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1 COMPUTER LANGUAGE

Learning Outcomes

At the end of this lesson, students will be able to:

- Comprehend Programming language.
- Learn about types of programming languages.
- Know the history and development of Programming Languages.

Warm-up

We use different modes to communicate. Can you guess their names?

E		A		L

I reach the inbox as soon as you send me.

	E		T			

You have to post me to correct address.

	A		G			G	

The system of communication in speech and writing.

	O		V				A				N

A talk between two or more people.

Teacher's Note:

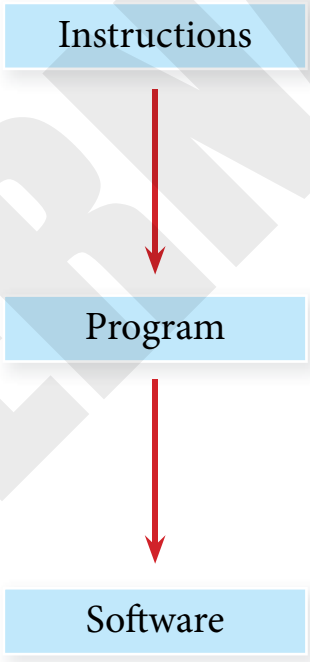
Apprise students that humans have the ability to communicate and share information. The simplest form of human-to-human interaction is possible only with the help of language that people understand. Now, introduce to them that to communicate with a computer, we need a language that the computer understands.

Hello, Friends! We use language to express our views and feelings. Let us learn the language which the computer understands.

You are in the kitchen, and your mother instructs you to make Pasta. You can easily understand the instructions because your mother is using a language you understand.

Similarly, we need a language that a computer understands to communicate with a computer. For every action, a computer has to be given instructions carefully.

A user inputs instructions into a computer's memory using a language the computer can comprehend. In other words, a program consists of instructions written using a specific programming language.



Similar to how people communicate with one another using different languages, we may also use different programming languages to write instructions for a computer program. Let us learn about Programming.

A Program is a set of instructions that tells the computer what to do. The process of writing a set of instructions that tells the computer how to input, process and output data is called programming.

To create a program, we need to learn a programming language. Some popular programming languages are listed below.

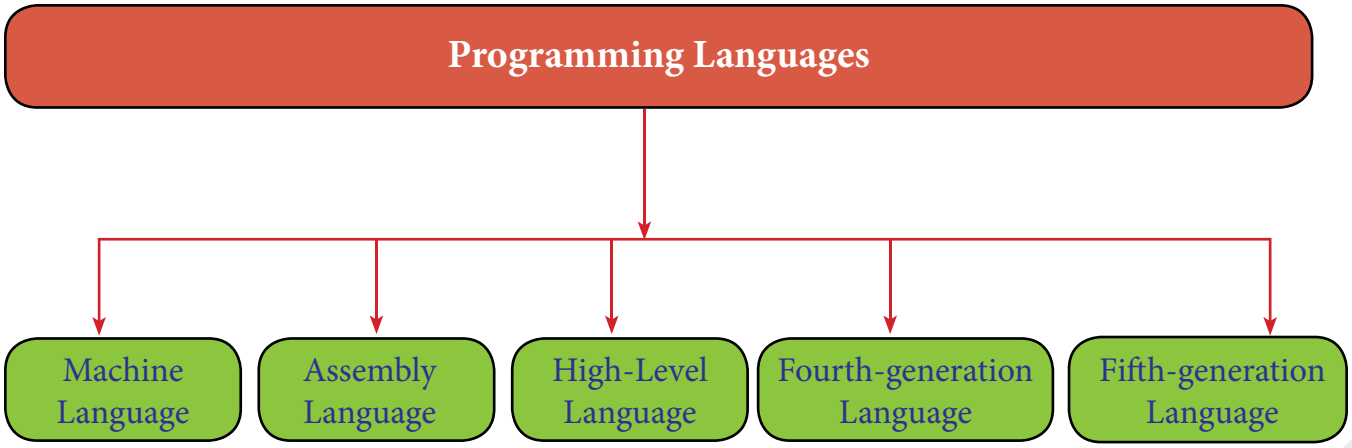
C	C++	Java	Python
Ruby	Perl	Scala	Scala
C#	Swift	R	PHP

Do You Know?

C++ was actually referred to as "The New C." This is because C++ draws inspiration from C, building upon its framework while adding new features and functions to the language.

HISTORY AND DEVELOPMENT OF PROGRAMMING LANGUAGES

The development of computer languages have been classified into the following categories.



Machine Language

(First Generation)- A computer is an electronic device that can only understand electronic signals. This language is expressed in binary form, i.e., 0 and 1, where 0 means 'off'; this is to signify a stage where the current is not flowing in the electronic computer units. The other stage is 1, the 'On' stage, which signifies the current flowing within the computer circuit.

This language has very high speed and very low memory utilisation. But understanding it is difficult and a bit time-consuming. It is highly dependent on the machine, which is why it is also regarded as a Low-Level Language.

Let me Answer

What do you mean by low-level language?

Assembly Language

(Second Generation) - Symbols or mnemonics codes are used in this language in place of 0 and 1. For example, if you want the computer to add two numbers, the mnemonics used for performing this task would be ADD. The assembly language programs have to be converted into machine language using translator programs known as Assemblers since a computer can only understand machine language.

Figure 1.1 First Generation Computer

High-Level Languages

(Third Generation) - People created a language due to limitations placed on using machine and assembly languages with the following features.

- User-friendly.
- Machine-independent.

Figure 1.2 Second Generation Computer

Almost all modern programming languages follow the standard of higher-level languages. The syntax of higher-level languages is similar to our English Language, which is easier and simpler than assembly and machine languages. All modern computers need a Translator to convert a higher language code to machine language code.

Figure 1.3 Third Generation Computer

Translator programs are of two types:

1. Interpreter: This translator program converts programming code written in a higher-level language into machine language. An interpreter translates line by line, carries out the instructions and then repeats the procedure for the remaining instructions. Interpreter programs are preferred for beginners and are slow in execution speed.

REMEMBER IT!

A Specialized Language Called Sql is used to update, delete, and Extract Information from Databases.

2. Compiler: A compiler is a translator program that converts programming code written in high-level languages into machine language. A compiler scans the whole code and converts the code at once.

Fourth-generation language (4GL) - Most fourth-generation languages are based on Structured Query Languages. This language is a combination of languages with the following features.

Figure 1.4 Fourth-Generation Computer

1. High speed of execution.
2. Highly user-friendly and designed to reduce the level of programming efforts.
3. In this language, the user has to mention only the required output, while the computer regulates the sequence of instructions that will fulfil those results.

Figure 1.5 Fifth-Generation Computer

Fifth Generation Languages (5GL) - The fifth-generation languages aim to provide an automated solution. It will look for an algorithm to solve any given problem and then automatically carry out the algorithm to solve that problem.

Generation	Popular Programming Languages
First Generation Languages	Machine Language
Second Generation Languages	FORTRAN, COBOL and ALGOL
Third Generation Languages	FORTRAN, Pascal and the C-family C++, C#, Objective-C
Fourth Generation Languages	Perl, Python, Ruby, SQL, MatLab
Fifth Generation Languages	Mercury, Prolog, OP55

Advantages of Learning Programme

1. Reasoning Skills: Programming demands solving complex problems. In programming, we learn how to break down a large problem into smaller problems and how to solve each of these smaller difficulties. This strategy aids in the growth of our reasoning skills.
2. Enhances Creativity: Making something new from scratch is what programming is all about, and this requires creativity.
3. Develop Analytical Thinking: Analysis is the initial stage in problem-solving. Understanding complicated issues and producing simple solutions to them is the core goal of programming. This necessitates a thorough examination of the issue at hand.

Let me Answer

What do you mean by creativity?

Kids' IQ

Saurabh's great grandmother was a programmer in the third generation of computer language. What kind of language did she use at that time?

.....

Let's Recall

- The process of writing a set of instructions that tells the computer how to input, process and output data is called programming.
- Machine language is highly dependent on the machine.
- The syntax of higher-level languages is similar to our English Language.
- Fourth-generation languages are based on the Structured Query Language.
- The fifth-generation languages aim to provide an automated solution.

A. Fill in the blanks

1. A program consists of instructions written using a specific ..... language.
2. A computer is an electronic device that can only understand ..... .
3. Machine language is highly dependent on the .....
4. ..... codes are used in the Assembly languages.
5. In binary language, 0 means ..... and 1 means ..... .

B. Match the following.

1. First Generation Languages	COBOL
2. Second Generation Languages	Prolog
3. Third Generation Languages	C++
4. Fourth Generation Languages	Machine Language
5. Fifth Generation Languages	SQL

C. Write T for True statements and F for false statements.

1. Machine language is expressed in binary form. ☐
2. Assembly languages are not converted. ☐
3. High-level languages are machine-dependent. ☐
4. Interpreter programs are preferred for beginners. ☐
5. A compiler converts the code one by one. ☐

D. Answer the following questions.

1. What do you mean by Machine language?

.....

.....

2. State the difference between compiler and interpreter.

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.....

3. How are high-level languages different from Assembly languages?

.....

.....

4. Write the features of the fourth-generation language.

.....

.....

5. What are the advantages of learning a program?

.....

.....

Critical Thinking

Rahul has been given a task to complete this task. Help him out to complete the table.

Generation	Popular Programming Languages
	Machine Language
	FORTRAN, COBOL
Third Generation Languages	FORTRAN, Pascal and the C- family C++,
Fourth Generation Languages	
	Mercury

A GIRL FACING FRONT AND WORKING ON COMPUTER AND AROUND HER THERE ARE 5 CLOUDS AND INSIDE IT IS WRITTEN: C++, Python, HTML, FORTRAN, JS

Team Work

Pair up with your friend and collect information about the programming languages which you can see in the above picture. Write some lines about each of them in the space given below.

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2 ADVANCED FEATURES OF POWERPOINT 2016

Learning Outcomes

At the end of this lesson, students will be able to:

- Create Photo Album in a presentation.
- Understand ink equations to add mathematical equations.
- Do the screen recording.
- Add audio and video clips on a slide.

Warm-up

Colour the circle green if the statement is True and colour it red if the statement is False.

Microsoft PowerPoint is a software application that allows you to create and show slides to support a presentation.	
A slide is a region surrounded by dotted borders on a slide.	
WordArt is a feature that creates text effects which are not available through font formatting.	
In MS PowerPoint, shapes can not be added to the presentation.	

Teacher's Note: *Assist students in doing the above activity and recall the features of Microsoft PowerPoint 2016 learnt in Class 5.*

Hello, Friends! *Let us learn the advanced features of PowerPoint..*

PowerPoint 2016 provides various tools and features to enhance the appearance of a presentation. A presentation is a collection of slides, arranged in a continuous manner. Each slide can contain images, videos, tables, shapes and much more that create a greater impact on the audience.

Do You Know?

PowerPoint was first released in 1987 under the name Presenter. Microsoft had to change the name later on due to copyright reasons.

Creating Photo Album

The different images used in a presentation make it more engaging. Various photographs from the internet and your own personal collection are available for use. You can choose the pictures you want from your whole collection with the help of PowerPoint's Photo Album tool. All of the photos in the photo album can be collected for quick access while creating a presentation.

Follow the given steps to create a photo album for your presentation.

Steps:

1. Click on the Insert Tab.
2. In the images group, click on the photo album drop-down menu.
3. Click on the New Photo album option. The Photo Album dialogue box appears.
4. In the insert picture from a section, choose

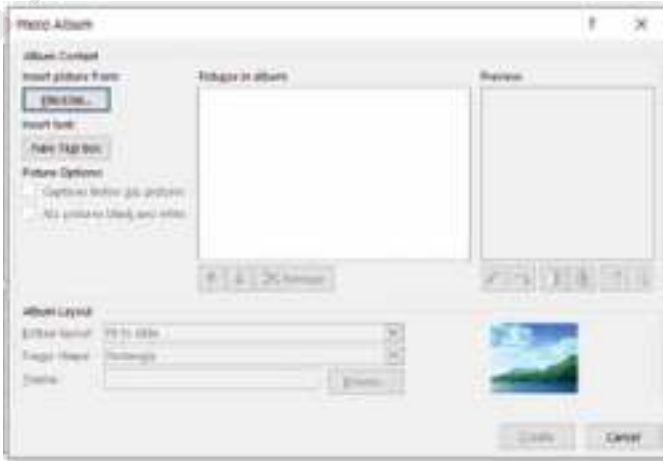

Figure 2.1 Insert Photo From

the File/Disk tab to select pictures from your computer. The Insert New pictures dialogue box appears.

5. Browse and navigate to the desired location to select as many as you want, to make your photo album.

   Under the pictures in the album box, the pictures that you select will be added.

6. Now, go to the Album Layout section and select picture layout, frame shape and theme accordingly.

7. Click on create button. Your photo album presentation is ready.

Figure 2.2 Insert New Picture

Figure 2.3 Photo Album

Ink Equations

You can quickly include mathematical equations in your presentation by using the ink equation tool.

Follow the given steps to add math equations to your presentation.

Steps:

1. Click on the Insert tab.

2. In the Symbols group, click on the drop-down arrow of the Equation button.

REMEMBER IT!

After selecting all of the images, you can arrange them in the order of your choice by using the up and down arrows next to the images in the Album box.

3. Click on the Ink Equation option from the list. The Math Input Control dialogue box appears.

4. Take the cursor to the yellow grid area and click on it. Observe a small black dot appears, from here you will start writing the equation.

5. Now using the mouse, write the equation.

6. Once done, click on the Insert button.

Screen Recording

Screen Recording is one of the features of PowerPoint which allows recording computer screen with audio. This recording then can be incorporated into your presentation.

You will require a sound card, microphone, and speakers in order to use this feature.

Let me Answer

How do you feel when you see your childhood album?

Follow the given steps for adding a screen recording in PowerPoint.

Figure 2.4 Screen Recording Option

Steps:

1. Select the slide where you want to record the screen recording.
2. Click on the Insert tab and in the Media group, click the screen recording option.
3. Click on the select area button.
4. Drag the mouse over the desired region of your screen you want to record.
5. Click on the record button if you want to add audio to the recording.
6. To end the Screen recording, place your cursor at the top of the computer screen. A pop-up window appears and you can click on Stop to save the recording.
7. The currently shown slide will automatically store the recorded video.

Figure 2.5 Selecting Area

Figure 2.6 Inserting Screenshot

ADDING VIDEO CLIPS IN A SLIDE

Understanding becomes very easy when something is explained using a video. We can also insert videos into the presentation. Video clips add liveliness to the presentation. This features enable the audience to engage efficiently.

Figure 2.7 Inserting video

Follow the given steps to insert a video clip onto a slide.

Steps:

1. Click on the Insert tab.
2. In the Media group, click on the video drop-down and select This PC option.
3. The insert video dialogue box appears. Navigate to the location and select the desired video, then click on insert.
4. Once the video is inserted, you can change video shape, border effect, styles and much more in the video Format option.
5. Click on the Play button below the video clip.

MOVING VIDEOS ON A SLIDE

Follow the given steps to move videos on a slide.

Steps:

1. Select the video.
2. Move the video by dragging it to the new location.

OR

Press the arrow keys to move the video by small amounts.

RESIZING THE VIDEO ON A SLIDE

Follow the given steps to resize the video on the slide.

Steps:

1. Select the video.
2. Resizing handles appear around the border of the video.
3. Drag any corner in or out as per the requirement.

OR

Click on the Format tool tab. In the size group, write the specific video height or video width and then press enter.

Kids' IQ

Farhan wants to add the following Mathematical equation.

$$F(n) = \frac{(\varphi)^n - (-\frac{1}{\varphi})^n}{\sqrt{5}}$$

Suggest to him the easiest way to perform this task.

.....

Let's Recall

- A presentation is a collection of slides, arranged in a continuous manner.
- Ink equation tool can quickly include mathematical equations in your presentation.
- Screen Recording allows recording computer screen with audio.
- We can also insert videos into the presentation.
- Video can be moved to the new location.

A. Fill in the blanks

1. A ..... is a collection of slides.
2. Ink Equation tool enables to include ..... equations.
3. Using the ..... tool, you can correct any errors in the part of the equation.
4. ..... enables recording computer screen with audio.
5. Video clips add ..... to the presentation.

B. Write T for True statements and F for false statements.

1. Videos cannot be resized in a slide. ☐
2. Screen recording can be incorporated into your presentation. ☐
3. Sound card, microphone and speakers are required for screen recording. ☐
4. A photo album can be created in the presentation. ☐
5. Photo album option is in the _____ group. ☐

C. Answer in one word.

1. The tab that is used for inserting video files in PowerPoint.
2. The button used to stop the recording.
3. The group in which the equation button is present.
4. The things required for screen recording.
5. The tab that is used for resizing the inserted video.

D. Answer the following questions.

1. Write the steps to create a photo album.

.....

.....

2. How can we insert a video clip in the presentation?

.....

.....

3. Write the steps to move videos on a slide.

.....

.....

4. What is the use of ink equation in PowerPoint 2016?

.....

.....

5. How can we do screen recording?

.....

.....

Critical Thinking

Ravneet made the presentation on Water Pollution. She also recorded a video of the Yamuna River and added it to the presentation. Now, she realised the video size is big, so she wants to reduce the size of the video and she is not able to do it. Help her to complete this task.

.....

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Team Work

Record a video of the causes of Air pollution which you see in your daily life. Create a presentation including those recorded videos and present it in the class.

.....

.....

.....

.....

3 MORE ON MS EXCEL 2016

Learning Outcomes

At the end of this lesson, students will be able to:

- Know about different keys.
- Edit a cell in the worksheet.
- Create a list using an auto-fill feature.
- Create and copy the formulas.

Warm-up

A balanced diet makes us grow healthier and stronger. Children of your age must stick to the right timetable to take proper meals. Complete the diet table of the week given below and learn how healthier the food you eat is.

DAY	BREAKFAST	SCHOOL LUNCH	EVENING SNACK	DINNER
Monday	Whole wheat Bread, eggs and milk			
Tuesday				One Chapati, green vegetable and salad.
Wednesday				
Thursday		Vegetable Salad		
Friday				
Saturday				Boiled vegetable rice
Sunday				

Teacher's Note:

From the above activity, introduce to the students that there might be chances when we want to replace some meals with others. This needs modification, so it can be done easily in Ms Excel worksheet.

Hello, Friends! *In the previous class, we learnt the features of Ms Excel 2016 and performed calculations. In this lesson, we will learn about various ways to edit the data in the worksheet.*

Let us learn the function of a few keys that are used for modifying the data in a worksheet.

FUNCTIONS OF KEYS

Arrow Keys

To move one cell up, down, left, or right, use the arrow keys. The next cell in the worksheet can be selected using the Shift + Arrow key combination.

Backspace

You can remove the content of the active cell by pressing the backspace key. We can remove one character to the left of the insertion location by turning on the editing mode.

Delete

This key removes the contents of the cell including the formula applied to the selected cells. Deleting the content does not affect the cell formats or comments. In cell editing mode, it deletes the character to the right of the insertion point.

End

This key can be utilised in different ways.

- This key will move the insertion point to the right of the cell content if edit mode is on.
- To activate the last used cell in the lower right corner of the active worksheet, press Ctrl + End.

Enter

After entering all of the text into the active cell, we can press the Enter key. As we press enter key, the next cell would be activated in the worksheet.

Home

The first visible row in the worksheet will be activated when we press the Home key.

Page Down

To move one screen down, we can press the Page Down key.

Page Up

To move one screen up, we can press the Page Up key.

Spacebar

This key can be utilised in different ways.

- To select an entire column in a worksheet, press Ctrl + Spacebar.
- To select an entire row in a worksheet, press Shift + Spacebar.
- To select the entire worksheet, press Ctrl + Shift + Spacebar.

Tab

To move to the right cell of the active cell, we can press the Tab Key.

Entering Text

Follow the given steps to enter the data in the cell.

Steps:

1. Click on the desired cell.
2. Type the text in the cell.
3. Press the Enter Key.

Editing Cells

We might enter the wrong text or value in the cell. MS Excel allows to quickly and easily change the cell value.

Follow the given steps to edit a cell in the worksheet.

Steps:

1. Click on the cell you want to edit.
2. Double click in the cell or press the F2 Key.
3. Erase the cell data.
4. Type the new data.
5. Press the Enter Key.

Do You Know?

You can edit the cell by clicking the desired cell and making changes directly in the Formula bar.

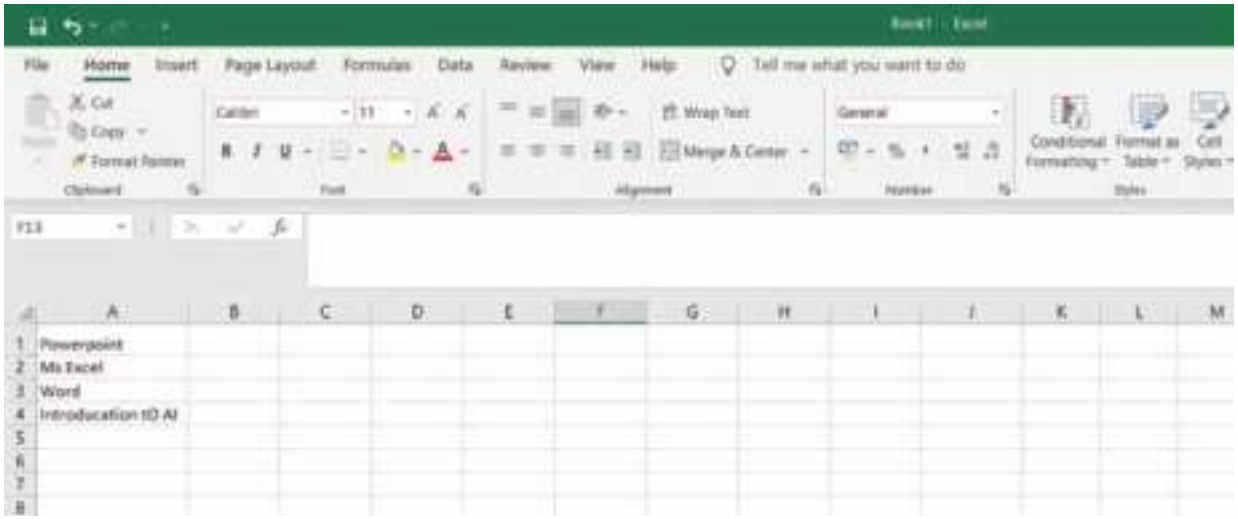

Figure 3.1 Editing Cells

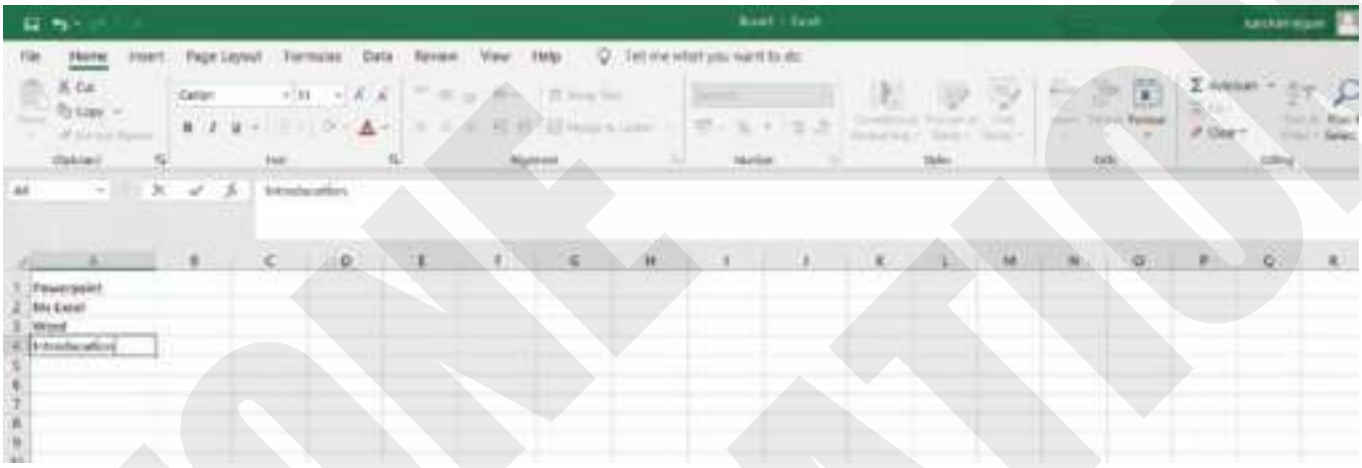

Figure 3.2 Editing Cells with Formula Bar

Using Edit Mode

To update the content of the active cell, we can use The Edit mode.

Follow the given steps to edit the content of a cell.

Steps:

1. Double-click on the cell you want to edit.
2. Observe the cursor blinking, which signifies that the cell is ready for editing.
3. Change the text and press the Enter key.

REMEMBER IT!

Press Alt + Enter key combination to enter multiple data in the same cell.

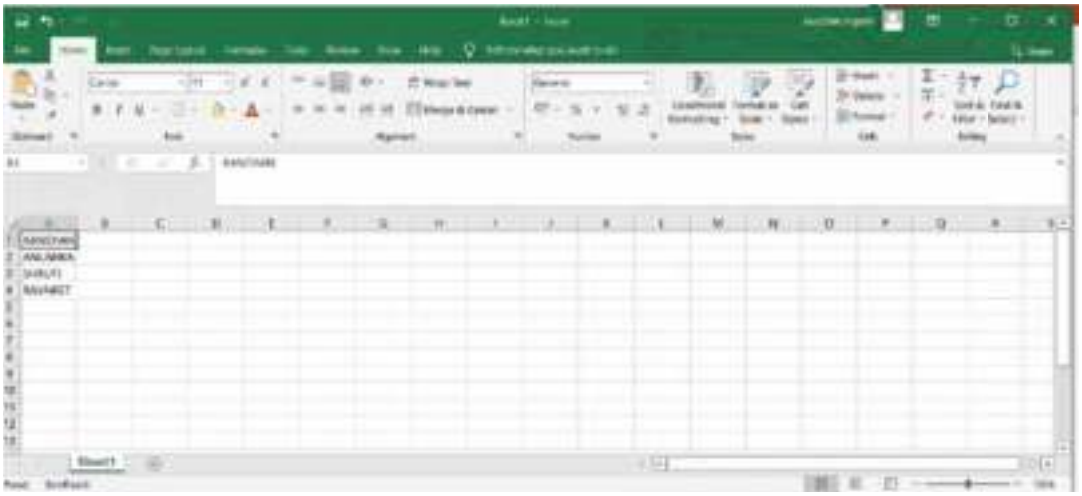

Figure 3.3 Ready Mode

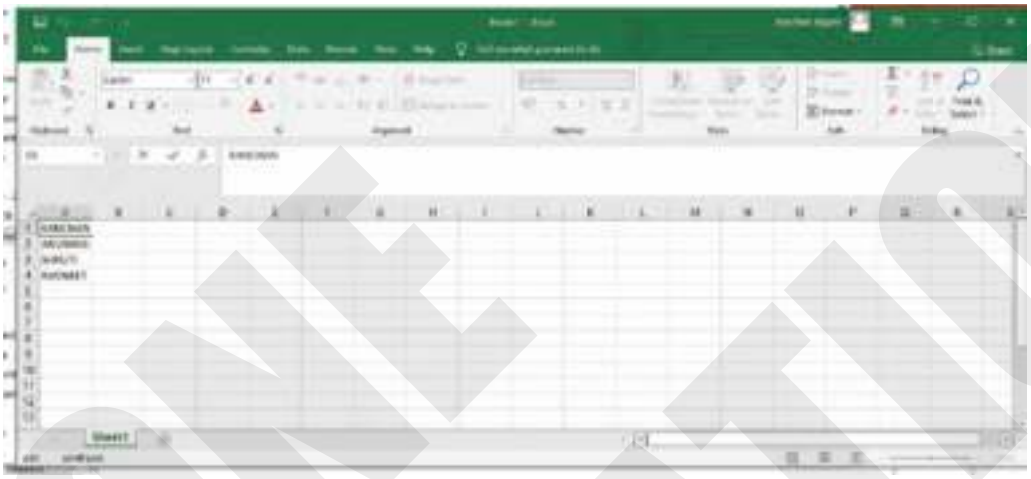

Figure 3.4 Edit Mode.

AutoFill

AutoFill feature automatically fills a series of data in your worksheet. For example, we may use the list of Months, and days in our worksheet frequently. To make it easy to enter repetitive or sequential lists of information, there is a special feature in Excel called AutoFill.

Follow the given steps to create a list using an auto-fill feature.

Let me Answer

What do you mean by automatic? Give an example of a thing which works automatically.

Steps:

1. Enter the first two values you want to start the series with.
2. Select both the cells in which you have entered the data.
3. Position the mouse pointer over the bottom right corner of the last selected cell. Observe the pointer changes to the (+) sign.

4. Drag the mouse to where you want the series.

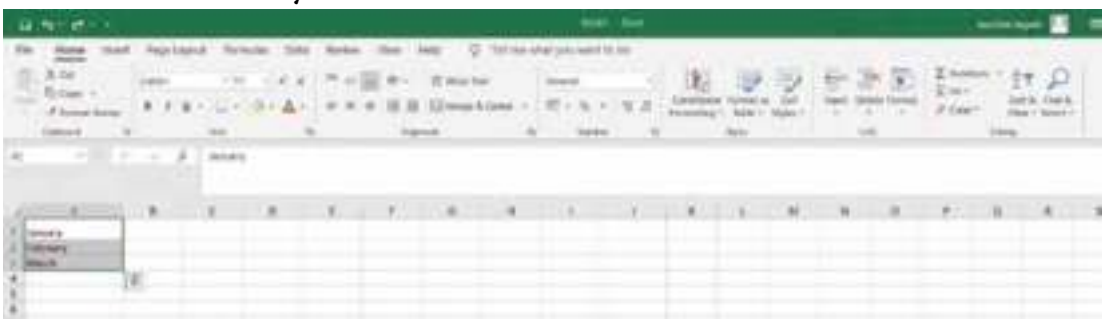

Figure 3.5 Enter Desired Values

5. Observe the cells filled with the desired values.

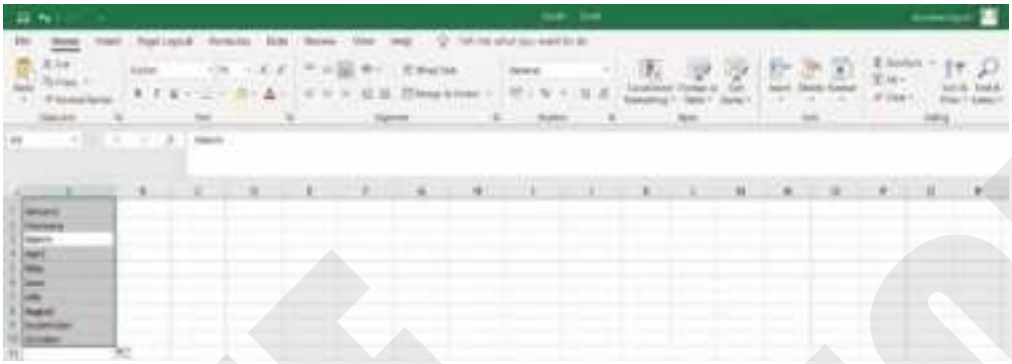

Figure 3.6 Auto Fill

Delete Option

Deleting Cells

Follow the given steps to delete the cells.

Steps:

1. Select the range of cells to be deleted.
2. In the cells group, on the home tab, click on the drop-down arrow of the delete option.
3. The delete dialogue box will appear, click on the delete cells.
4. Now, choose the desired option.
5. The selected cells will be deleted.

Figure 3.7 Delete Cells

Deleting Rows/columns

Follow the given steps to delete the rows.

Steps:

1. Select the row to be deleted.
2. In the cells group, on the home tab, click on the drop-down arrow of the delete option.
3. Select the Delete sheet rows option.
4. The entire row will be deleted.

Creating Formulas

Formulas make the task of performing calculations easy. It lets us perform simple as well as complex calculations. In Ms Excel, almost all types of formulas can be applied for performing calculations.

Follow the given steps to perform calculations using simple formulas.

Steps:

1. Enter the two numerical values in cells C1 and C2.
2. Click in cell C3 where you want to add the formula.
3. In cell C3, type =average(C1:C2)
4. Press the Enter key.

Observe that the average of the values entered in cells C1 and C2 is displayed in cell C3.

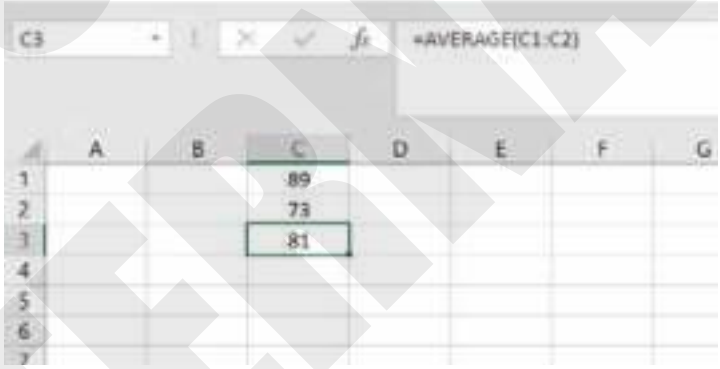

Figure 3.8 Average Formula

Formula	Explanation		Output
Sum	Finds the sum of cells values	=sum(B1:B2)	298
Average	Finds average of cells values	=average(B1:B2)	77
Count	Counts number of values	=count(B1:B2)	2
Max	Finds the largest value in the cells	=max(B1:B2)	63
Min	Finds the smallest value in the cells	=min(B1:B2)	58

Figure 3.9 Formula

Copying a Formula

There are two methods to copy a formula.

Let me Answer

Is there any difference between the formulas you apply in maths and on the Excel worksheet?

Using the Fill Handle

Steps:

1. Click in the cell that contains the formula.
2. Position the mouse pointer over the lower-right corner of the cell until it turns (+).
3. Drag the fill handle over the cells to which you want to copy the formula, then release the mouse button.

Using Copy and Paste

Steps:

1. Select the cell that contains the formula, and on the Home tab, click Copy.
2. Select the cell or cells where you would like to paste the formula.
3. On the Home tab, click Paste.

Kids' IQ

Have you ever thought about why we use formulas?

.....

.....

Let's Recall

1. To move one cell up, down, left, or right, use the arrow keys.
2. MS Excel allows to quickly and easily change the cell value.
3. AutoFill feature automatically fills a series of data in your worksheet.
4. You can remove the content of the active cell by pressing the backspace key.
5. There are two alternative methods for copying formulas in Excel.
6. In Excel a formula starts with = sign.

A. Fill in the blanks

1. ..... key can remove the content of the active cell.
2. Deleting the content does not affect the cell ..... or comments.
3. ..... feature automatically fills a series of data in your worksheet.
4. In Excel, a formula starts with the ..... sign.
5. To move one cell up, down, left or right, use the ..... keys.

B. Write T for True statements and F for false statements.

1. In MS Excel, almost all types of formulas can be applied for performing calculations. ☐
2. Using the fill handle option, we can paste a formula. ☐
3. Copy option is available on the File tab. ☐
4. Press the F2 key to edit the cell. ☐
5. Formulas do not let us do complex calculations. ☐

C. Answer in one word.

1. By pressing this key, the first visible row in the worksheet will be activated.
2. This key is pressed to move one screen down.
3. Keys combination pressed to select an entire column in a worksheet.
4. This key is pressed to move to the right cell of the active cell.
5. The mode which is used to update the content of the active cell.

D. Answer the following questions.

1. State one difference between Page Up and Page Down key.

.....

.....

2. What do you mean by the Autofill feature?

.....

.....

3. Write the function of the End key.

.....

.....

4. Write the steps to edit the content of a cell.

.....

.....

5. How can we copy a formula?

.....

.....

Critical Thinking

Sam wants to create a timetable for self-study. He does not want to type the name of all the days on the worksheet. Suggest to him the tool he should use to add the days automatically.

.....

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.....

A boy looking at the timetable for studying.

Team Work

Prepare a mark sheet for 20 students for the subjects- English, Mathematics, Science, Hindi and Social Studies. Follow the given instructions.

- Insert a column of Average to the right of the Total column .
- Insert a row below the fifth row.
- Using AutoFIll features, fill the roll numbers 1 to 20 for the students.
- Find the average using the formula.

4 FORMULAS AND FUNCTIONS IN EXCEL

Learning Outcomes

At the end of this lesson, students will be able to:

- Comprehend the significance of formulas and functions.
- Differentiate between formulas and functions.

Warm-up

Observe the following marks of the students. Fill in the missing numbers.

Roll No.	Name	English	Maths	Science	Total
1	Anushka	60	52	56	
2	Kanchan	65		58	179
3	Surovhi	76		76	241
4	Niharika	68	75		208
5	Shruti	88	89	82	
6	Megha	89		68	238
7	Rahul	100	99	72	
8	Shubham		87	100	250
9	Utsav	62	53	75	
10	Madhvi	62	78	84	

Teacher's Note:

Inform students that the above task can be done quickly and effectively in MS Excel as it holds a wide range of formulas and functions that are easy to use.

Hello, Friends! *As we know, Excel is one of the most useful programs and can provide us with a wide range of tools to work. Let us learn how to use formulas in Excel.*

Formulas are the user-defined instructions to perform calculations, whereas functions are the pre-defined or in-built formulas that come with excel.

WORKING WITH FORMULAS

A formula establishes a relationship between two or more cells. All Excel formulas have the same general structure: an equal sign (=) in the beginning. Using the formulas, you can perform simple as well as complex calculations.

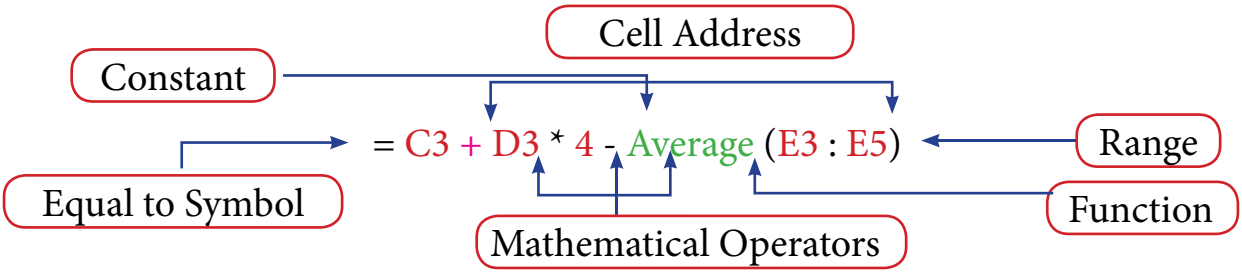
The elements included in the Formula are:

- References: Range of cells included in the calculations.
- Operators: Symbols that mention the operation to be performed.
- Constants: Numbers or text values that do not change.
- Functions: Pre-configured formulas in Excel.

Do You Know?

A range is a rectangular area made up of a collection of cells that are close to one another.

ELEMENTS OF FORMULAS IN EXCEL



REMEMBER IT!

Formulas are not case sensitive. E.g. = b5 + c5 is similar to =B5 + C5

Input Modes

Three input modes in Excel control how specific keystrokes and mouse clicks are interpreted. These input modes are as follows:

- Enter Mode: This mode appears when you type the equal sign to begin the formula. It is the mode you use to enter text.
- Point Mode: Excel enters Point mode when we press any navigation key on the keyboard. This is the mode you use to select a cell or range as a formula operand.
- Edit Mode: Excel enters Edit mode when we press the F2 key. This is the mode you use to make changes to the formula.

Let me Answer

What do you mean by Input?

Rules for Entering formulas in cell

1. Click the cell in which you want to enter the formula.
2. Type = sign to specify that you're entering a formula.
3. Type the Operands and operators of Formula.
4. Press Enter to get the desired result.

FORMULAS IN EXCEL

Arithmetic formulas

Arithmetic formulas are by far the most common type of formula. They conduct calculations by combining numbers, cell addresses, and the result of functions with mathematical operators.

Operator	Name	Example	Result
+	Addition	=10+5	15
-	Subtraction	=10-5	5
-	Negation	=-10	-10
-	Multiplication	=10*5	50
/	Division	=10/5	2
%	Percentage	=10%	0.1
^	Exponentiation	=10^5	100000

Figure 4.1 Arithmetic Operators

Comparison Formula

An expression that compares two or more numbers, text strings, cell contents, or function outputs is known as a comparison formula. The result of the formula gives the logical value true if the comparison statement evaluates to be true. If the comparison statement evaluates to be false, the formula returns the logical value false.

Operator	Name	Example	Result
=	Equal to	=10=5	FALSE
>	Greater than	=10>5	TRUE
<	Less than	=10<5	FALSE
>=	Greater than or equal to	=”a”>=”b”	FALSE
<=	Less than or equal to	=”a”<=”b”	TRUE
<>	Not equal to	=”a”<>”b”	TRUE
^	Exponentiation	=10^5	100000

Figure 4.2 Comparison Operators

Reference Formulas

The following table mentions the operators you can use in reference formulas.

Operator	Name	Description
: (colon)	Range	Produces a range from cell reference (for example, A1:C5
(space)	Intersection	Produces a range from cell reference (for example, A1:C5)
,(comma)	Union	Produces a range that is the union of two ranges (for example, A1:C5, B2:E8)

Figure 4.3 Reference Formulas

Cell Reference

A cell reference is a cell address that can be used in a formula to denote a specific cell. We can refer to a cell with its address.

Let me Answer

What is the meaning of reference? How can you relate it with Reference Formulas?

There are three types of cell references:

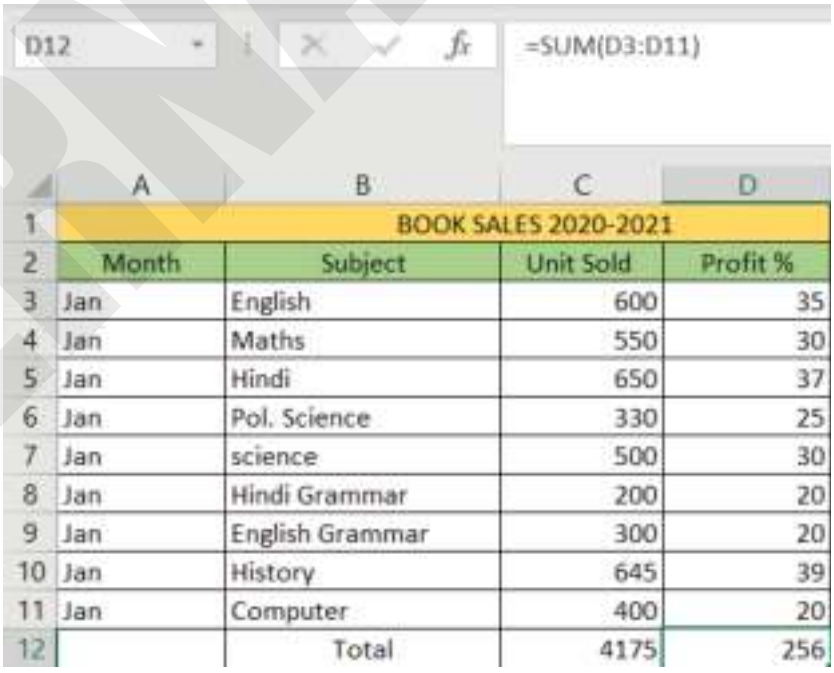
Relative Reference

When a formula is copied from one cell to another cell, the value in the copied cell automatically gets changed.

Follow the given steps to use the relative cell reference.

Steps:

1. Select the cell that contains the formula in which the reference of other cells is used. In this case, we have selected cell C12, in which the formula =Sum(C3:C11) is written.
2. Click on the copy command from the clipboard group under the Home tab.
3. Select another cell, here we have selected cell D12. Click on the Paste command from the clipboard group under the Home tab.



	A	B	C	D
1	BOOK SALES 2020-2021			
2	Month	Subject	Unit Sold	Profit %
3	Jan	English	600	35
4	Jan	Maths	550	30
5	Jan	Hindi	650	37
6	Jan	Pol. Science	330	25
7	Jan	science	500	30
8	Jan	Hindi Grammar	200	20
9	Jan	English Grammar	300	20
10	Jan	History	645	39
11	Jan	Computer	400	20
12		Total	4175	256

Figure 4.4 Relative Reference

4. Observe in the Formula bar that the cell address that you have used in the formula gets changed according. Here, D12 has the cell reference from D3 to D11 instead of C3 to C11.

Absolute Reference

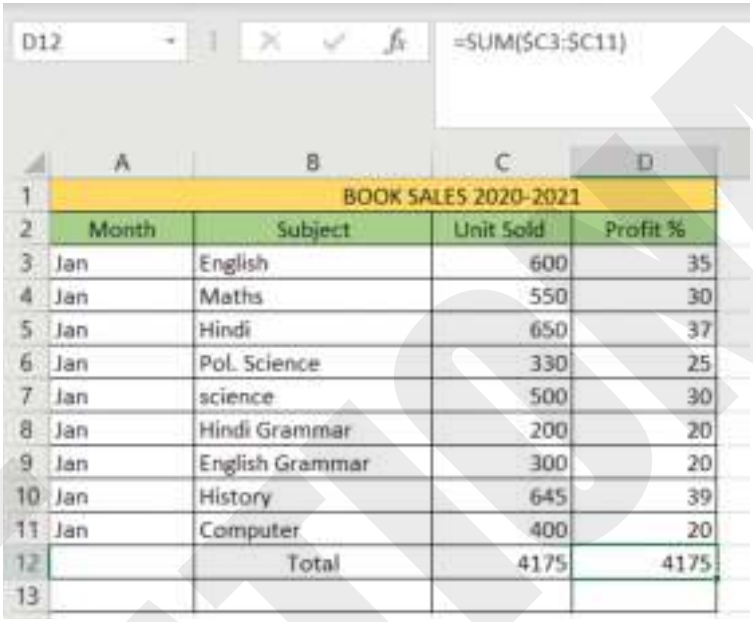
Use an absolute reference if you want to keep the original references exactly as they were. The column reference and the row reference should be preceded by a dollar symbol if you want the formula to keep its original reference when it is copied.

Let us see.

Steps:

1. Select the cell C12, change the formula in the address bar to =SUM($C3: $C11).
2. Select the cell C12 and click on the copy button in the clipboard group.
3. Select cell D12 and select the Paste button from the clipboard group.

See the values in the address bar, see the cell reference is still C3 ro C11.



	A	B	C	D
1	BOOK SALES 2020-2021			
2	Month	Subject	Unit Sold	Profit %
3	Jan	English	600	35
4	Jan	Maths	550	30
5	Jan	Hindi	650	37
6	Jan	Pol. Science	330	25
7	Jan	science	500	30
8	Jan	Hindi Grammar	200	20
9	Jan	English Grammar	300	20
10	Jan	History	645	39
11	Jan	Computer	400	20
12		Total	4175	4175
13				

Figure 4.5 Absolute Reference

Mixed Reference

A mixed reference is a combination of relative and absolute references. Either a row or column has to be locked preceding it with a Dollar symbol.

Steps:

1. Add a column In-stock with some values as shown.
2. Click on cell C13 and types this formula =$C12 - E$12.
3. Copy and Paste this formula in the cell E13.

See the address bar the formula is =$C12-G$12. The reference to C12 remains the same but, E12 has changed.

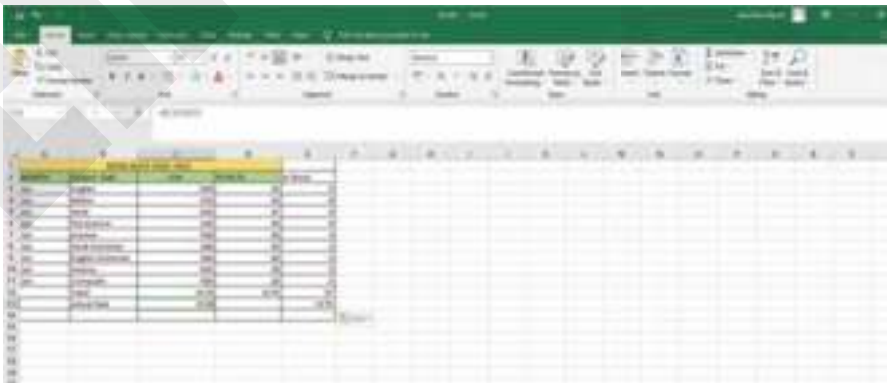


Figure 4.6 Mixed Reference

References to other worksheets

You can refer to cells in other worksheets within the same workbook.

Using Copy - Paste Option

Follow the given steps to use Copy-paste option.

Steps:

1. Click on the Sheet 1 tab.
2. Click on the cell C12 where the SUM function is used.
3. Using Ctrl + C, copy the formula.
4. Click on the sheet 3 tab and click on the cell C11.
5. Press Ctrl + V to paste the formula.

Figure 4.7 Using Copy-Paste Option (1 & 2)

Using Sheet reference

In this, we use sheet number, exclamation mark and cell address to refer to a cell of a particular worksheet. For example, Sheet1!D6; means we're referring to the cell D6 of Sheet1.

Steps:

1. Add Sheet4 to the Workbook and types the values in Sheet4.
2. In Sheet4, cell B11 type the formula =1000 +Sheet1!C11.
3. Press Enter and observe the changes in the value shown in the cell B11.

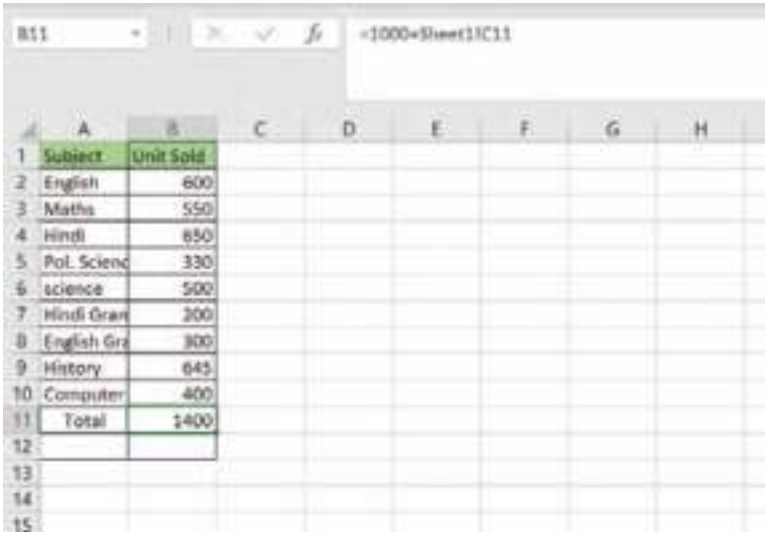


Figure 4.8 Using Sheet Reference

Functions

Functions are predefined formulas in Excel to perform simple and complex calculations. Functions eliminate the chance to write incorrect formulas. They accept the arguments and return values. Arguments are the information which contains input values to the function. The values are given within ( ) parenthesis. Arguments can be numbers or text, etc. Return values display Function output.

Rules to Enter a Function

- All Excel functions must begin with = sign.
- The function name must be a valid Excel name.
- Open and close parenthesis must be placed after the function.
- Arguments must be enclosed in Parenthesis.

Average Function

The Average function returns the average of the range values. The arguments can be a range of cells, simply numbers or numbers along with cell reference(s).

Follow the given steps to calculate the average.

Steps:

1. Click on the cell where you want to place the average of values. Let us say C11 sheet 1.
2. Select the Insert Function button on the Formulas tab to open the Insert function dialogue box.
3. Select Average from the list box and click on the Ok button.

4. Drag the mouse pointer to cell D6.
5. The cell E6 will display =AVERAGE(C6:06).
6. Type the closing parenthesis symbol and press the Enter key.
7. The cell E6 will display the calculated result.

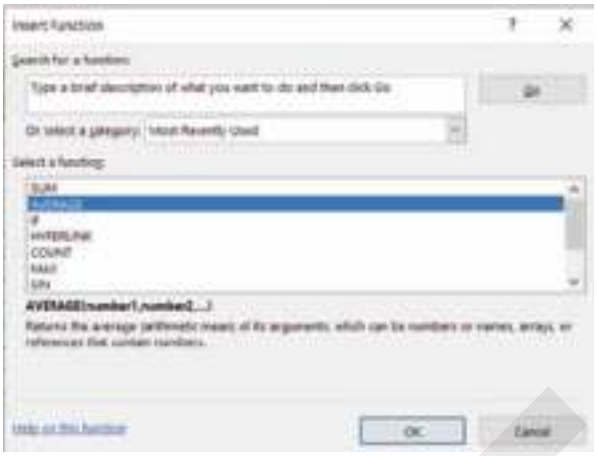


Figure 4.9 Insert Function

Figure 4.10 Function Arguments

Kids' IQ

Kanchan has made a spreadsheet for the marks obtained by the students of her class in different subjects. Which option should she select to update the spreadsheet if she has to change marks in one of the subjects of any student?

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Let's Recall

1. An Excel formula starts with an = sign.
2. Formulas are the user-defined instructions to perform calculations.
3. Functions are the pre-defined or in-built formulas that come with excel.
4. Excel gives you three ways to enter the Edit mode.
5. The Average function returns the average of the range values.
6. Mixed reference is a combination of Relative and Absolute reference.
7. Absolute reference is used to keep the original references exactly as they were.

A. Fill in the blanks

1. A formula establishes a ..... between two or more cells.
2. There are ..... input modes in Excel.
3. ..... formulas are the most common type of formula.
4. A cell reference is a cell ..... that can be used in a formula to denote a specific cell.
5. A mixed reference is a combination of ..... and ..... references.

B. Write T for True statements and F for false statements.

1. Enter mode begins when we press any navigation key on the keyboard. ☐
2. Absolute reference is used to keep the original reference exactly as they were. ☐
3. Functions eliminate the chance to write incorrect formulas. ☐
4. We can refer to a cell with its address. ☐
5. Arguments must be enclosed in Parenthesis. ☐

C. Define the following.

1. Functions -
2. References -
3. Operators -
4. Constants -
5. Comparison Formula

D. Answer the following questions.

1. Explain the types of input modes.

.....

.....

2. What is the relative reference?

.....

.....

3. What are the rules to enter a function?

.....

.....

4. Write the steps to calculate the average.

.....

.....

5. What do you mean by mixed reference?

.....

.....

Critical Thinking

ABC International school organised a cricket match between class VI A and VI B. Saumya, one of the students, was asked to prepare a worksheet to store the runs scored by each player. Now, she has prepared it and wants to copy the data along with the formula and paste it into another worksheet. Suggest to her the cell reference she should use to perform the task.

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Team Work

A. Create a worksheet in which you would maintain your Monthly Expenses on Stationery. The worksheet must have the following headings: S.No., Commodity, Price, Quantity. Find the total for each heading by using formulas learnt in this chapter.

B. Conduct a group discussion on the topic: Function vs Formula

5

COMPUTATIONAL THINKING

Learning Outcomes

At the end of this lesson, students will be able to:

- Comprehend Computational thinking and its importance.
- Know the components of computational thinking.

Warm-up

You are Mario, tick marks the things will you think of while playing this game.

- **What items do you need to collect?**
- **Determine the exit and the fastest way to reach the finish line.**
- **Different types of enemies and ways to destroy them.**

Teacher's Note:

Inform students that you always analyse the situation, and think of actions to work out a strategy for completing the level in the most efficient way. This is a Problem-solving procedure.

Hey! Friends. Do you know that Computational thinking is an interrelated set of skills and practices for solving complex problems? Let us learn about it.

WHAT IS COMPUTATIONAL THINKING?

Computational thinking is the step that comes before programming. It's the process of breaking down a problem into simple enough steps. This can be connected to high-order thinking skills and is not bound only to computers. It is a method of problem-solving that aids the user in comprehending, interpreting, and resolving issues.

Let me Answer

In what situation do we apply high-order thinking skills?

Computational Thinking Involves:

- Logically segmenting a problem into smaller segments.
- Application of general concepts to broken problems.
- Searching for recurring patterns in the problem.
- Determining relevant details and omitting the unnecessary ones.
- Follow an algorithm to make decisions and produce the right answer.

KEY SKILLS OF COMPUTATIONAL THINKING

There are four key skills in computational thinking:

- Decomposition
- Pattern Recognition
- Pattern Abstraction
- Algorithm Design

Decomposition

Decomposition is the method of breaking complicated issues into smaller, more manageable pieces. When a problem is considered in its whole, many problems appear to merge, which causes confusion. But when a problem is broken down into parts, it makes getting at the solution easier step-by-step away. Any work that is completed sequentially is easier to complete and facilitates understanding of the steps.

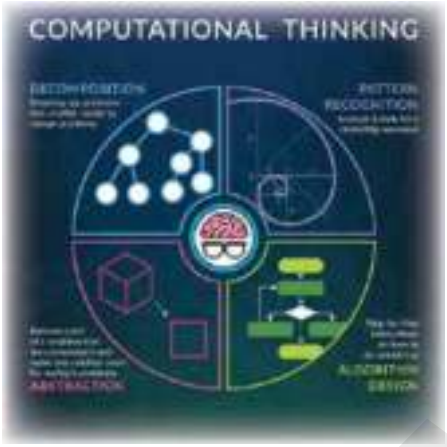


Figure 5.1 Computational Thinking

REMEMBER IT!

Pattern recognition is the special ability of the human brain to not only find the patterns but figure art in a logical way

Figure 5.2 Decomposition

Pattern Recognition

A pattern is a repeated design. Our brain recognises a variety of patterns in daily life.
The process of pattern identification is crucial in computational thinking since it allows the user to find solutions more quickly. Once a problem is broken down, discovering patterns in the broken parts simplifies work.

Pattern Abstraction

A problem can be made easier to think about by abstraction. This entails concealing irrelevant data and displaying just relevant information. It is one step that helps us to arrive at a logical conclusion.

Let me Answer

Have you ever heard the world decomportion in some other subject?

Algorithm design

Algorithm design is setting out the steps and rules needed to follow in order to achieve the desired outcome.

Dress yourself up.
Put some money in your wallet.
Go to the shop.
Ask for your favourite chocolate.
If your desired chocolate is available,
go to step 6 else go to step 9.
Give money to the shopkeeper.
Keep the chocolate with you.
Go back home.
Ask for any other chocolate.
Go to step 7.

IMPORTANCE OF COMPUTATIONAL THINKING

- Develops reasoning and logical thinking.
- Aids in understanding patterns and sequences.
- Once established, an algorithm can also be employed in the future, saving time.
- By using computational thinking, one not only identifies issues but also offers a solution.

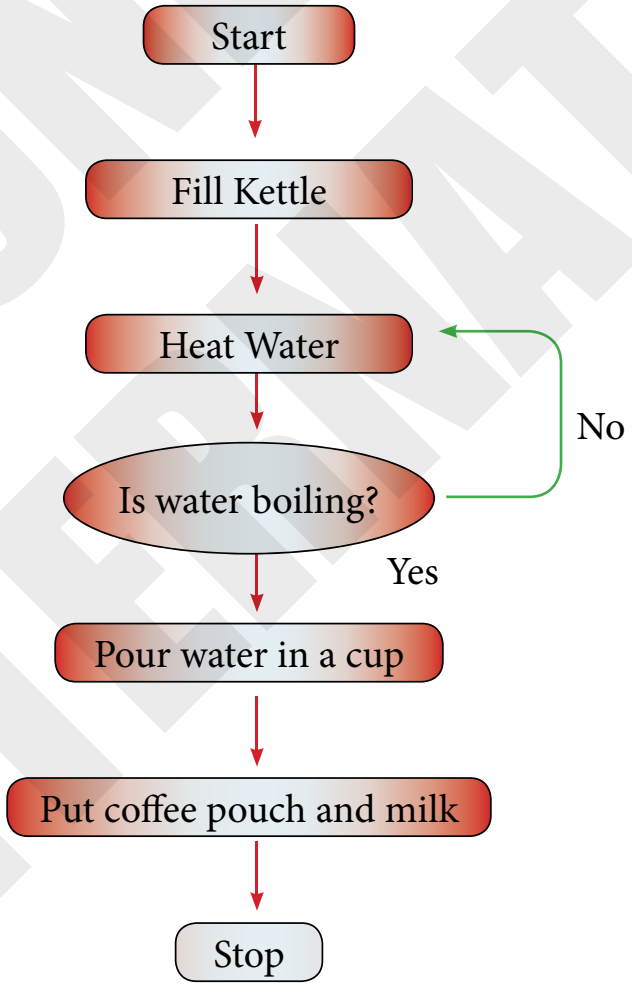
Do You Know?

Computational thinking is the mental skill to apply fundamental concepts and resoning.

FLOWCHART IN COMPUTATIONAL THINKING

The quickest and cleanest way to solve any problem is to define the issue and work your way through a flowchart step by step.

Let us work through a flowchart on how to make a cup of coffee.



Kids' IQ

What is one of the key skills of Computational thinking which start with letter D and Ends at letter N.

.....

.....

Let's Recall

1. Computational Thinking is a problem-solving process.
2. Computational Thinking is the process of breaking down a problem into simple enough steps.
3. A problem can be made easier to think about by abstraction.
4. Decomposition is the method of breaking complicated issues into smaller, more manageable pieces.
5. A pattern is a repeated design.

Upskill Your Intelligence

A. Fill in the blanks

1. Computational thinking is the step that comes before .....
2. A ..... is a repeated design.
3. The process of breaking up a problem into manageable and understandable portions is known as ..... .
4. Computational thinking aids in understanding ..... and ..... .
5. Computational thinking can be connected to ..... skills.

B. Write T for True statements and F for false statements.

1. An algorithm once established can be used at later times. ☐
2. Pattern Reference is one of the key skills of Computational thinking. ☐
3. When a problem is broken down into parts, it makes getting at the solution easily. ☐
4. Our brain is not capable of recognising a variety of patterns. ☐
5. Computational thinking not only identifies issues but also offers a solution. ☐

C. Answer in one word.

1. The method of breaking complicated issues into smaller, more manageable pieces.
2. The process of identifying a pattern.
3. This key element of computational thinking hides the irrelevant data and display just relevant information.
4. Setting out the steps and rules needed to follow in order to achieve the desired outcome.
5. The quickest and the cleanest way to solve any problem.

D. Answer the following questions.

1. What is Computational thinking?

   .....

   .....

2. What is the importance of Computational thinking?

   .....

   .....

3. Name the key skills of computational thinking. Explain any two.

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4. Define the algorithm with an example.

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5. What is pattern recognition?

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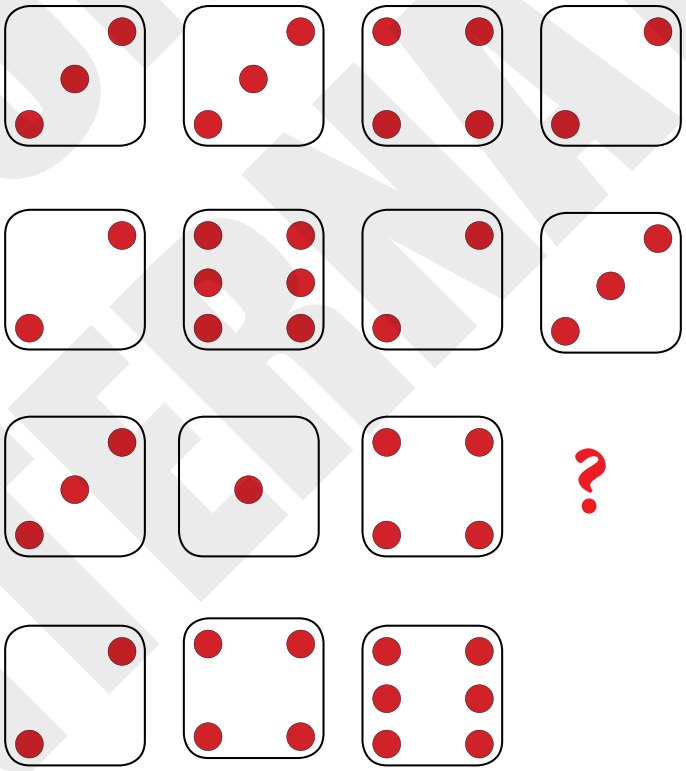
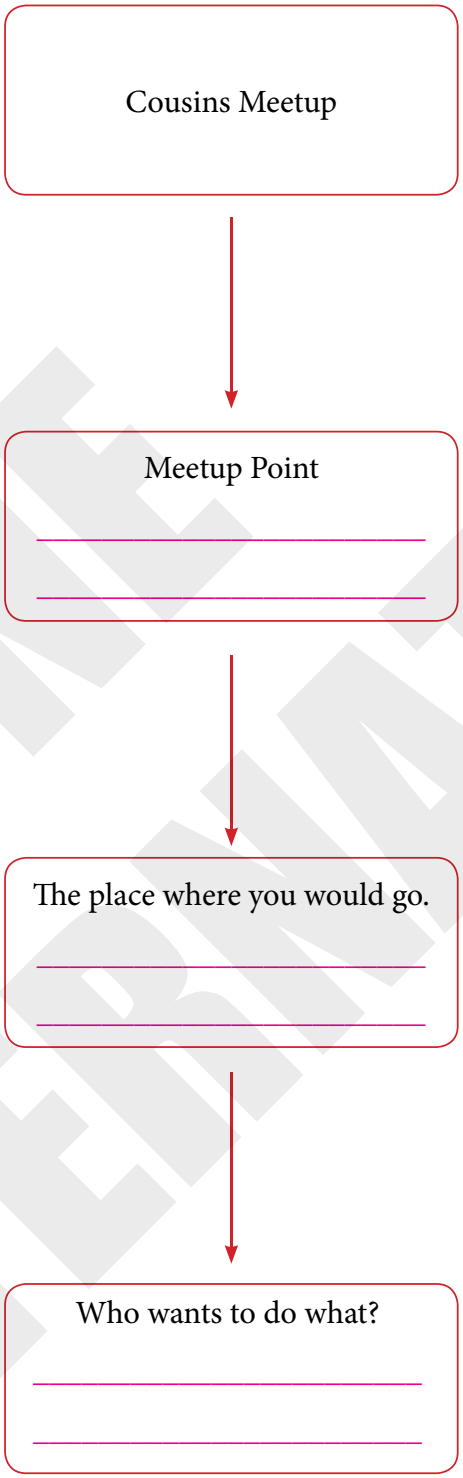
Critical Thinking

Which dice completes the domino pattern?



Team Work

Work with your partner. You and your cousins are planning to meet after a long time. You all are looking for probable options, complete the flowchart using the instructions given to come to a result.



6 INTRODUCING PYTHON

Learning Outcomes

At the end of this lesson, students will be able to:

- Know the python language and its features.
- Learn the components of Python window.
- Start python IDLE and interactive mode.

Warm-up

Tara and Mahi are locked inside the room. Their friend has come to unlock the door but the lock requires a password. Help her out in decoding the password.

Teacher's Note:

Inform students that the set of instructions is 'input', executing the instructions leads to 'processing' and the answer after decoding the password is 'output'. Likewise, a computer also works in three stages. To get the work done on a computer, you enter the raw data (input), a computer operates on this data (processing) and the desired result is obtained (output).

Hey! Friends. Computers understand a language made up of 0s and 1s, known as machine language or low-level language. Humans find it challenging to write or understand instructions using 0s and 1s, so it led to the invention of a high-level programming language - Python. Let's learn more about it.

WHAT IS PYTHON?

A programme is an organised series of instructions that a computer must follow in order to do a certain task, and the language used to specify this programme to the computer is referred to as a programming language.

Python is one of the most popular programming languages widely used throughout the world to create apps for automation, using AI, building applications for websites server-side coding, machine learning algorithms and more.

Let me Answer

What is the full form of AI?

FEATURES OF PYTHON

- Python is an open-source programming language, which implies that anyone who is versed with Python is capable of creating new programmes and adding them to the available python libraries.
- Python is freely available on the internet and can be easily downloaded from www.python.org.
- Python is portable and platform independent means it can run on various operating systems and hardware platforms.
- Python has a rich library of predefined functions. You can use these library modules to add impressive functionality to your programs.
- Python's syntax is clear, concise, and simple to comprehend.

Do You Know?

Python is also a kind of snake which is nonvenomous and found in Asia, Africa and Australia.

Python Interface

Python provides two different modes for writing programs. There are two ways to use the Python interpreter:

a. Interactive Mode

b. Script Mode

Individual statements can be instantly carried out in interactive mode. Whereas, Script mode allows us to write more than one instruction in a file called Python source code file that can be executed.

REMEMBER IT!

Python is not named after the snake, but after the British TV show Monty Python's Flying circus.

Installing Python

As we already know that Python can be freely downloaded from the web. It can be installed from the Python website, https://www.python.org/.

Follow the given steps to install Python on your computer.

Steps:

1. Open www.python.org to download the latest version of Python.

Figure 6.1 Installing Python

2. Click on the Downloads buttons and click on the button shown in the following picture.

Figure 6.2 Python Download

3. Click on Install now in 'The python Setup' window to install Python.

Figure 6.3 Install Python

4. The installation progress will be shown in the progress bar window.

Figure 6.4 Python Installation Progress Window

5. The installation status will be shown on the last screen. Python will show the following screen after the installation process has been successfully completed.

Figure 6.5 Completing Python Setup

COMPONENTS OF PYTHON WINDOW

Let us learn about the various components of Python Shell.

Title Bar: The name of the application and the document are displayed here.

Command buttons like Minimise, maximise, restore and close are presented here.

Menu Bar: Various tabs such as File, Edit, Shell, Debug, Windows and Help are displayed here.

Script Area: The area where you type the code.

Status Bar: Current status of your cursor is displayed here.

STARTING PYTHON IDLE

Follow the given steps to open the Python interface.

Steps:

1. Click on the Start button.
2. Click on All apps and scroll down to the Python folder and select the IDLE option.
3. The Python IDLE screen will open.

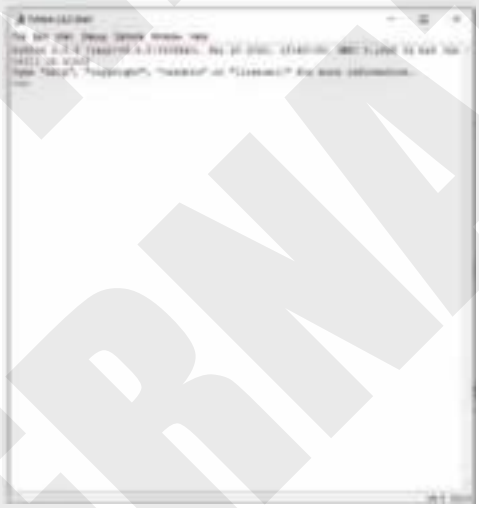


Figure 6.6 Python IDLE

Python IDLE and Interactive Mode

Every Windows application has a unique user interface that makes it easier for users to use it to its fullest potential. We can perform different tasks like saving, opening, debugging, configuring IDLE settings etc.

Interactive Mode

In Python Interactive mode, the python IDLE screen looks as shown below.

Figure 6.7 Interactive Mode

Python Command in the Interactive Mode

1. Open the Python IDLE.
2. You can see a welcome message from the Python interpreter with version details and ' >>>', the python prompt. It is a primary prompt that specifies that the interpreter is expecting a command.
3. Type the following statement and press the Enter key.

Figure 6.8 Picture

4. Observe that 'Welcome to Python Programming' and 'Hello' is printed on the screen.

PYTHON IDLE AND SCRIPT MODE

Script Mode

Follow the given steps to use the script mode.

Steps:

1. Start Python IDLE.
2. Click New on the File menu.
3. Type the commands in the window that opens.

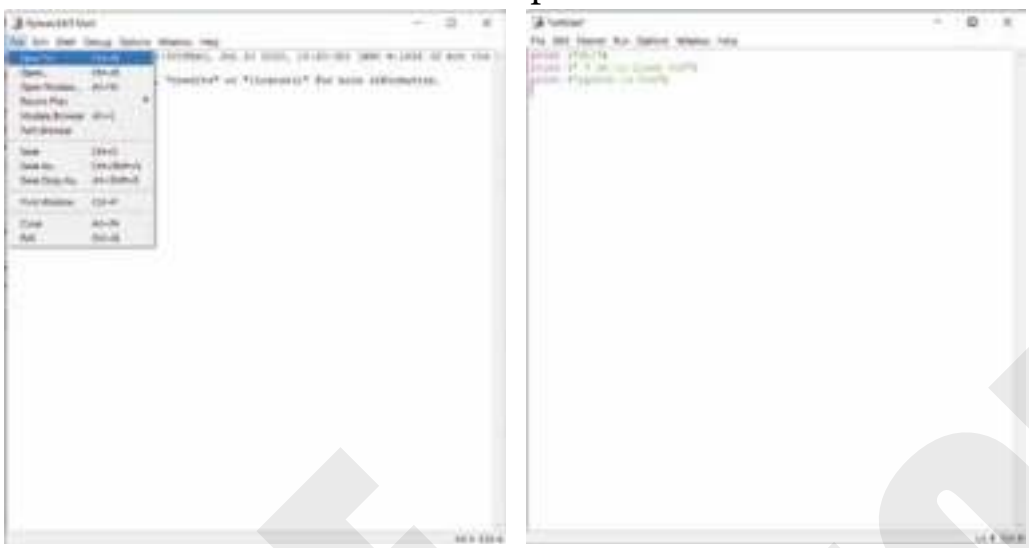


Figure 6.9 Screenshots 1 & 2

4. Click on save on the File menu.
5. Name the file with the .py extension.

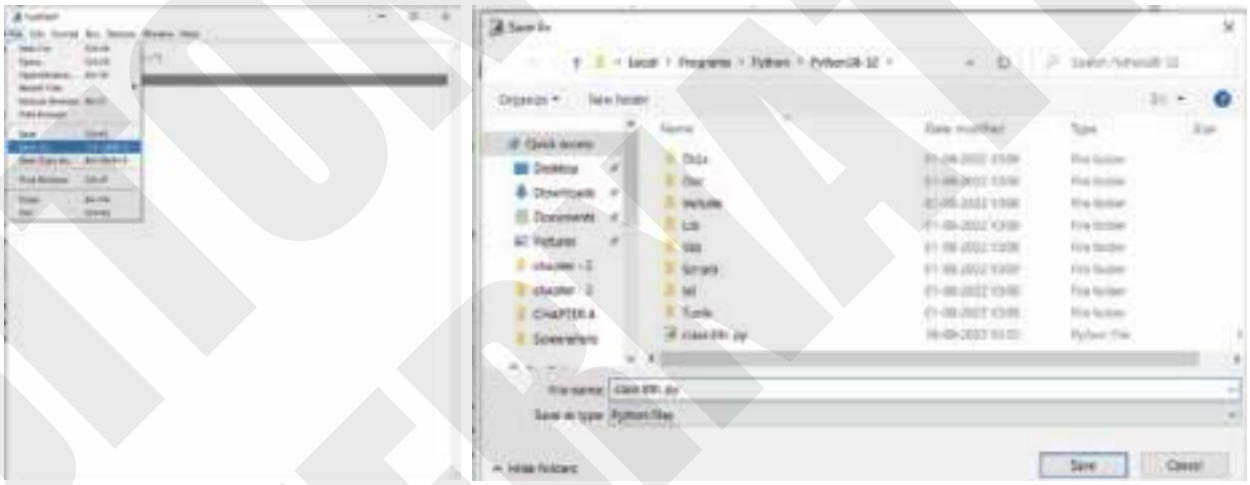


Figure 6.10 Screenshots 3 & 4

Kids' IQ

To save a python file, which extension do we use?

.....

.....

.....

Let's Recall

1. Python is one of the most popular programming languages.
2. Python has a rich library of predefined functions.
3. Python provides two different modes for writing Python programs: Interactive mode and Script mode.
4. Individual statements can be instantly carried out in interactive mode.
5. Primary prompt specifies that the interpreter is expecting a command.

A. Fill in the blanks

1. Python is an ..... programming language.
2. Python is freely available on the ..... .
3. Python provides ..... different modes for writing programs.
4. ..... statements can be instantly carried out in interactive mode.
5. The name of the application and the document are displayed on the ..... bar.

B. Write T for True statements and F for false statements.

1. Python has a rich library of predefined functions. ☐
2. Python is platform-independent. ☐
3. The Python prompt specifies that the interpreter is expecting a command. ☐
4. The area where you type the code is the Status bar. ☐
5. You can perform mathematical operations using Python Interactive mode. ☐

C. Arrange the following steps to install Python.

1. The installation status will be shown on the last screen. Python will show the following screen after the installation process has been successfully completed.
2. Click on Install now in 'The python Setup' window to install Python.
3. Open www.python.org to download the latest version of Python.
4. Click on the Downloads buttons and click on the button shown in the following picture.
5. The installation progress will be shown in the progress bar window.

D. Answer the following questions.

1. What is Python?

.....

.....

2. Discuss the features of Python.

.....

.....

3. Explain the components of the Python window.

.....

.....

4. Write the steps to use the script mode in Python.

.....

.....

5. Write the difference between an interactive mode and a script mode.

.....

.....

Critical Thinking

Unscramble the words to make the components of the Python window.

1. RTISCP RAAE - .....
2. LIETT RAB - .....
3. TTSSUA RAB - .....
4. UENM RAB - .....

Team Work

With the help of the Internet, name any four programming languages and their developers.

Programming Language	Developer name
_____	_____
_____	_____
_____	_____
_____	_____

7 INTRODUCING HTML

Learning Outcomes

At the end of this lesson, students will be able to:

- Know about HTML and its features.
- Rules for writing HTML codes.
- Contrast between a container and empty tags.
- Design a Web page.

Warm-up

Samaira wants to surf some of the famous websites. Provide her with the website links of the following.

WIKIPEDIA
The Free Encyclopedia

Teacher's Note:

Ask students if they have ever thought about which language is used to build these superb websites. Inform them that Markup languages are used to create websites.

Hello Friends!! *We use Markup languages to create websites. HTML and XML are the most popular Markup Languages.*

Let's Learn about one of them, i.e. HTML

INTRODUCTION TO HTML

HTML stands for Hypertext Markup Language. It is one of the most popular and widely used languages for creating web pages. Websites consist of multiple web pages with text, pictures, videos, and animation because of HTML. HTML contains a number of tags that are easy to learn and work with.

Tim Berners-Lee developed HTML in 1991.

HTML Released Year

HTML 1	HTML 2	HTML 3	HTML 4	HTML 4.01	HTML 5
1993	1995	1997	1999	2012	2014

Let me Answer

What is the full form of HTML?

Key Features of HTML

- A platform-independent language.
- A very easy and simple language.
- It allows us to build tables and add a link to the web page.

- It offers a flexible way to construct web pages along with the text.

Let me Answer

Explain Platform independent language.

TERMINOLOGIES RELATED TO HTML

Hypertext

Using tags called Hypertext, a basic text is transformed into a dynamic text. Also, it has the unique ability to link to other web pages.

Markup Language

A language which uses special symbols called Tags to format text documents and tells the browser how to display the text.

Tags

Tags are the basic building blocks of a web page. Each HTML tag carries out a certain task, and some are used for formatting text while some are used for adding images and videos and some others are used for navigation.

Do You Know?

Html is also called Tag-based language.

Webpage

A webpage is a formatted document that is translated and displayed by the web browser of your computer system.

Rules for Writing HTML codes

In order to write HTML codes, we need to abide by some rules. These are:

- Tags should always be surrounded by angle brackets. < >
- Values given to the attributes should be enclosed within the double quotes.

REMEMBER IT!

There should be no spaces between < and > in a tag.

Tags in HTML

As we know that HTML is a markup language which uses tags to markup the content of web pages. Tags are used as keywords in HTML. Each tag is used to carry out a certain operation, which browser software can recognise. Attributes are characteristics that have been assigned to each tag. Attributes of tags can be used to modify their properties.

Let us look into some HTML tags and their attributes.

Tag	Attributes
<BODY>	Background
<Font>	Face, size, colour
<IMG>	SRC, width, height

The HTML tags can be categorised as

- Container Tags: A tag that has both an open and close tag is called a Container tag. For Example: <HTML> ..... </HTML>

Opening Tag **Closing Tag**

- Empty Tags: A tag that only contains an open tag and no closing tag is called an Empty Tag. For Example: <BR>, <HR> and many more.
- Block Level Tags: The block level tags start on a new line by default and occupy the entire available width. For Example: Paragraph <P>, Horizontal rule <HR>, etc.
- Text Level Tags: The text level tags are used to mark up parts of the text. These tags do not start with a new line. For Example: Bold <B>, Subscript <sub>, etc.

Structure of HTML document

The HTML file is a text document that contains markup tags. The markup tags instruct the web browser on how to display the webpage. An HTML file is saved with .htm or.html extension.

Let us learn the basic structure of the HTML document:

<HTML>

<HEAD>

<TITLE> Title of the web page </TITLE>

</HEAD>

<BODY>

Content of the web page

</BODY>

</HTML>

REMEMBER IT!

Head contains the information which is not to be shown on the web page whereas Body contains the information which is to be shown on the web page.

Designing a Web Page

We already know, how to create a basic HTML document. Now, let us learn to create a web page using some different tags.

```
<html>
<head>
<title> English Essays </title>
</head>
<body bgcolor=”green”>
    <h1> English Essays </h1>

    <h2> 1. Importance of trees </h2>
```

Trees give us life directly and indirectly as they are the source of oxygen production, CO, consumption and source of rain. They are the most precious gift to humanity on the earth from nature. We must be grateful, give honour and preserve it for the wellness of humankind. We should understand the importance of trees in our lives and do our best to save trees to save a life, save the environment on the earth and make the earth a green earth.

```
</body>
</html>
```

Type the above in the Notepad window with the desired name.html

This file can be located in Windows Explorer, and double-click on the file icon.

The web page will appear like this:

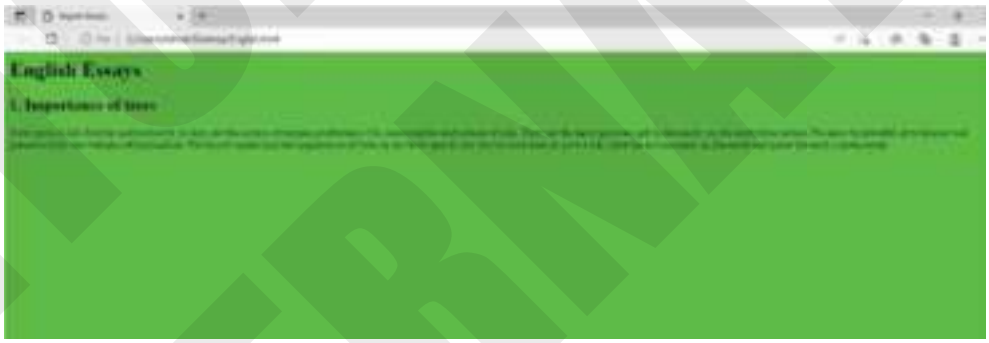


Figure 7.1 Web page

EDITING AN HTML DOCUMENT

Follow the given steps to edit an existing HTML document.

Steps:

1. Navigate to the location where you’ve saved your file.
2. Right-click on your file to open the context menu.

3. Move your cursor over the 'Open with ' option, and a sub-menu will open.

4. Click on the Notepad.

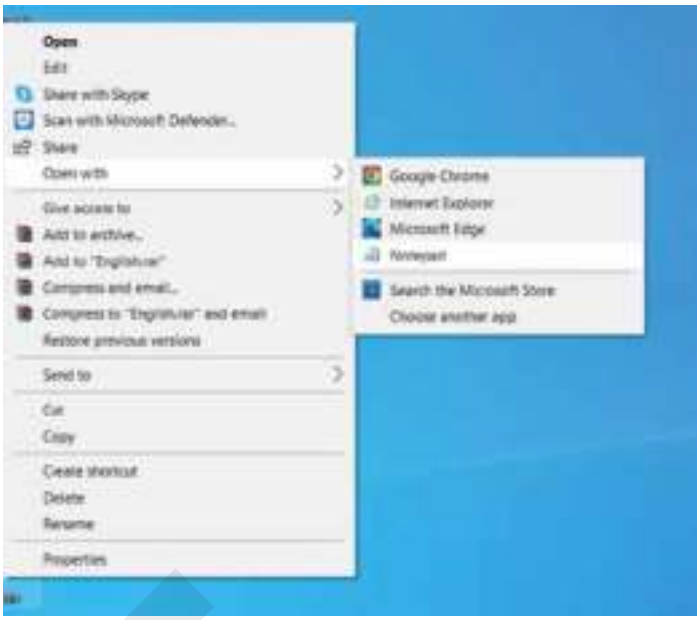


Figure 7.2 Editing HTML FILE

Once you are done making the changes, you need to save the file by pressing the Ctrl + S keys.

Kids' IQ

Where do we write the Html document?

.....

.....

Let's Recall

- HTML stands for Hypertext Markup Language.
- Tags are the basic building blocks of a web page.
- Attributes are characteristics that have been assigned to each tag.
- A tag that has both an open and close tag is called a Container tag.
- A tag that only contains an open tag and no closing tag, is called an Empty Tag.
- The markup tags instruct the web browser on how to display the webpage.
- An HTML file is saved with .htm or.html extension.

A. Fill in the blanks

1. HTML stands for ..... .
2. ..... developed HTML in 1991.
3. HTML is a platform ..... language.
4. ..... are the basic building blocks of a web page.
5. ..... are characteristics that have been assigned to each tag.

B. Write T for True statements and F for false statements.

1. HTML was developed in 1981. ☐
2. HTML is a very difficult language. ☐
3. Hypertext transforms a basic text into a dynamic text. ☐
4. Tags should always be surrounded by curly brackets. ☐
5. A tag that only contains an open tag and no closing tag is called a container tag. ☐

C. Answer in one word.

1. The basic building blocks of a web page.
2. A language which uses tags to format text documents and tells the browser how to display the text.
3. A formatted document that is translated and displayed by the web browser.

4. Characteristics of tags that can be used to modify them.

5. The tag starts on a new line by default and occupies the entire available width.

D. Answer the following questions.

1. What is the basic structure of the HTML document?

.....

.....

2. Explain different types of HTML tags.

.....

.....

3. Write the rules for writing HTML codes.

.....

.....

4. Explain any three terminologies related to HTML.

.....

.....

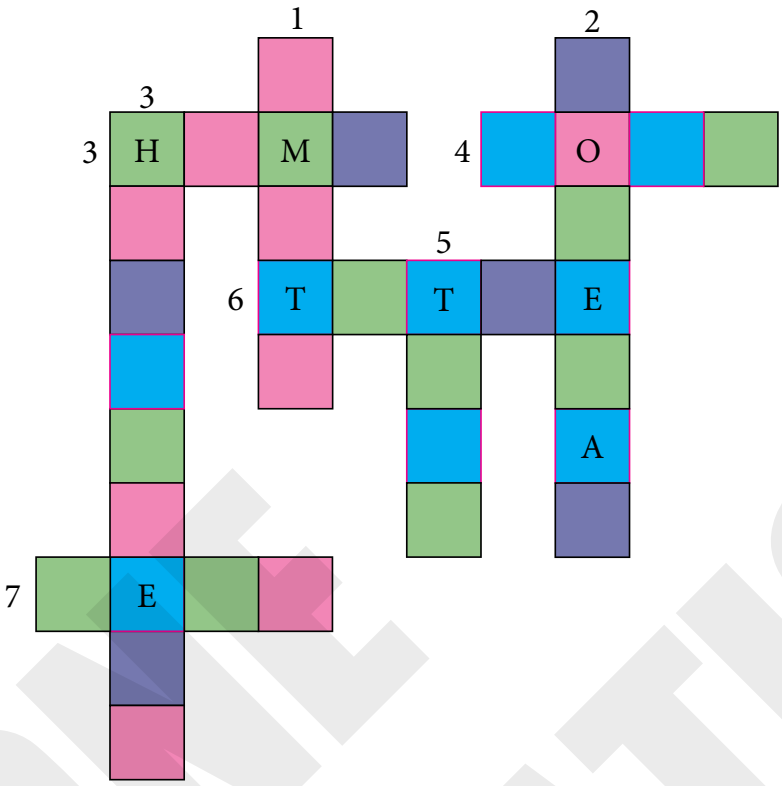
5. Write some HTML tags with the ir attributes.

.....

.....

Critical Thinking

Solve the crossword using the given clues.



Down:

1. The tags which have only an opening tag.
2. Most commonly used Text Editor for web page designing.
3. A tag that transforms a basic text into a dynamic text.
5. Attribute used to change colour of the text in a web page.

Across:

3. Markup language used to create web pages.
4. Tag used to define the text to be shown on the web page.
6. Tag is used to define what is to be shown on the title bar when the web page is opened in the web browser.
7. Tag used to define header area of the web page.

Team Work

Names of some famous websites are given below. Surf the internet with the help of your teacher to find out the programming languages used for creating these websites.

www.youtube.com - _____ www.google.com - _____

www.facebook.com - _____ www.twitter.com - _____

8 INTRODUCING ARTIFICIAL INTELLIGENCE

Learning Outcomes

At the end of this lesson, students will be able to:

- Know about AI and its types.
- Learn about the history of AI.
- Understand the components and benefits of AI.
- Recognise various applications of AI.

Warm-up

Parthik wants to reach the new location. Your father has verbally explained the way, but you got confused. Which application programme would you use to locate the new location?

A boy and a roadway ahead

Teacher's Note:

Guide the students about the application and introduce to them with the word 'Artificial Intelligence.'

Hello Friends!! *As we know, the ability to derive information, learn from experience, adapt to the environment, understand, and correctly utilise thought and reason is defined as Intelligence. In this Chapter, let us learn what Artificial Intelligence is.*

The ability of computers to do a wide range of jobs has exponentially expanded since their introduction. Humans are responsible for developing computer systems in terms of speed and reduced size. With the progress in technology now, we have self-driving cars, face and voice recognition apps, flying drones, voice assistant apps and much more. These applications use various technological tools to learn and make decisions independently. This ability of applications or machines is known as Artificial Intelligence.

ARTIFICIAL INTELLIGENCE

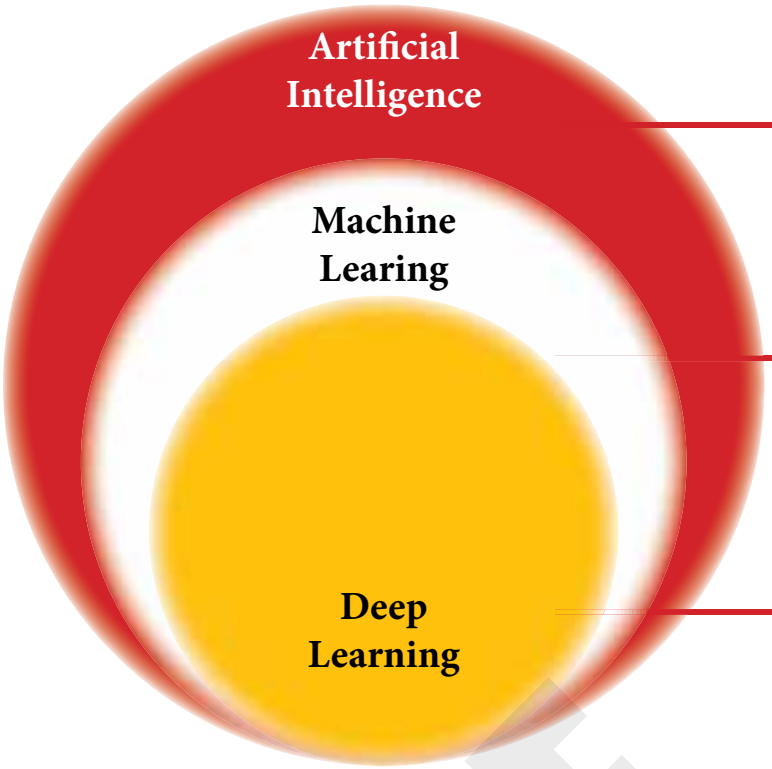
The intelligence demonstrated by a machine is known as AI. This intelligence is almost identical to humans. It is a way of making the computer, a computer-controlled robot or software which thinks intelligently, as intelligent humans think.

Artificial intelligence (A.I.) is generally defined as the property of machines that mimic human intelligence, characterised by cognitive ability, memory, learning, and decision making.

Let me Answer

Tell about the devices which use Artificial Intelligence.

The ideal characteristic of artificial intelligence is its ability to rationalise and take actions that have the best chance of achieving a specific goal. A subset of artificial intelligence is machine learning (ML), which refers to the concept that computer programs can automatically learn from and adapt to new data without being assisted by humans. Deep learning techniques enable this automatic learning by absorbing huge amounts of unstructured data such as text, images, or video.



All is a technique that enables computers and machines to mimic human intelligence, using logic, if-then rules, decision trees, and machine learning

A subset of Al that includes abstruse statistical techniques that enables machines to improve at tasks with experience.

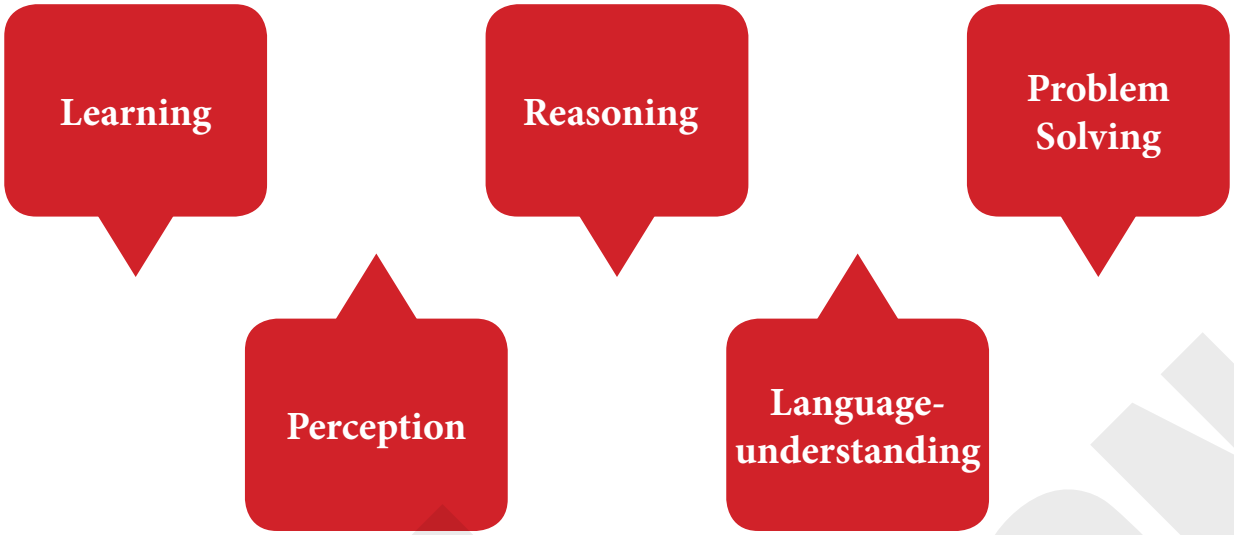
The subset of machine learing composed of algorithm that permits software to train itself to perform tasks, I speech and image recognition, by exposing multi-layered neural networks to vast amo of data

Types of AI

Artificial Intelligence is of two types- Weak AI and Strong AI.

Weak AI	Strong AI
Weak AI, also known as narrow AI, is artificial intelligence with limited functionality.	Strong AI is widely used, and the scope is vast.
It is good at specific tasks.	It has incredible human-level intelligence.
Weak AI uses advanced algorithms to accomplish specific problem-solving or reasoning tasks that do not encompass the full range of human cognitive abilities.	Strong AI has a complex algorithm that helps systems act in different situations, and strong AI-powered machines can make independent decisions without human interaction.
Examples: Alexa, Siri	Examples: Automation, Robotics.

COMPONENTS OF ARTIFICIAL INTELLIGENCE



a. Learning:

The learning stage is the first stage in the growth process of artificial intelligence, just like it is for humans. For instance, when training a child to ride a bike for the first time, there will be a trial-and-error process during which the child will make mistakes and fall off their bike while progressively learning the guidelines and methods required to perform the task at hand. Learning is an essential part of AI and happens in several different forms. The simplest form of learning is by trial and error. The solution keeps on solving problems until it comes across the right results. The programme maintains track of all the movements that resulted in success and stores it in its database to use the next time the computer is given the same problem.

The learning component of AI includes memorising individual items like different solutions to problems, vocabulary, foreign languages, etc., also known as rote learning. This learning method is later implemented using the generalisation method.

b. Reasoning:

Up until around 50 years ago, only humans could practise the art of reasoning. The reasoning is one of the fundamental components of artificial intelligence since it can differentiate and draw conclusions as well as inferences from the situation. These inferences can also be classified as deductive or inductive. Deductive reasoning is in which the truth of the premise guarantees the truth of the conclusion. In contrast, in the case of inductive reasoning, the truth of the premises supports the conclusion, but it cannot be fully dependent on the premises. In programming logic, generally,

deductive inferences are used. Reasoning involves drawing inferences that are relevant to the given problem or situation.

c. Problem-solving:

Problem-solving is possibly the most important aspect in the development of artificial intelligence because the fundamental premise of AI is the development of computer programmes and systems that handle issues in a manner comparable to that of humans. The problem-solving component in AI allows the programs to include step-by-step reduction of the difference, given between any goal state and the current state.

d. Perception:

In using the 'perception' component of Artificial Intelligence, the element scans any given environment using different sense-organs, either artificial or real. To provide a real-world application of perception in terms of artificial intelligence, many self-driving cars function through the perception of different physical objects within a given environment, ranging from traffic lights, weather conditions, buildings, and highways and roads, just to name a few.

Let me Answer

What is the literal meaning of perception?

e. Language Understanding:

Natural Language Processing involves machines or robots to understand and process the language humans speak and infer knowledge from the speech input. AI is developed to easily understand the most commonly used human language, English. This way, the platform allows the computers to understand the different computer programs executed over them easily.

Do You Know?

SHRDLU was one of the first AI programs to understand natural language.

Application of AI

AI has been dominant in various fields such as –

1. Gaming: In strategic games like tic-tac-toe, Minecraft, chess, and others, AI is essential because it allows machines to generate many potential outcomes based on their heuristic knowledge.

2. Health Care: Diagnoses of conditions like cancer, diabetes, and cardiovascular problems have been made with success using AI. Also, AI has been playing a very crucial role in identifying the right medicine for different disorders.

3. Customer Support: Worldwide, businesses and organisations invest a significant amount of money on customer care and put in a lot of effort to give their clients ongoing assistance. Many companies have built chatbots to provide customer support that use Natural Language Processing to answer questions about their products and services.

4. Banking and Financial Systems: Banks and other financial organisations create Smart Apps to assist consumers with check deposits, fraud detection, etc., using AI technologies.

5. Space Research: Artificial intelligence facilitates satellite communications and extracts the maximum value from the images, increasing our understanding of space.

AI Around Us

AI was developed to improve our daily tasks and make life easier. Let us look at artificial intelligence that we see around us.

Voice Assistant

A voice assistant is a kind of AI software that can comprehend and carry out human spoken orders. Examples: Google Assistant, Cortana, Siri and Alexa.

Figure 8. 1 Siri and Alexa

Face Detection

Face detection is an AI technology used for various purposes. We use face detection for filters on the face while taking pictures and face ID for unlocking the phone.

Figure 8. 2 Face ID

Face 1 ☐ words with mask in apple phones.

Navigation

Navigation apps use AI to update a commuter about traffic congestions in a particular area and the estimated time to reach a particular destination. Also, it recommends the best route. Example: Google Maps

Figure 8. 3 Google Maps

Robots

Robots are machines that run independently and take the place of humans at work. They do not look like humans by appearance nor perform exactly like humans. They use AI and can do many tasks.

For Example: Vegetable chopper, robot waiter and much more.

Figure 8. 4 Vegetable Chopper

Kids' IQ

Name a few popular apples that make use of AI.

.....

Let's Recall

- The intelligence demonstrated by a machine is known as AI.
- Artificial Intelligence is of two types- Weak AI and Strong AI.
- AI can understand human language with the help of a concept called Natural Language Processing.
- Weak AI is also known as narrow AI.
- A voice assistant is a kind of AI software that can comprehend and carry out human spoken orders.
- AI systems are efficient enough to reduce human efforts in various areas.

A. Fill in the blanks

1. The intelligence demonstrated by a machine is known as ..... .
2. A subset of artificial intelligence is ..... .
3. Artificial Intelligence is of two types ..... and ..... .
4. The learning stage is the ..... stage in the growth process of artificial intelligence.
5. ..... are machines that run independently and take the place of humans at work.

B. Write T for True statements and F for false statements.

1. Strong AI is also known as narrow AI. ☐
2. Artificial intelligence is almost identical to humans. ☐
3. Alexa and Siri are examples of weak AI. ☐
4. AI is developed to easily understand the most commonly used human language, English. ☐
5. AI can identify the right medicines for different disorders. ☐

C. Answer the following in one word.

1. Component of artificial intelligence which involves machines to process the human language.
2. One of the first AI programs to understand the Natural language.
3. The most important aspect in the development of artificial intelligence.
4. An AI software that can comprehend and carry out human spoken orders.
5. AI technology which uses face ID for unlocking the phone.

D. Answer the following questions.

1. What do you mean by artificial intelligence?

.....

.....

2. Differentiate between Weak AI and Strong AI.

.....

.....

3. Name the components of Artificial Intelligence. Explain any two.

.....

.....

4. How AI is used in many organisations for customer support?

.....

.....

5. Write any two applications of AI around us.

.....

.....

Critical Thinking

Read the following conversation carefully and fill the gaps.

Robot and in cloud - Hey guys, what are you talking about?

A boy in cloud: We have reached the location by using _____ since we didn't know the route.

A girl in cloud : We were able to control the _____ using _____ and did not have to type down manually. I say that AI is being used here but Sandeep disagrees.

Robot in cloud: Ria is correct. AI is being used by the assistant here.

Team Work

AI might become more prevalent in schooling in the near future. How will AI aid to enhance the teaching and learning process? Ask your teacher. In the space provided here, write down what you know.

_____

_____

_____

_____

9 INTERNET SERVICES AND CYBER SECURITY

Learning Outcomes

At the end of this lesson, students will be able to:

- Know about Internet services.
- Learn Netiquettes.
- Understand the cyber threats.

Warm-up

Look at the pictures given below and identify the icons of the app. Fill in appropriate colours in the logos.

Figure 9. 1 Firefox black n white logo

Figure 9. 2 Opera black n white logo

Figure 9. 3 Internet Explorer black n white logo

Figure 9. 4 Google Chrome Black n white logo

Teacher's Note:

Guide students that life today is highly dependent on computers, but it would have never been so popular and widely used if it was not for the Internet.

Hello Friends!! In the previous class, we learned how to access the internet. In this chapter, we will learn about Internet services and cyber threats in detail.

Internet is the interconnection of a large number of computer networks all over the world. The internet plays an important role to make our life simple. It has revolutionised the world and made it into a global village. In a couple of seconds, information can be shared with a person anywhere around the globe.

Internet is also used for a variety of services including communication, shopping, banking and much more.

Internet Services

We may carry out various operations on the Internet. Further, the Internet allows us to access different types of data such as text, images, audio, video and software.

Let us know about some of the Internet Services in detail.

Let me Answer

For what purpose do you use Internet?

Communication

The internet is currently the most widely used form of communication. The rise of the internet has made communicating with others much simpler. Apart from sending e-mails, you can talk to others almost face to face over the Internet. You only need to click once to share your opinions, thoughts, videos, etc. with your friends.

Let us know about some of the ways used for communication over the Internet.

E-mail

E-mail stands for electronic mail. Messages can be sent and received from one computer to another through the Internet. E-mail can be sent anytime during the day, anywhere in the world and to many people simultaneously. Yahoo Mail and Gmail are some of the popular e-mail service providers. If you already have an email account, simply log in to receive and send e-mails.

Figure 9. 5 Inbox of Gmail

Video Conferencing

To communicate with your friends and family, you use phones and mobile devices. With the development in technology, the person with whom you are talking can be seen as well. This online technology which allows users in different locations to hold face-to-face meetings without having to move to a single location together is called video conferencing. In video conferencing, two or more people can speak to each other simultaneously over audio and video from different locations. The basic requirement for video conferencing is a connection to the Internet. In addition to this, you need to have a microphone and a webcam connected to your computer or laptop.

Video conferencing is a fantastic technology. Companies with multiple offices might establish direct video communications between their locations in order to allow their teams to work more collaboratively. It has promoted e-learning as knowledge of teachers and lecturers living in cities can be brought to remote areas. Surgeons in the medical industry can supervise operations taking place in various parts of the world from their own hospitals.

Voice-Over-Internet Protocol (VoIP)

VoIP is the transmission of voice and multimedia content over an internet connection. It is basically used for voice communications. It is available on smartphones, personal computers, laptops and other hardware devices that can access the Internet.

Skype and GoogleTalk are the most common and popular VoIP services.

Follow the given steps to use the VoIP service of Skype.

Steps:

1. To install Skype on your computer, go to www.skype.com website.
2. Download Skype.
3. Double-click on the Skype icon to start Skype.

4. To create an account on Skype, click on the Sign In or Create button to open the Sign In screen.

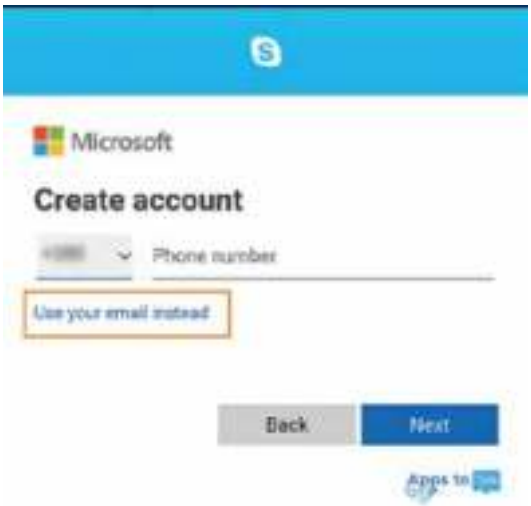


Figure 9. 6 Creating an Account on Skype

REMEMBER IT!

Sky peer-to peer' is the original name of skype.

5. Click on Create one! Link. The create account screen appears.
6. Enter your email and click on the Next button.
7. Enter a password and click on Next.
8. Upload your personal details if you wish to and then click on the Continue button.
9. Further, skype asks you to check the webcam and microphone. Click on continue and the Skype Welcome screen appears.

Figure 9. 7 Skype Welcome Screen

10. Click on the Contacts tab to add your contacts to the Skype account.
11. In the Add a new contact dialog box, enter the Skype ID of your friends.

Figure 9. 8 Add a new Contact Dialogue

12. Select the desired person from the contacts tab to make a call.
13. Click on the call button to make a voice call to the person.
14. Click on the video call button to make a video call to the person.

SOCIAL NETWORKING

A social networking website provides a forum for connecting individuals who share similar hobbies or interests. It allows you to share your views, ideas and suggestions. With your contacts and friends, you may also share audio, video, and still pictures. Some social networking sites let you create groups that share a common interest.

Facebook, Tumblr, Instagram and Twitter are some of the most common Social Networking sites. These are also used as a marketing hub. On these websites, there are a large amount of knowledge and information is shared from across the world. However, these services are typically viewed as a way for students to divert attention away from their studies. So, we should use these sites wisely.

Figure 9. 9 Facebook site and Instagram site

E-Greetings

E-greetings are identical to conventional cards in every way. The only distinction is the use of digital text and effects to generate it. E-greetings are in soft copy, whereas paper greeting cards are in hard copy. This means that you can see an e-greeting on your monitor but you cannot touch it. E-greetings can be sent anytime through emails, saving paper and trees in the way. An amazing e-greeting is created by the animation effects, music, still images, and text. Some of the popular e-greeting websites are www.egreetings.com, www.e-cards.com, www.123greetings.com and more.

The recipient of an e-greeting must click on a link sent by the sender of the greeting in order to view the e-greeting in his computer browser.

Figure 9. 10 www.123greetings.com

Let me Answer

Have you ever sent an e-card to anyone?

E-Banking

Money can be transferred online from one bank account to another. Cheques were used in the past to transfer funds. The clearing of the cheques takes two to three days. With e-banking, you can transfer funds easily from one account to another through the computer, laptop and even your smartphone.

Figure 9. 11 Netbanking pnb

Do You Know?

The united American Bank is thought to be the first bank in the world to offer computerised banking at home.

Advantages of E-banking

- Less time-taking
- Minimise paperwork
- Fewer chances of human errors
- financial discipline and promotes transparency

Disadvantages of E-banking

- Lack of direct contact between customer and banking officer
- Security issues
- Internet connectivity is a mandate

NETIQUETTES

The rules and standards that should be adhered to when meeting or conversing with others are known as etiquettes. In online communication, there may be a situation when the person may misunderstand your remark. A set of guidelines has been created to prevent misunderstandings. This set of rules is known as Netiquettes, which stands for Network Etiquettes.

Some common netiquettes are:

- Use appropriate language.
- Avoid typing in capital letters as it can be interpreted as if you're shouting at the person.
- Avoid using the "Reply To All" option when not necessary to answer everyone marked in the email.
- Try to ignore the sender's minor typing errors.
- The subject of the email must be in relation to the matter of the email.
- Avoid sending repeated emails just for publicity of the product or service.

Cyber Threats

A cyber threat is a malicious act that seeks to damage data, steal data, or disrupt digital life in general. Most cyber threats are committed with the intention of making money.

Types of Cyber Threats

There are various types of cyber threats. Some of them are as follows:

Data Diddling

This kind of attack involves altering the raw data just before it is processed by a computer and then changing it back after the processing is completed. For example, a student goes through the school's grade recording system and changes the grades of his half yearly exams, hence increasing his grade point average.

Phreaking

The crime where hackers attack your voice network like they would (and do) attack your data network. Instead of flooding your server with outbound emails, they flood your telephone system with outbound calls. Your phone bill will cover the cost of those calls. This is an exercise to create revenue for the hackers though, so they don't want you to know you have been hacked.

Cloning

This refers to a fraud in which scanners are used to steal the electronic serial numbers of cellular phones, which can be utilised for billing purposes and making broadcast calls. Clones can be created to make free calls that are charged to the owner of the original cell phone using the stolen serial numbers.

Carding

This refers to the process of stealing credit card numbers online, to be resold or used to charge merchandise against the account of the victim.

Cracking

The term "cracking" means trying to get into computer systems in order to steal, corrupt, or illegitimately view data. The persons who are involved in the process of cracking are called crackers.

Software cracking is considered illegal and cracked software is often called pirated software.

Cyber Security

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security.

Privacy and confidential information must be preserved, and the system must be secured against malicious theft or disturbance.Unfortunately, cybercrime is becoming more prevalent worldwide.

The various reasons for increased cyber crimes are:

- Not trained Internet users
- Lack of awareness
- Increased use of internet

Kids' IQ

Should we share the one time poncoord (OTP) with everyone?

.....

Let's Recall

- Internet is the interconnection of a large number of computer networks all over the world.
- E-mail stands for electronic mail.
- The technology which allows watching the person while talking is called video conferencing.
- Skype and GoogleTalk are the most common and popular VoIP.
- E-greetings can be sent anytime through emails.
- Facebook, Tumblr, Instagram and Twitter are some of the most common Social Networking sites.
- A cyber threat is a malicious act that seeks to damage or steal data.
- Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks.

A. Fill in the blanks

1. ..... stands for electronic mail.
2. VoIP stands for ..... .
3. The technology of watching the person while talking to him is called ..... .
4. Netiquettes stands for ..... .
5. ..... were used in the past to transfer funds.

B. Write T for True statements and F for false statements.

1. The Internet is currently the most widely used form of communication. ☐
2. E-mail can be sent only during the day. ☐
3. Gmail is famous for video conferencing. ☐
4. The most common VoIP services are Skype and GoogleTalk. ☐
5. We can create groups on social media networking sites. ☐

C. Answer in one word.

1. A set of guidelines to be followed in online communication.
2. Transmission of voice and multimedia content over an internet connection.
3. A forum for connecting individuals who share similar hobbies or interests.
4. Cards which use digital text and effects.
5. The most common social networking site.

D. Answer the following in one word.

1. What do you mean by cloning?
2. What is cyber security?

3. Discuss different types of communication techniques.

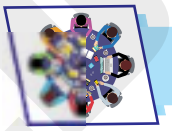
4. Differentiate between e-greetings and paper greetings.

5. Explain any three types of cyber threats.

Critical Thinking

Search any five Internet services in the given grid.

A	H	E	B	A	N	K	I	N	G	O	I	P
R	B	C	A	S	D	F	G	O	H	J	K	L
D	F	D	E	C	V	B	N	M	A	P	V	S
C	O	M	M	U	N	I	C	A	T	I	O	N
Q	E	E	A	R	T	Y	Y	J	F	V	I	O
S	D	F	I	G	O	H	F	G	K	L	P	D
Q	W	E	L	E	G	R	E	E	T	I	N	G



Team Work

Work in pairs. Sign up yourself with an e-greeting website such as http://egreetings.gov.in and send an e-greeting to your partner.

Fun Game

A set of instructions that tells a computer how to input, process and output data.

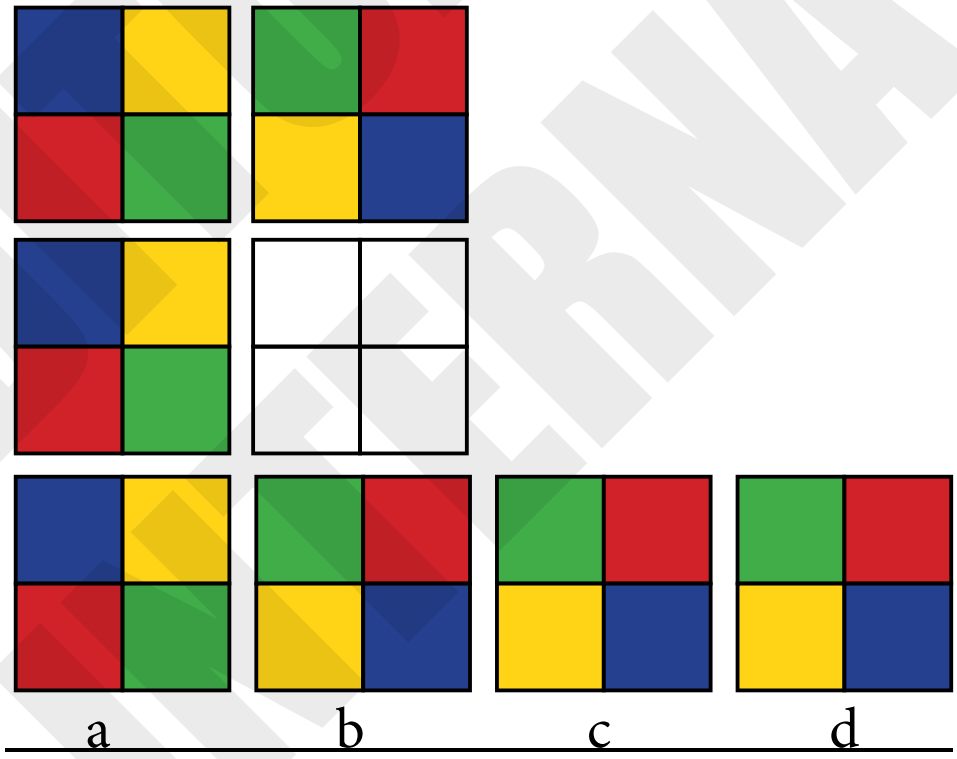
A collection of slides, arranged in a continuous manner.

This tool allows automated lists and custom lists, to be easily added to a spreadsheet.

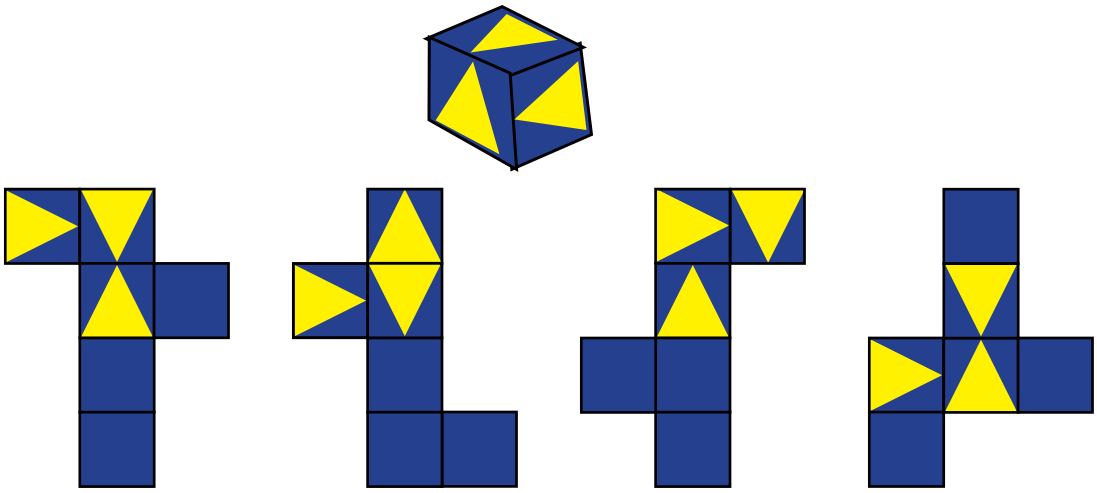
Pre-designed formulas in Excel to perform simple and complex calculations.

An app which updates commuter about traffic congestions in a paricular and about the estimated to reach the destination.

1. Which patterned block will come in the fourth block?



2. Which is the correct net to from the given cube?



A B C D

3. Which number should be placed in the empty triangle?