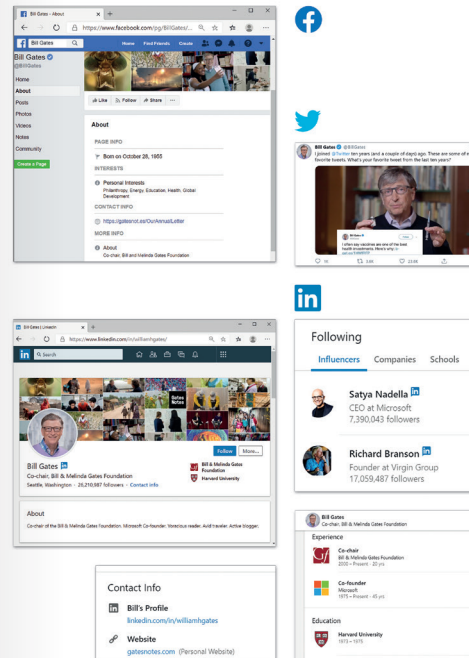
The search can be done by typing the full name, or typing the last name in a search engine such as Google, for example, Bill Gates, and then the search results can be examined to find web pages containing family information, Facebook pages, or photos.

This search result provides a wealth of free information available for anyone, as detailed information can be obtained easily, but you can also know the academic history of the person, friends, beliefs, influencers, and even contact information.
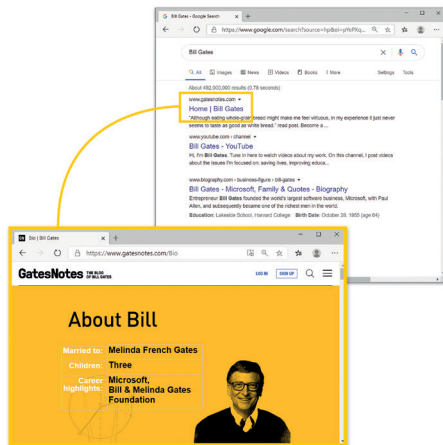
Sources of professional information and personal achievements can be obtained by searching for the person on Twitter, Facebook and LinkedIn.

About Bill

Married to: Melinda French Gates
Children: Three
Career highlights: Microsoft, Bill & Melinda Gates Foundation

Following

Influencers   Companies   Schools

Satya Nadella
CEO at Microsoft
7,390,043 followers

Richard Branson
Founder at Virgin Group
17,059,487 followers

Contact Info

Bill's Profile
linkedin.com/in/williamhgates

Website
gatesnotes.com (Personal Website)

Comparison

It is a visual way to compare and contrast different options. It is excellent for highlighting differences between two similar things, emphasizing similarities between two dissimilar things, and proving that one option is superior/inferior to the other.
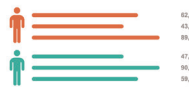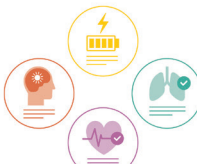
Map/Location

It visually communicates information in relation to a geographic area. It is preferred when you want to compare places and cultures via setting-centric data.

Photo-based/Photo-graphic

It is based on a photo, uses text and data to explain a point. It is suitable for creating brochures and explanatory posters.

Hierarchical

It organizes information by levels – whether it be level of importance, level of difficulty, income level, etc. It is most appropriate for comparing the different levels with each other and showing the relationship between them.

Anatomical

It breaks down complex information and explains it in a visual and effective manner. It is ideally suited to biology, health, education and marketing.

Visualized numbers

It adds images to statistics to make them more appealing. It is most appropriate for making individual units of information visually interesting.

Visual résumé

It is a résumé in the form of an infographic. It is best suited for industries that are open to non-traditional résumés, such as advertising, marketing, tech startups, and graphic design.

Flowchart

It summarizes the steps involved in making a product or describing a process chain. It helps your audience visualize a concrete but complex set of instructions or information.
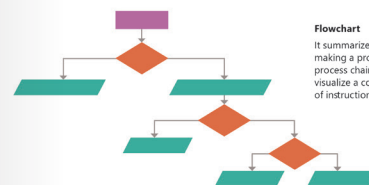
Interactive

Interactive infographics are great for maximizing engagement as the viewer can interact with the data. They are ideal for sharing information across multiple digital platforms and devices.

Infographics design stages

When creating a good infographic, you need to strike a balance between presenting enough information and not overdoing it.

1. Choose a topic.
Choosing a topic is the first step in designing infographics. Choose an interesting topic that can be easily supported with the right sources of information and data.

2. Define your audience.
Depending on the audience's prior knowledge, determine the content.

3. Define your goals
to give the infographic a purpose and structure.

4. Collect the data.
During the second stage, two main tasks are taken into account:

a. Gathering reliable information and data.
It is done by researching various sources from search engines on the Internet to books and other sources, taking into account the variety of data and information gathered, including text, digital information, data, images, geographic maps, diagrams and more.

b. Sorting and refining information and data.
It is done in order to access scientific material that can be used in its final form.

5. Design.
a. In design planning, ideas about the topic are elaborated upon in advance and then presented in an appropriate and simplified way through various form elements such as models, images, icons, and text content, focusing on the fact that the main idea of the topic should be simple and attractive.

b. You also have to select the appropriate design tools to create the design through various programs and websites that help in designing infographics.

6. Review and Share.
After you design and review your infographic, you can share it via email or social media.

Infographics design tools

Have you thought about how infographics are used to help share data and information? There are a lot of infographic makers for creating an infographic from scratch. Some are easy to use and some are more complex. Here you will get an idea of what you can do with the **Canva** desktop application.

Canva is an easy to use, graphic software that gives you access to a wide range of open source photographs, graphics and fonts. With Canva, you can make complex ideas and large amounts of data easy to understand. It is free, but you can upgrade your account for access to premium tools and content, anytime. You can download it from **https://www.canva.com**. There you can also find a lot of information and examples. The designs and projects you start with Canva on one computer can be accessed and worked on from any other computer that can connect to the Internet and go to https://www.canva.com.

You can create an infographic, which contains simple icons, maps, symbols and charts. You can use text as labels or to briefly describe facts. The viewer will explore the content by studying the images and symbols in each section of the infographic. It is simple and enjoyable. Let's start!

To create an infographic:

> Open **Canva**.
> Create an account and login. **1**
> In the Home page of Canva, click on Infographic. **2**
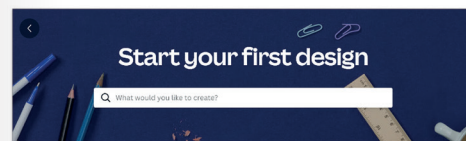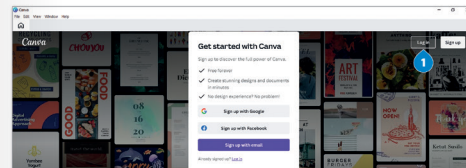
Chroma Keyer

A cool feature that you have already heard about and have seen in movies, is blue/green screen keying. This is when you shoot something in front of a blue or green background and then combine what you've shot with another video or image. The video can be something that you've taken with your camera or a 3D video that you've created.

To add a chroma keyer effect:

> Put your video or image with the blue screen in the first track and your video or image that you want to have as a background in the second track. **1**
> Click the **Event FX** button. **2**
> From the **Plug-In Chooser - Video Event FX** window, select the effect **Sony Chroma Keyer 3** and click **OK**. **4**
> See how the two videos or images start to blend. On the **Video Event FX** window, on the **Chroma Keyer** plug-in **3** tweak the properties a little bit to achieve your desired result. **6**
> You can use the **Pan/Crop** plug-in **7** in order to pan, rotate, zoom or crop the selected clip. Use the buttons on the left side of the window **8** to make changes to the clip.
> When you have finished close the window. Your effect has been applied to your clip. **9**

You can use the **Add** button to add more than one effect to your clip.

Click the **Remove Selected Plug-In** button to remove the current effect.

You can open the Pan/Crop plug-in by clicking the **Pan/Crop** button.

If you apply an effect to your clip the **Event FX** button will become green.
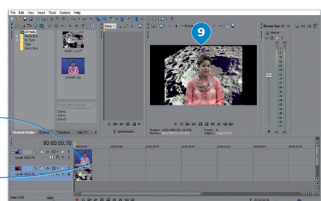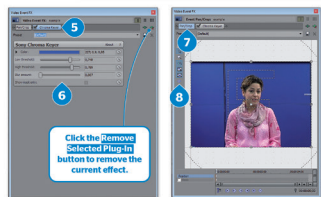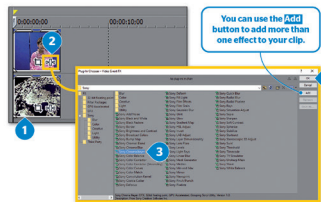
Color effects

Apart from transitions you can apply color effects. Color effects allow you to correct any color mistakes or "dress" your clips with colors to change the mood. For example, if you make a clip about the jungle you may want to enhance the color green.
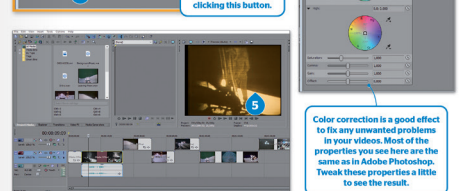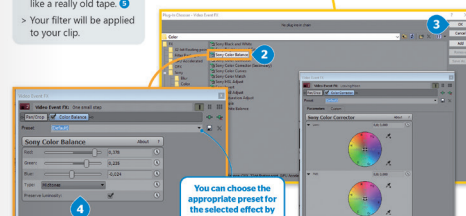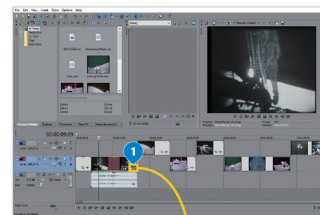
To add a color effect:

> Select the clip or the clips on the Timeline that you want to add an effect to and click the **Event FX** button. **1**
> From the **Plug-In Chooser - Video Event FX** window, select the **Color Balance** effect **2** and click **OK**. **3**
> On the **Video Event FX** window, tweak the properties **4** a little bit to make your clip look like a really old tape. **5**
> Your filter will be applied to your clip.

You can choose the appropriate preset for the selected effect by clicking this button.

Color correction is a good effect to fix any unwanted problems in your videos. Most of the properties you see here are the same as in Adobe Photoshop. Tweak these properties a little to see the result.

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