Contents

1 ADVANCED FEATURES OF EXCEL

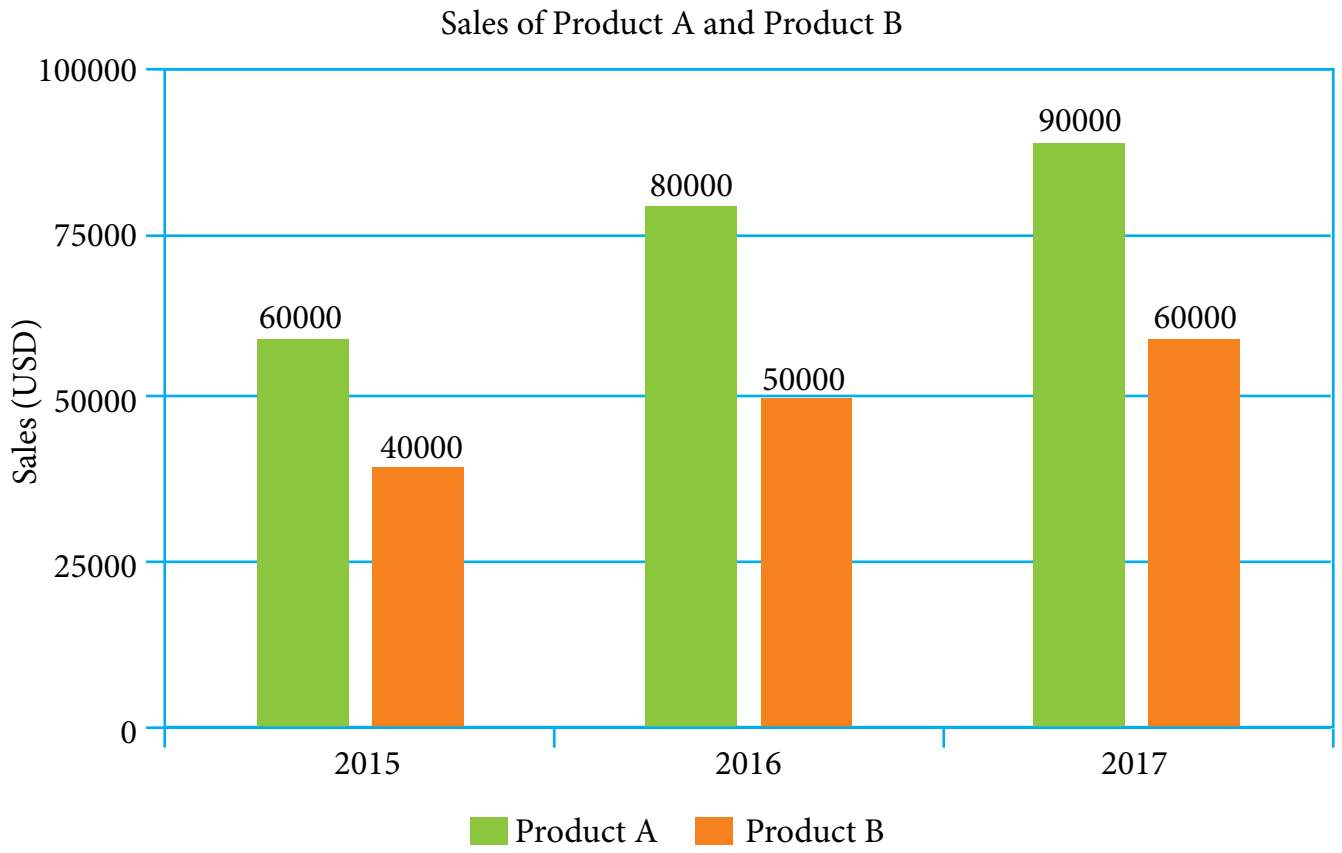
Learning Outcomes

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

- Make Charts in Excel.
- Recognise the components of a chart.
- Format Charts and sort data in a worksheet.

Warm-up

Observe the following chart carefully. What does it represent?



Teacher's Note: *Guide students with the help of a chart to easily understand the data and compare values.*

Hey Friends! Let's learn how to make charts using the data from the worksheet.

In order to efficiently handle a big amount of information in spreadsheets, Excel offers several extremely helpful functions including charts, sorting, and filtering data.

Humans are visual learners, therefore when given reference visual points, their understanding is enhanced. One efficient way to represent data in a pictorial form is through charts. We can easily understand and compare data values with the help of charts.

Charts depend on the data of a worksheet. When the information in the spreadsheet changes, the chart is immediately updated.

MAKING A CHART

As stated above, in order to insert a chart in a worksheet; we need to add some data to it.

Follow the given steps to make a chart in Excel.

Steps:

1. Select the data from which you want to make a chart.
2. Click on the Insert tab.

Let Me Answer

Have you ever made a chart in your Mathematics class?

	A	B	C	D
1	Make	Colours	Odometer	Price
2	Honda	White	77667	7500000
3	TVS jupiter	Black	590312	850000
4	Yamaha	Red	456668	40000
5	Bajaj	Green	97111	700000
6	Royal enfield	Blue	340015	3500000
7	Apache	Black	877774	5000000
8	Hero Splendor	white	78889	90000000
9				
10				
11				

Figure 1.1: Creating chart

3. In the Charts group, click on see all charts button to open the Insert Chart window.
4. Click on the All Charts tab and from the list of charts shown in the left pane select column.
5. Click on the 'ok' button to insert the chart in the worksheet.

Figure 1.2: Insert Chart

Figure 1.2: All Charts

ELEMENTS OF A CHART

Various elements of a chart are:

1. **Chart Area:** All the area and other objects of a chart are included in the chart area.
2. **Category Axis:** The horizontal area of a chart is called the X-axis or category axis.
3. **Value Axis:** It is the vertical axis which is used to plot the values and is called the Y-axis.
4. **Data Series:** Data series consists of the bars, slices, lines or additional elements that show the data values.
5. **Category Name:** The labels visible on the X and Y axes are the category names.
6. **Plot Area:** A window within the chart area is the Plot Area.
7. **Legend:** Colours, patterns, or symbols assigned to the data series are depicted by Legends.

Let Me Answer

Define x-axis and y-axis.

FORMATTING A CHART

The look of the chart is enhanced by formatting. Chart elements, chart styles, and Chart Filters can also be formatted. We can also change the numbers on the value axis, and hide or show gridlines.

Changing the Title of a Chart

Follow the given steps to edit the Chart title.

Steps:

1. Click on the chart title.
2. Right-click on the Chart Title placeholder; the pop-up menu will appear.
3. From the pop-up menu, select the Edit text option.
4. Add the new Chart Title and press the ESC key.

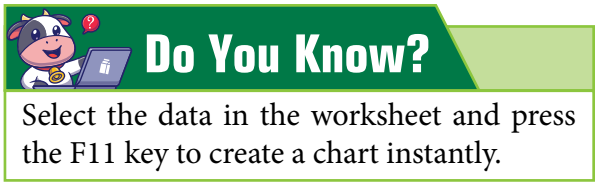
Editing Chart Elements

Titles, labels, gridlines and data labels can be edited.

Follow the given steps to edit the elements.

Steps:

1. Click on the Chart.
2. The following pane will be displayed.



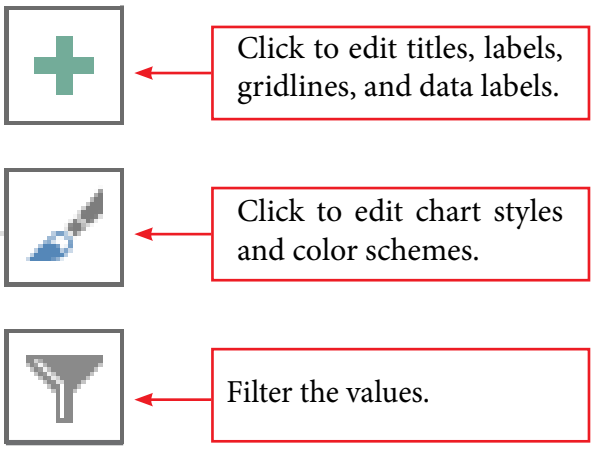


Figure 1.4: Chart Elements

EDITING CATEGORIES IN A CHART

Follow the given steps to edit categories of the chart.

Steps:

1. Click on the chart.
2. Click on the filter button.
3. Select the Categories option and unselect 1 from the Panel.
4. Click the Apply button and see the changes.

Figure 1.5: Chart Filters

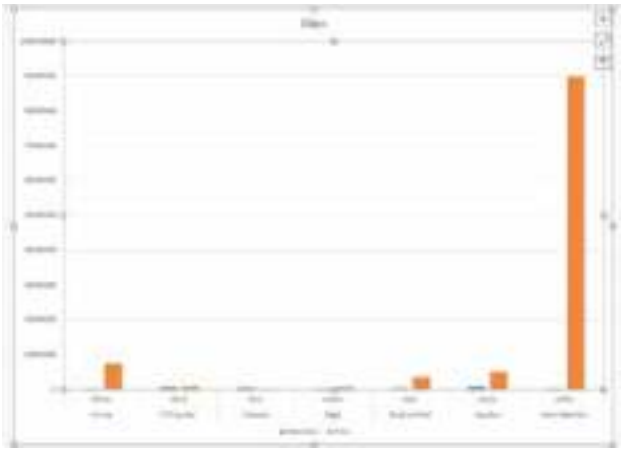


Figure 1.6: Editing Chart Categories

FORMATTING LEGENDS

Follow the given steps to edit the legends in the chart.

Steps:

1. Right-click on the legend.
2. From the pop-up menu, select the format legend option to open the Format Legend Panel.
3. Click on the Fill and Line option.
4. Select the solid fill option.
5. From the colour drop-down list, select the colour of your choice.

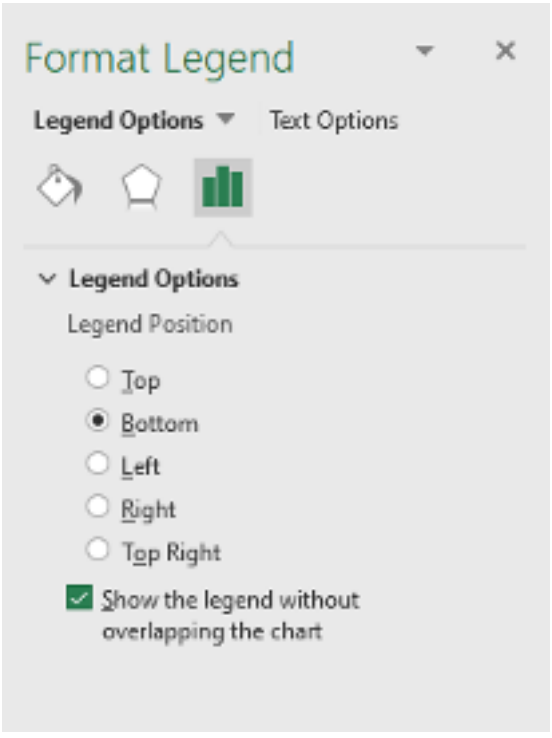


Figure 1.7: Legend Option

Figure 1.8: Format Legend

SORTING DATA

Sorting is a feature in MS Excel that helps you organise data. You can sort a text column in alphabetical order (A-Z or Z-A). We can sort a numerical column from largest to smallest or smallest to largest. We can also sort a date and time column from oldest to newest or newest to oldest.

Follow the given steps to sort the given data.

Steps:

1. Select the range of cells containing the data to be sorted.
2. On the Data tab, in the Sort & Filter group, click on the sort option to open the Sort dialogue box.
3. From the Sort by drop-down list, choose the column which you want to sort.
4. Select the values option from the Sort On drop-down list.
5. From the Order drop-down list, choose the order of sorting- largest to smallest option.
6. In the Sort dialogue box, click on the Add Level button to add a new level below the first level.
7. Specify the column name as mentioned in the sheet by dropdown list and order of sorting as A to Z in the Order drop-down list in the new level.

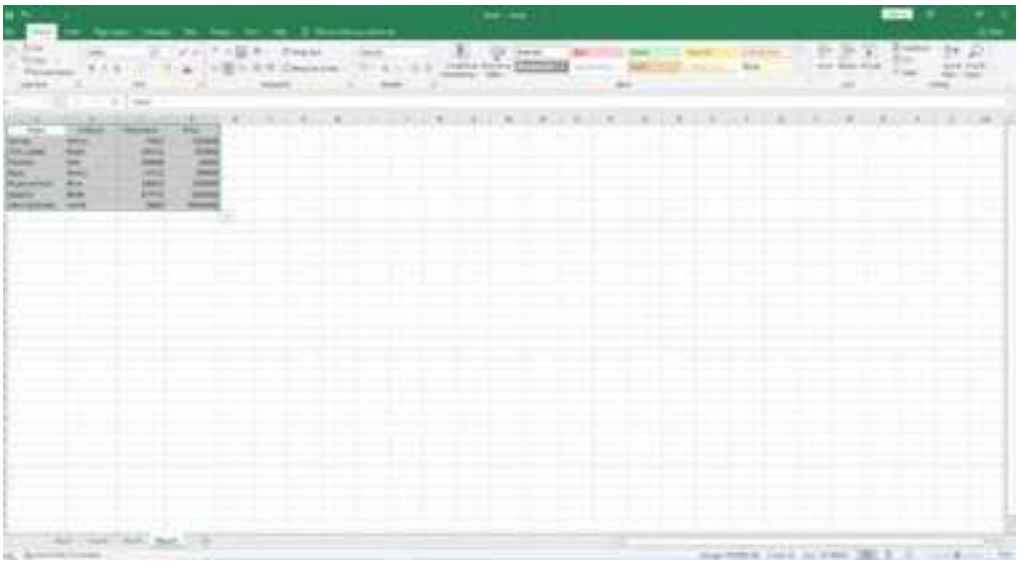


Figure 1.9: Sorting Data

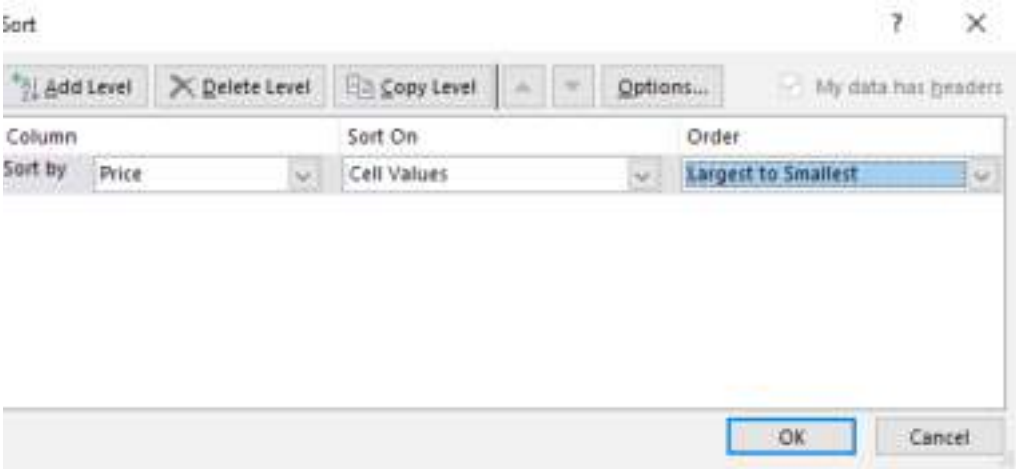


Figure 1.10: Sort

Figure 1.11: Sorting Data with Multiple Columns

Filtering Data

Filter temporarily hides some of the data in a table, so you can focus on the data you want to see.

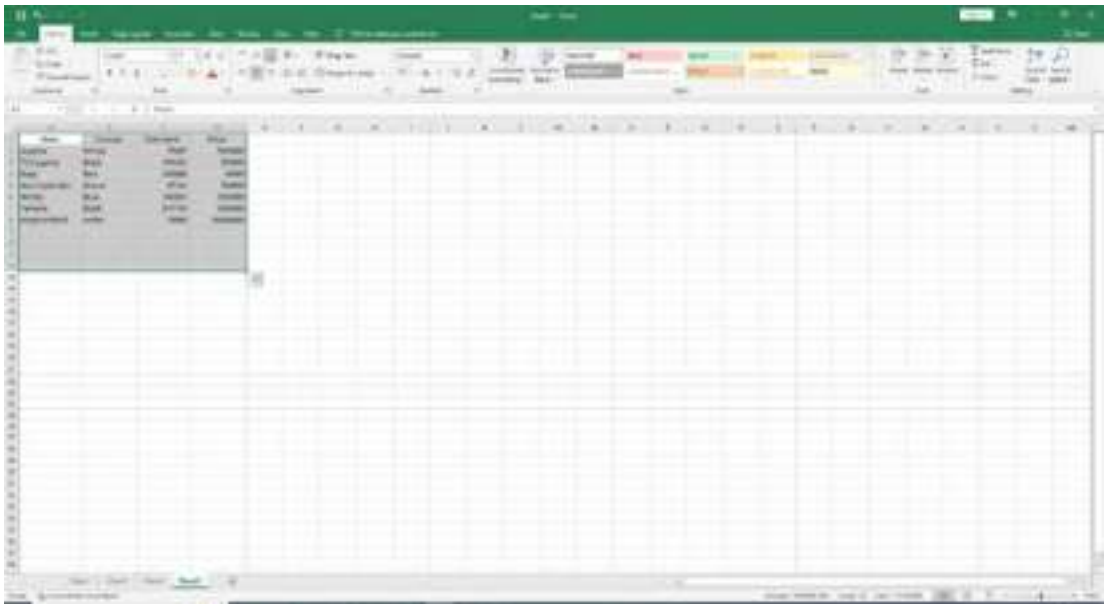


Figure 1.12: Filter Data

Follow the given steps to filter data.

Steps:

1. Select the data you need to filter.
2. On the Data tab, click on the filter option in the Sort & Filter group.
3. The filter arrows appear next to each column's heading.
4. Click on the arrow next to the column to specify a condition.
5. A drop-down list appears which provides many options for filtering data.
6. Select the checkboxes of the values based on which you would like to filter the data and clear all other checkboxes.

REMEMBER IT!

Ensure that the item of each data type in a column is identical before filtering the data.

7. Click Ok.
8. Observe the list which is filtered according to the chosen criteria.

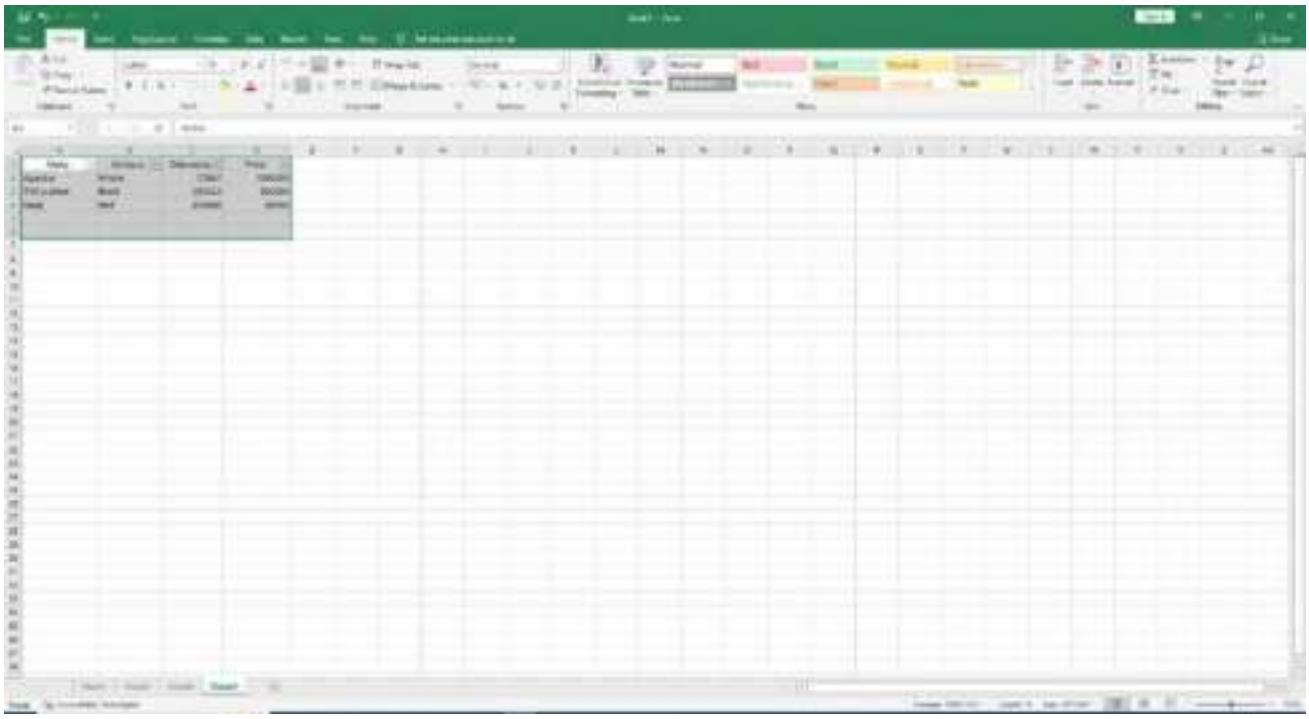


Figure 1.13: Filtered Data

Kids' IQ

Sangam has created a chart that shows the grades he received in several exams. He immediately realised that he needed to modify the colours and symbols used to represent the data series after creating the chart. Which part of the chart should he use to make the same changes?

Let's Recall

- The chart is immediately updated when the information in the spreadsheet changes.
- The labels visible on the X and Y axes are the category names.
- The horizontal area of a chart is called the X-axis or category axis.
- Data series consists of the bars, slices, lines or additional elements that show the data values.
- The look of the chart is enhanced by formatting.
- Sorting is a feature in MS Excel that helps you organise data in a particular order.
- Filter temporarily hides some of the data in a table, so you can focus on the data you want to see.

A. Fill in the blanks

1. Charts depend on the data of a .....
2. The area and other objects of a chart are included in the ..... area.
3. Category axis is also called as .....
4. A window within the chart area is the ..... area.
5. ..... just temporarily hides the data.

B. Write 'T' for True statements and 'F' for False statements.

1. The X-axis is a vertical axis. ☐
2. The look of the chart is enhanced by formatting. ☐
3. Titles, labels and gridlines cannot be edited. ☐
4. Filter helps you organise data in a particular order. ☐
5. Formatting improves the appearance of a chart. ☐

C. Answer the following questions.

1. Explain any three elements of a chart.

.....

.....

2. What do you mean by filtering?

.....

.....

3. Write down the steps to sort data.

.....

.....

4. State the difference between sorting and filtering.

.....

.....

5. Write the steps to change the title of a chart.

.....

.....

Critical Thinking

Ramesh is the head of the accounts department in the organisation. He has made an Excel sheet which displays the Name, designation, salary and bonus of each employee. However, he is asked to show the sheet to one of his colleagues but is not allowed to disclose the bonus given to each employee. Suggest to Ramesh how he can hide the specific data.

Team Work

Work in pairs. Imagine your school has organised an Inter-class Race. In sheet 1, add the names and timings of the players in Team A. Further, add the names and timings of the players in Team B in sheet 2.

2

MORE ON PYTHON

Learning Outcomes

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

- Recognise Python keywords.
- Comprehend the fundamental rules of a language.
- Understand Syntax.
- Identify different operators of Python.

Warm-up

What will be the output if the given statements are typed in interactive Python mode?

1. >>>'Python is Fun'

2. >>>30 + 30

3. >>>'Shubham\Shubhi'

4. >>> 100% 30

Teacher's Note: *Assist students in doing the above exercise and give some more statements to them.*

Hello Friends! *We covered the fundamentals of the Python programming language in the previous class. More information about the rules that govern the Python programming language will be covered in this chapter.*

There are several laws that apply to every human language. These principles are language-specific; we adhere to the linguistic rules of the language in which we are communicating. Similar to this, if you want to instruct a machine using a programming language, you must adhere to the syntax, or set of rules of that language.

REMEMBER IT!

Python is one of the 9 languages that influenced the design of JavaScript.

SYNTAX

The collection of guidelines that must be followed while writing programming statements is known as the syntax. The interpreter will highlight a statement mistake if the proper syntax is not used.

For example, your science teacher finds out that the labelling of the diagram done by you is not correct, then she will mark the labelling as incorrect.

Do You Know?

Many big names use Python for their products/services. Some of these are NASA, Google, IBM, Nokia,etc.

A syntax error might cause the programme to stop working by using improper punctuation, the wrong keywords, or undefined phrases.

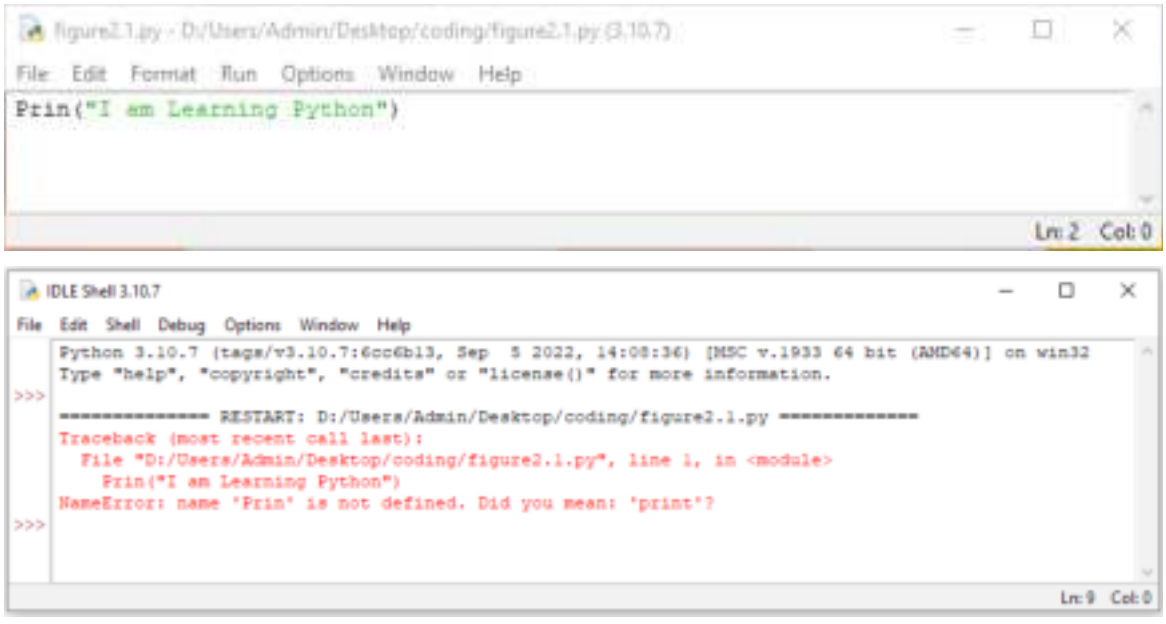


Figure 2.1: Syntex Error

Look at the program's output and the interpreter's error in the example above. The error is highlighted in red.

VARIABLES

Variables are places in a computer's memory where values can be stored. These values are retrieved from memory during processing, where they are subsequently processed to produce output. Each variable has a set of values and distinctive names that make it easier to find and identify the values that have been stored in memory.

Marks=80 : Marks is a variable that stores the value 90.

PinNo=110032 : PinNo is a variable that stores the value 110032.

VARIABLE NAMING CONVENTIONS

The guidelines that need to be followed while defining variables are known as variable name conventions.

Let Me Answer

Create two variable names by following its name conventions.

- An underscore (_) or an alphabet can begin a variable name.
- White spaces are used to create variable names.
- The names of variables can be made up of letters, numbers, and underscores.
- A variable name needs to make sense.

Let's create some programs using variables.

Program 1: To print the average of two numbers, write a programme. To store the values, use the following variables:

Number1, number 2, average , total

Figure 2.2: Program1

Output

Program 2: Using variables create a program to convert Kilograms into Grams.

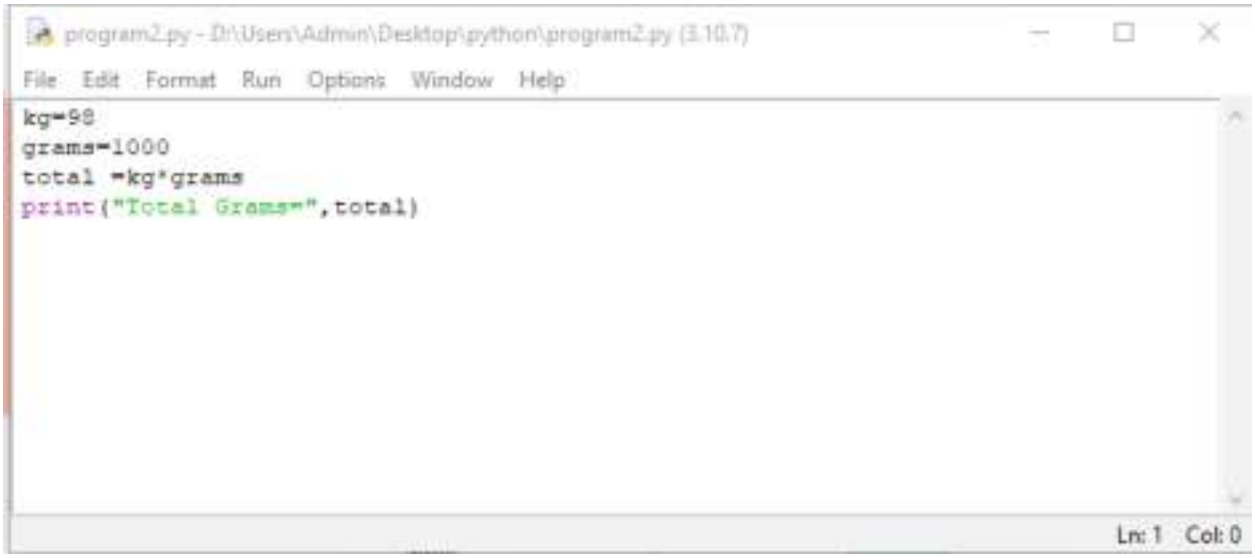


Figure 2.3: Program 2

Output

Program 3: Create a program to print your the marks scored by Ajeet in the following subjects.

1. Engligh 2. Hindi 3. Math 4. Science

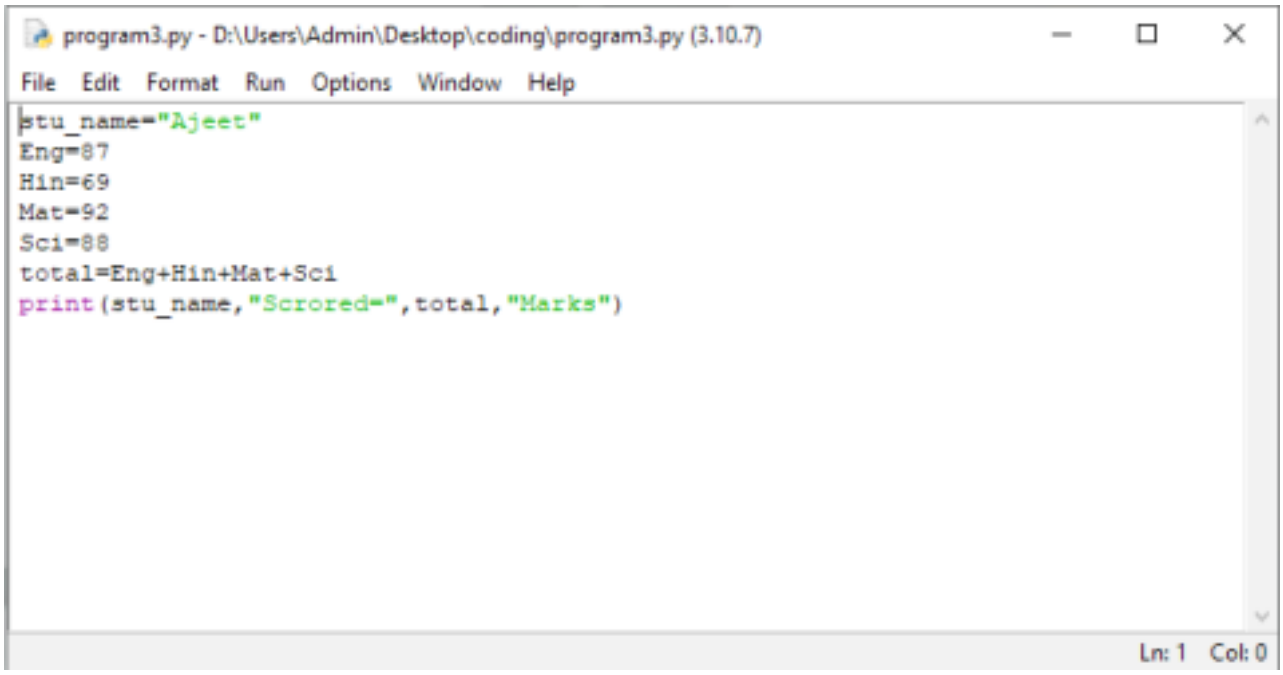
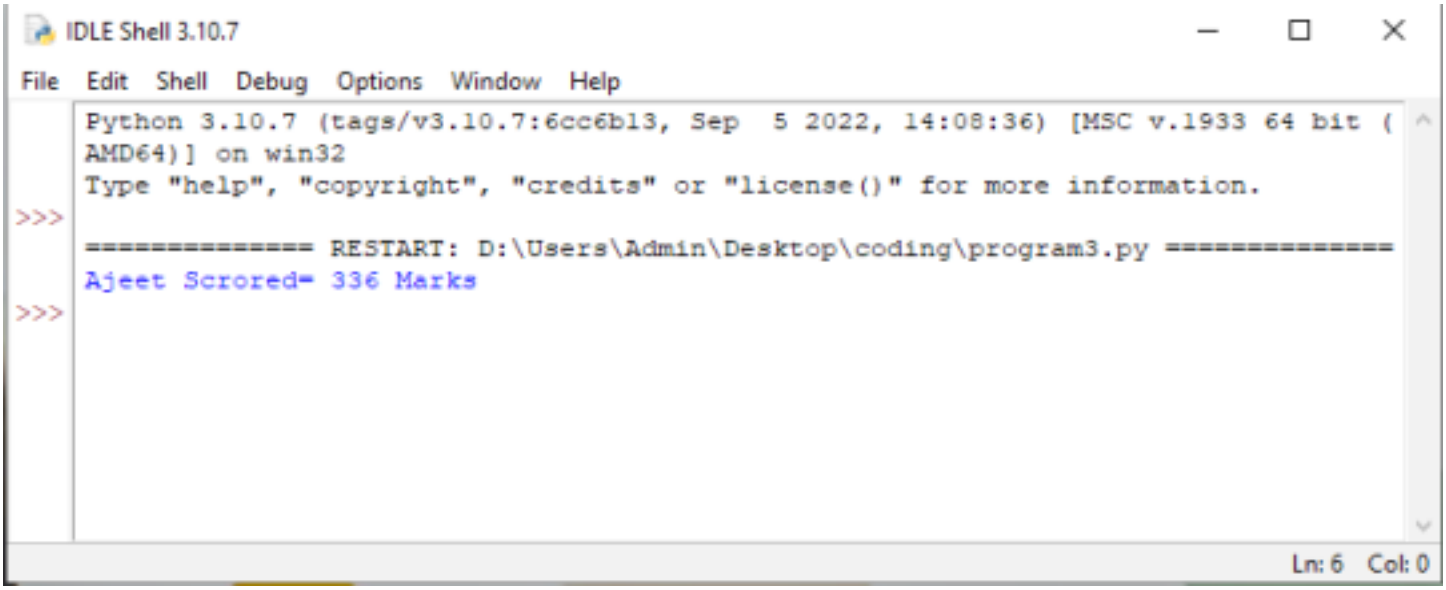


Figure 2.4: Program 3



Output

INPUT() FUNCTION

The input function in Python is used to receive user input. The input function is used to collect values from users and save them in a variable.

Let us now create a program, to print your name and school's name using input and print function.

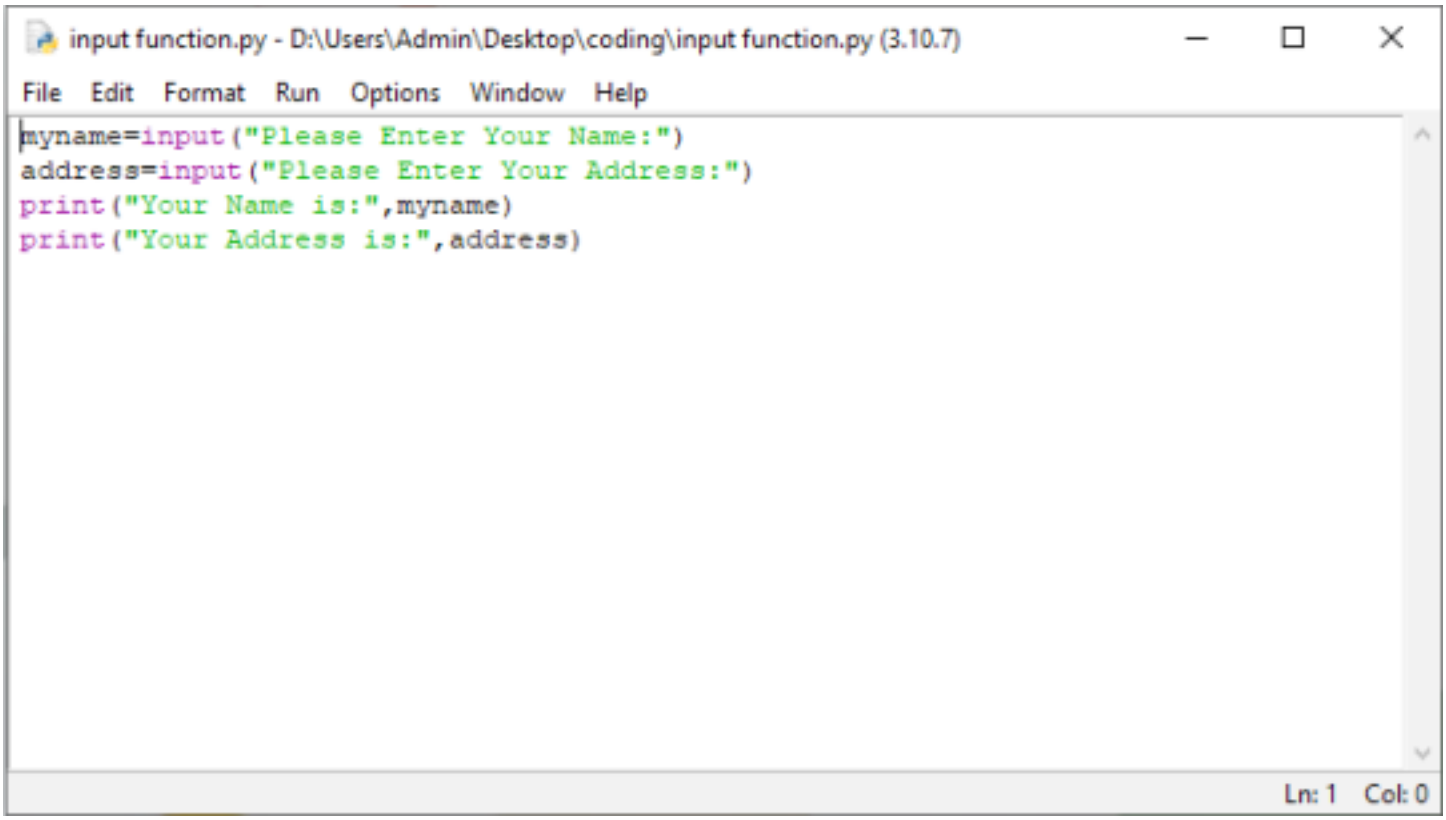


Figure 2.5: Input Function

Output

Program 4: Let us create a program, to print the cube of a number entered by the user.

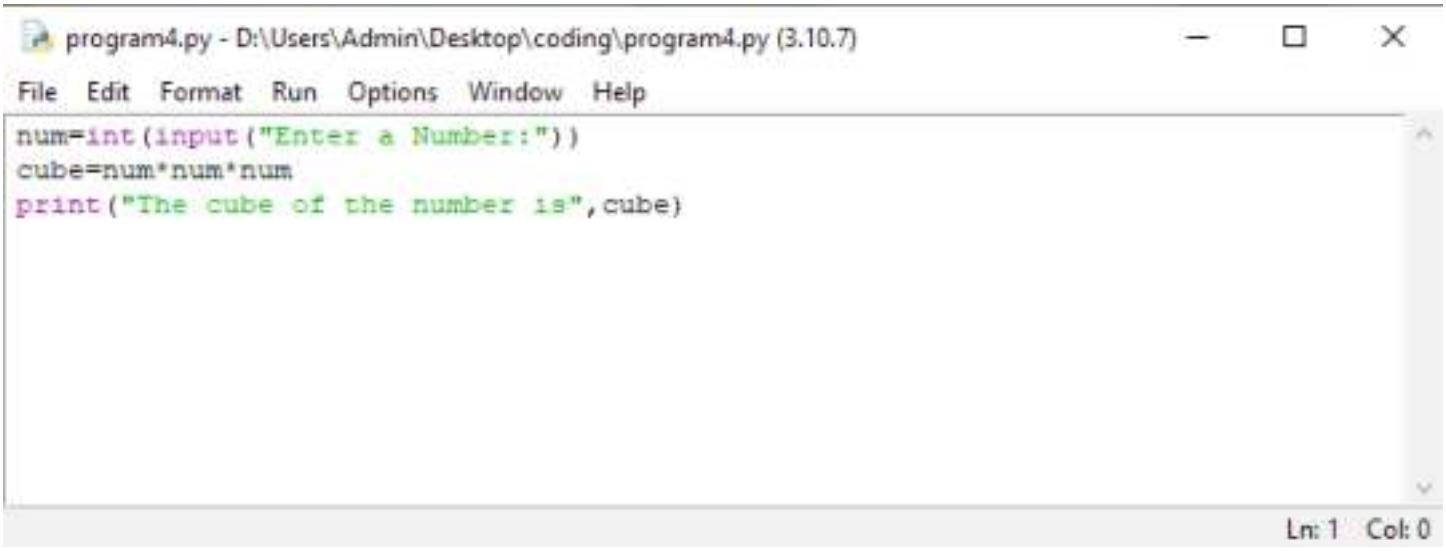


Figure 2.6: Program 4

Output

Let Me Answer

Tell the input to print a cube of a number.

KEYWORDS

When speaking in English, you employ a variety of words, and each word has a distinct meaning that is interpreted by the listener. The Python interpreter understands a set of reversed words with specific meanings as keywords. In order to develop your own programming language, you must define keywords and give them a specific function.

Let's know about some keywords of Python language.

LIST OF KEYWORDS IN PYTHON

Keyboards in Python				
False	class	finally	is	return
None	continue	for	lambda	try
True	def	from	nonlocal	while
and	del	global	not	with
As	elif	if	or	yield
assert	else	import	pass	
break	except	in	raise	

IDENTIFIERS

Different programme elements are referred to as identifiers. We can state that identifiers are the names assigned to variables, methods, objects, etc.

Identifiers

- A letter must come first in an identifier name.
- In Python, identifier names are case-sensitive.
- In Python, an identifier can be any length.
- Python keywords are not permitted to be used as identifier names.

EXPRESSION AND OPERATORS

An expression can be a statement that consists of variables and operators.

Expressions are represent at on value. For example any string is also an expressions since it represents the value of the string as well.

Operators are special symbols in Python that carry out arithmetic or logical computation.

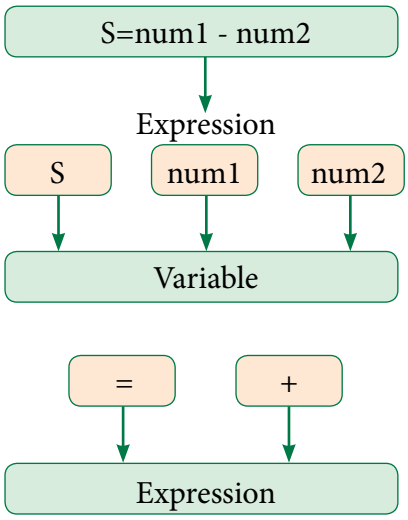


Figure 2.7: Expression and Operator

OPERATOR IN PYTHON

Operators are used to carry out various operations on variables and produce meaningful outcomes.

Python Operators

Operator	Function	Symbol	Example
Arithmetic	Used for performing mathematical operations.	(+) Addition (-) Subtraction (/) Division (*) Multiplication	Num1+Num2 Num1-Num2 Num1/Num2 Num1*Num2
Relational	Used to check relation between two or more variables.	(<) less than (>) greater than	Num1<Num2 Num1>Num2
		(==) equals (<=) less than equal	Num1==Num2 Num1<=Num2
		(>=) greater than equal to (!=) not equal to	Num1>=Num2 Num1!=Num2
Logical	Used to evaluate multiple conditions.	and or	Num1=36 Num2=45
		not	Num1>Num2 and Num2<Num1
			Num1>Num2 or Num2<Num1

Kids' IQ

Put a (✓) for correct and (✗) for incorrect identifier names:

Identifiers	
myClass	
1 variable	
print	
Item price	

Let's Recall

- To instruct a machine using a programming language, you must adhere to the syntax of that language.
- The interpreter will highlight a statement mistake if the proper syntax is not used.
- A syntax error might cause the programme to stop working.
- Variables are places in a computer's memory where values can be stored.
- An expression can be a statement that consists of variables and operators.
- Operators are used to carry out various operations on variables and produce meaningful outcomes.

A. Fill in the blanks

1. To instruct a machine using a program language, you must adhere to the ..... of that language.
2. ..... is the collection of guidelines that must be followed while writing programming statements.
3. The error is always highlighted in ..... colour.

4. An ..... or an ..... can begin a variable name.

5. The ..... function in Python is used to receive user input.

B. Write 'T' for True statements and 'F' for False statements.

1. Keywords must be defined in order to develop your own programming language. ☐

2. Different programme elements are referred to as variables. ☐

3. An expression can be a statement that consists of variables and operators. ☐

4. Black spaces are used to create variable names. ☐

5. Each variable has a set of rules. ☐

C. Answer the following questions.

1. What is syntax?

.....

.....

2. What do you mean by variables?

.....

.....

3. Write the guidelines to be followed when naming variables.

.....

.....

4. What is an input function?

.....

.....

5. Write some keywords in Pythons.

.....

.....

Critical Thinking

Rearrange the letters to create keywords in Pythons.

1. LLAOONNE -
2. TWHI-
3. SSARET-
4. TEURRN-
5. LLOAGB-

Team Work

The C programming language is another one that is particularly well-liked. Python language keywords are listed in the table below.

If the C language has an equivalent keyword, find it and enter it in the area provided below.

Python	C Language
for	
else	
True	
As	
break	

3 BIG DATA

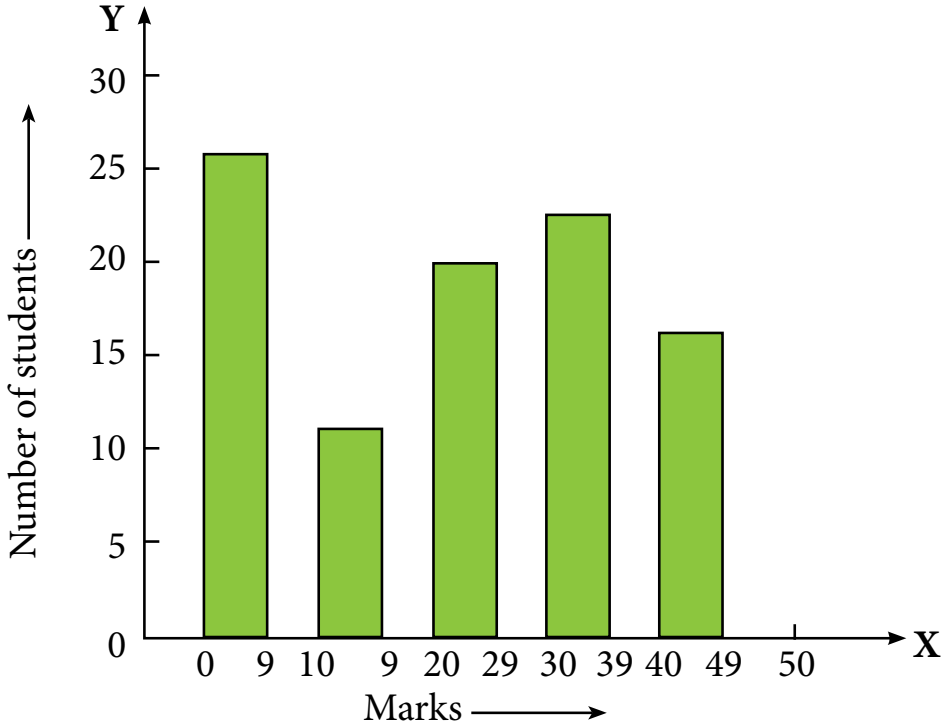
Learning Outcomes

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

- Comprehend the value of data.
- Understand big data application.
- Know the 5 v's of big data.
- Understand Data science life cycle.

Warm-up

Observe the bar graph and answer the questions.



Q1. How many students obtained the marks between 10-19?

Q2. How many total students are there in the above class?

Teacher's Note: *Elucidate students that small datas can be calculated easily but it's beyond human ability to calculate the data which is large and diverse. For that, we need high-end computing devices.*

Hello Friends! In this chapter we will learn about big data and how it can be classified as big.

These days, the internet is used by millions of people all over the world to access and share information, making data the most crucial part of computing. While surfing the web, they also leave a trail of data behind, which is used by various companies and organisations. They employ this data to gather information that aids in the development of fresh marketing initiatives and sales tactics. To better understand the purchasing habits of the customers, this data is further examined.This data is used by businesses like Amazon, Flipkart, and Google to offer relevant ads that cater to their customer's various interests.

Let Me Answer

How often do you get the ads similar to your interests?

BIG DATA

A human cannot calculate when the amount and variety of the obtained data are large. As the vast amount of data, this requires expert algorithms and high-end computing devices to process data in real-time.

In the field of "big data," various mathematical and statistical techniques are used to extract knowledge from voluminous data sets.

On the internet, a tremendous amount of data is shared. Let's look at how much data is shared each day globally utilising some of the most popular apps.

Let Me Answer

Which app do you use the most?

Google Facebook Youtube snapchat logoss

Google: 3.3 billions search queries in a day.

Facebook: 1.82 billion people log on to facebook daily.

Youtube: 30 Million videos are watched on youtube daily.

Snapchat: 4 billion snaps are shared on snapchat everyday.

The actual query, however, is how any data can be categorised as Big Data.

This can be explained with the help of 5 v's of Big data.

- Volume
- Velocity
- Variety
- Veracity
- Value

Volume

In the past ten years, there has been a dramatic rise in mobile users. These mobile users use a variety of apps, which creates a large volume of data.This data consists of their choices and searches related to different types of products, price and brand preferences.The application's backend database contains all of this data collection. Now that we have more computational power, it is simple to extract a big amount of data.

Velocity

The speed and computing capacity of the internet have multiplied dramatically. The adoption of various internet-based apps has increased as a result of this. These apps generate a significant amount of data quickly when the user interacts with them.Generation of data at a high speed is called data velocity. It doesn't only generate data but also involves accessing and processing data at a higher speed.

Variety

The various sorts of data produced by users are referred to as variety. Both structured and unstructured data can be produced.

Veracity

Extraction of relevant information is crucial, and the information must be correct. Veracity is the action of obtaining only relevant facts and eliminating irrelevant material.

Value

The company should find use for the information that was extracted. All of the user information gathered should be useful for business operations in some way. For instance, Amazon gathers data on the things that various age groups buy.

BIG DATA APPLICATION

Customer retention

Many businesses are using big data to comprehend client preferences, giving the business a clear understanding of what the customers want. The customer is therefore also happy since he receives what he actually requires. Higher client retention is facilitated by this two-way strategy.

Fraud detection

Big data is used by credit card companies to track transactions. The credit card companies have access to location and transaction information from all around the world. These businesses have access to all the information regardless of where in the world or when the credit card is swiped. In doing so, the companies are able to secure credit card transactions.

Predicting Trends

It is possible to find patterns, and forecast trends using the data gathered from numerous e-commerce apps. For instance, a company can gather information on the preferred winter gear of people of a specific area.

Government administration

In today's scenario, it is important that different departments of the government collaborate with each other. One government body can collect data from a particular region and share it with the other region. This helps the government in planning and implementation of various policies and services.

Healthcare

The usage of big data is common in the healthcare industry. In order to establish strategies to stop the spread of diseases, as well as to promote learning about it and study it, data gathered on a specific disease from around the world can be shared and kept on the cloud.

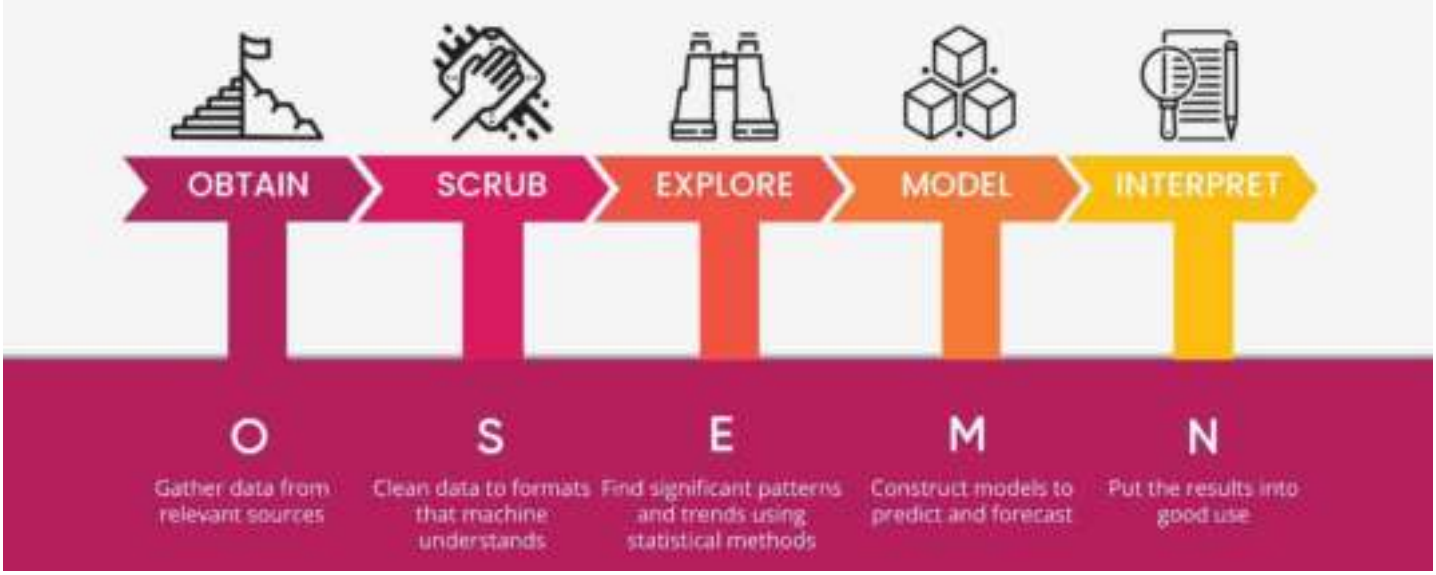
REMEMBER IT!

The COVID-19 pandemic has demonstrated that health care organisations become more resilient, agile, and innovative through digitally enabled business models with data at the core.

DATA SCIENCE

Finding relevant information from a huge data set is a key component of the study of data science. Data science is a multidisciplinary area that uses mathematical, scientific, and statistical techniques to generate and extract data.

The data science life cycle



Capturing Data

Obtain

Data extraction from various sources, such as user-used apps or websites is required for data collection.

Scrub

This entails translating the gathered data into a language that the machine can easily understand.

Explore

This involves extracting patterns within the data. For example, you can extract information about what change in temperature causes rainfall from weather-related data for a certain region.

Model

A data model is prepared after the data extraction. Different facts and figures and their relationship are represented in this data model. For instance, you might discover while extracting data that the customer city must be linked to a pin code.

Interpret

In order to train the model and create an understandable representation of the data, algorithms are used.

Do You Know?

In 2020 the number of data science job listings outstripped the number of people searching for such jobs by a factor of 3 to 1.

Kids' IQ

A model is created by Roma and she wants to train it. Which big data technique should she employ to train the model and present the data in a way that makes it simple to understand?

Let's Recall

- In the field of "big data," various mathematical and statistical techniques are used to extract knowledge.
- 1.82 billion people log on to facebook daily.
- The various sorts of data produced by users are referred to as variety.
- Scrub entails translating the gathered data into a language that the machine can easily understand.
- A data model is prepared after the data extraction.
- Data science is an interdisciplinary field that applies statistical, mathematical and scientific methods to create extract data.

A. Fill in the blanks

1. While surfing the web, we leave a ..... of data behind.
2. ..... billion search queries in a day on google.
3. The usage of big data is common in the ..... industry.
4. ..... is a multidisciplinary area that uses mathematical, scientific, and statistical techniques to generate and extract data.
5. ..... involves extracting patterns within the data.

B. Write 'T' for True statements and 'F' for False statements.

1. A data model is prepared before the data extraction. ☐
2. Algorithms are used in order to train the model. ☐
3. Extraction of relevant information is unnecessary. ☐
4. The application's backend database contains the data you searched such as products, price, etc. ☐
5. There are 4 v of Big data. ☐

C. Answer the following questions.

1. What is big data?

.....

.....

2. Explain any 3 v of Big data.

.....

.....

3. Write about the amount of data shared worldwide using some popular apps in a day.

.....

.....

4. What is Data science? Explain with a diagram.

.....

.....

5. What is fraud detection?

.....

.....

Critical Thinking

Kanchan has forgotten the 5 V's of Big data. Help her in recalling.

Team Work

Surf the internet and write about how e-commerce websites can improve using big data.

4 MACHINE LEARNING

Learning Outcomes

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

- Know about Machine learning.
- Comprehend different disciplines of machine learning.
- Recognise different types of machine learning.

Warm-up

Give an example of each:

1. AI-based app used for commuting. .....
2. AI-based game played on computer. .....
3. AI software that reads the text written by a pen on paper or on screen by a stylus. .....
4. AI-based app used by banks. .....
5. AI machines that perform the task given by a human. .....

Google Maps

alexa

Teacher's Note: *Apprise students that the above mentioned things have been improvised by humans.*

Hello Friends! We already know about artificial intelligence. Let's learn about one of the branches of it i.e Machine Learning.

The machines have undergone extensive human improvement. No one could have predicted a few decades ago that machines would eventually learn and improvise on their own.We have observed businesses putting forth great effort to offer their clients the best features by adding new features to their goods and services.

REMEMBER IT!

Alan Turing proposed the idea of a 'learning machine' in 1950.

Nowadays, we have vehicles that can drive themselves through all types of terrain. Now, these cars can learn on their own.

Let Me Answer

Can you name a machine which has transformed from basic to advanced?

When we give a machine data in such a way that it can expect to perform better in the future, we say that the machine is learning. For example, a speech-recognition machine's performance improves after hearing several samples of speech and sometimes the machine is even able to distinguish between different people's speech.

Machine learning typically refers to the evolution of software used to carry out artificial intelligence-related tasks.

Why is Machine learning important?

Humans learn because it improves their ability to live. It is believed that a machine would learn so that it can assist people more effectively.

- Especially when we are online, we leave a huge digital footprint. In order to gain a deeper knowledge of who we are, data provides insight into our decisions and preferences. Different machine learning techniques can be applied to this data to extract significant and helpful information. Organisations may be able to make better decisions with the help of this data extraction.
- New occurrences are happening all the time in the world. New knowledge is constantly being discovered by humans. Language changes, lifestyle changes, and even the technology we use every day change swiftly.

Machines can change with the environment more quickly and effectively than humans. As a result, there is less need to constantly rebuild the machines, all that needs to be changed is the algorithm fed into the machine.

DIFFERENT DISCIPLINES OF MACHINE LEARNING

You can become an expert in machine learning if you comprehend other concepts that are related to it. The various fields that have contributed to machine learning are briefly listed below.

Statistics

A lot of data is evaluated using statistical methods. Data from machine learning is of utmost importance. Machine learning algorithms that use statistical techniques are heavily used in machine learning because machines need enormous amounts of data to learn.

Psychological Models

Psychology is used to research and improve human performance in a variety of learning tasks. Similar models are also employed in machine learning to identify appropriate techniques for learning rapidly and effectively.

Let Me Answer

How do you think Psychological models are important?

Evolutionary Models

In nature, species evolve to be better at fitting their niches rather than just learning to function better as individuals or animals.Strategies that mimic some characteristics of biological evolution have been proposed as learning techniques to boost machine performance since the line between evolving and learning can be hazy in computer systems.

TYPES OF MACHINE LEARNING ALGORITHMS

Supervised Learning

Labelling the data is the first step in supervised learning, after which you train the computer to recognise various sets of labels with the aid of an algorithm. Supervised learning is achieved using the data that we have collected. For instance, giraffe and elephant photographs

Figure 4.1: Types of Machines Learning

are labelled separately, and the computer is trained to read the labels and recognise all the images of elephants.

Do You Know?

Nissan has increased its conversion rate by 67% with a machine learning model.

Unsupervised Learning

Unsupervised refers to understanding, learning, and adapting without any guidance or supervision. In unsupervised learning, the computer must determine the most accurate way to carry out a specific task. The machine receives input data and must look for hidden patterns in order to anticipate the output. The ability of a cat to survey its environment and learn about it through mistakes and corrections is an example of unsupervised learning.

Reinforcement Learning

An agent (user) begins interacting with its environment by creating actions, discovering errors and rewards. This is a learning process. And once the agent gets trained, it gets ready to predict the new data presented to it. For example, training your dog. The dog is an agent and it is trained through reinforcement. If the dog does something right, you award him with a biscuit. Similarly, when a machine successfully recognises a certain colour, it is given the value one; when it incorrectly recognises a colour, it is given the value zero.

Eureka Moment

Let's now use the Teachable Machine with Google app, a Google-developed programme, to comprehend the idea of machine learning. Launch your browser and click the following link.

Step 1: Type the URL in the browser address bar: https://teachablemachine.withgoogle.com/train

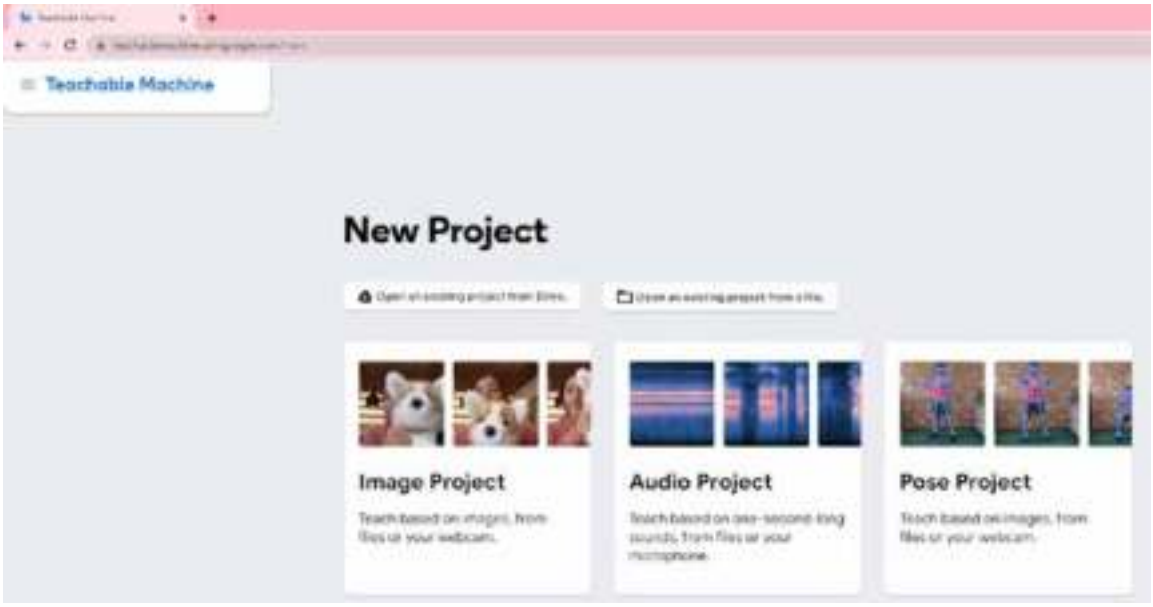


Figure 4.2: Teachable Machine

Step 2: Click on the Image Project link.

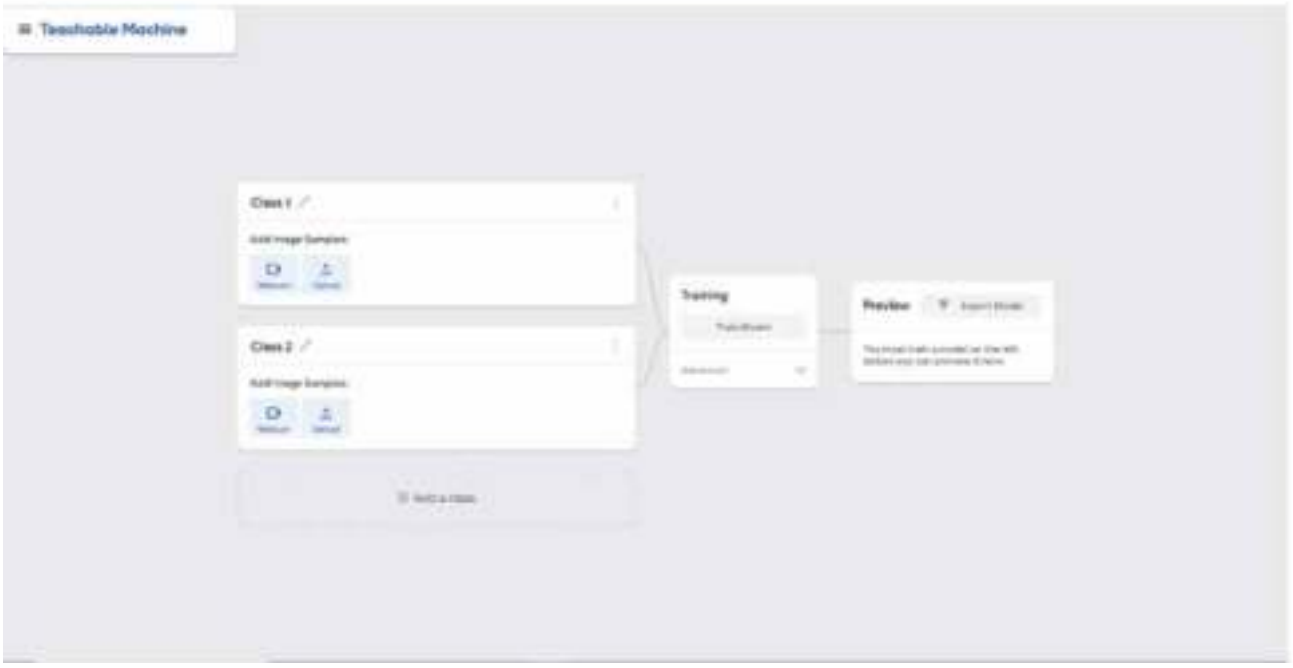


Figure 4.3: Creating Project

Step 3: Click on the webcam to start recording. Few Images will be captured by cam and few samples will be created.

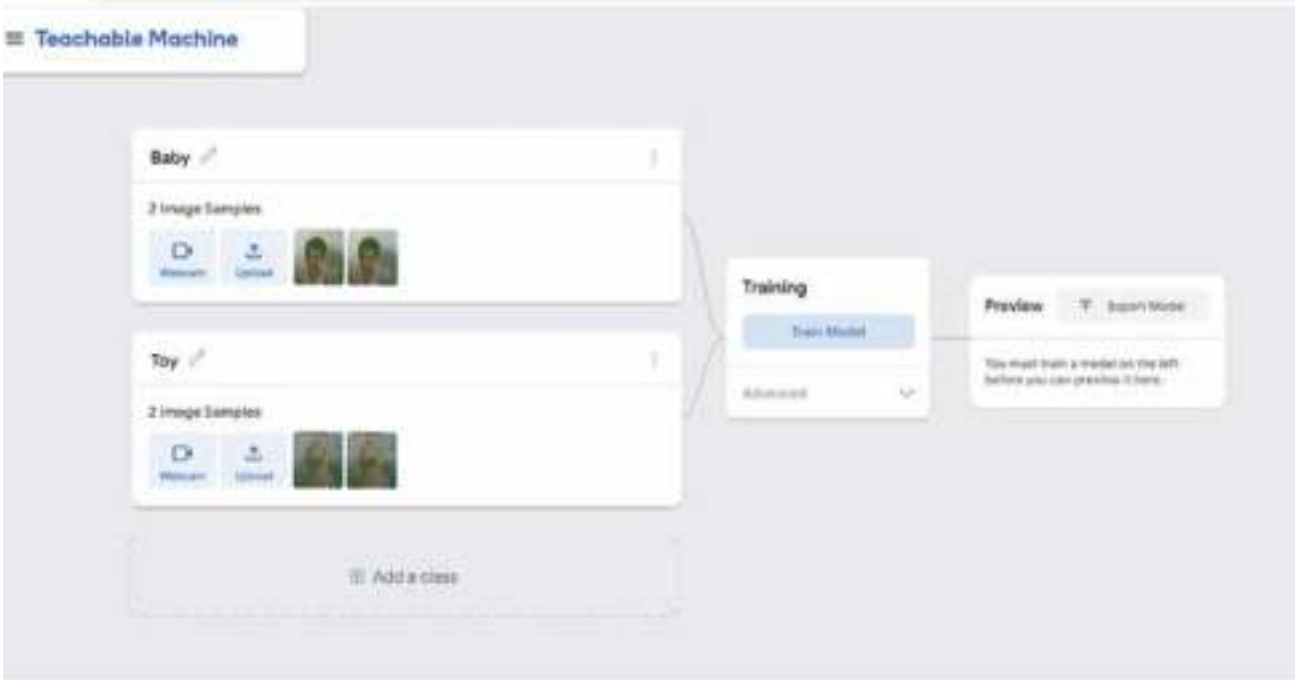


Figure 4.4: Creating Samples

Step 4: Click the pen icon once the sample has been created to modify the class name. It can be the name of the thing you took a picture of.

Figure 4.5: Class 1

Step 5: Now add the sample for class2. Repeat 3 and 4 steps for creating samples for class 2.

Figure 4.6: Class 2

Step 6: Click on the Training button after the samples are ready.

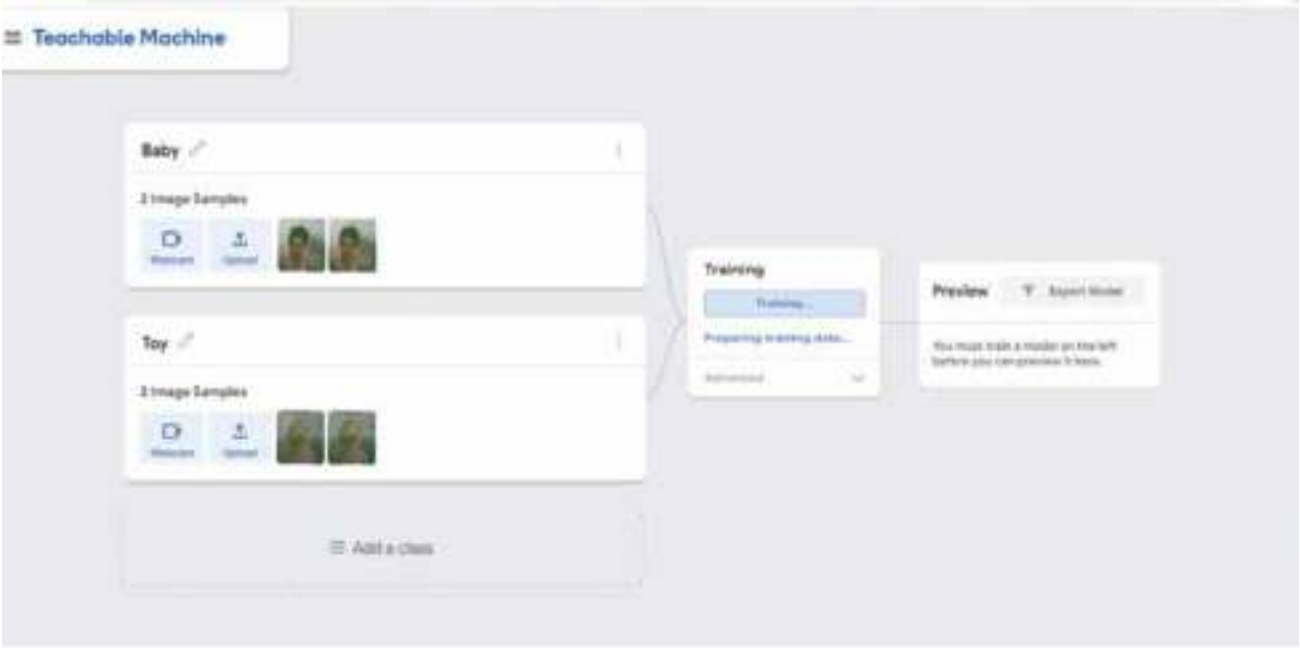
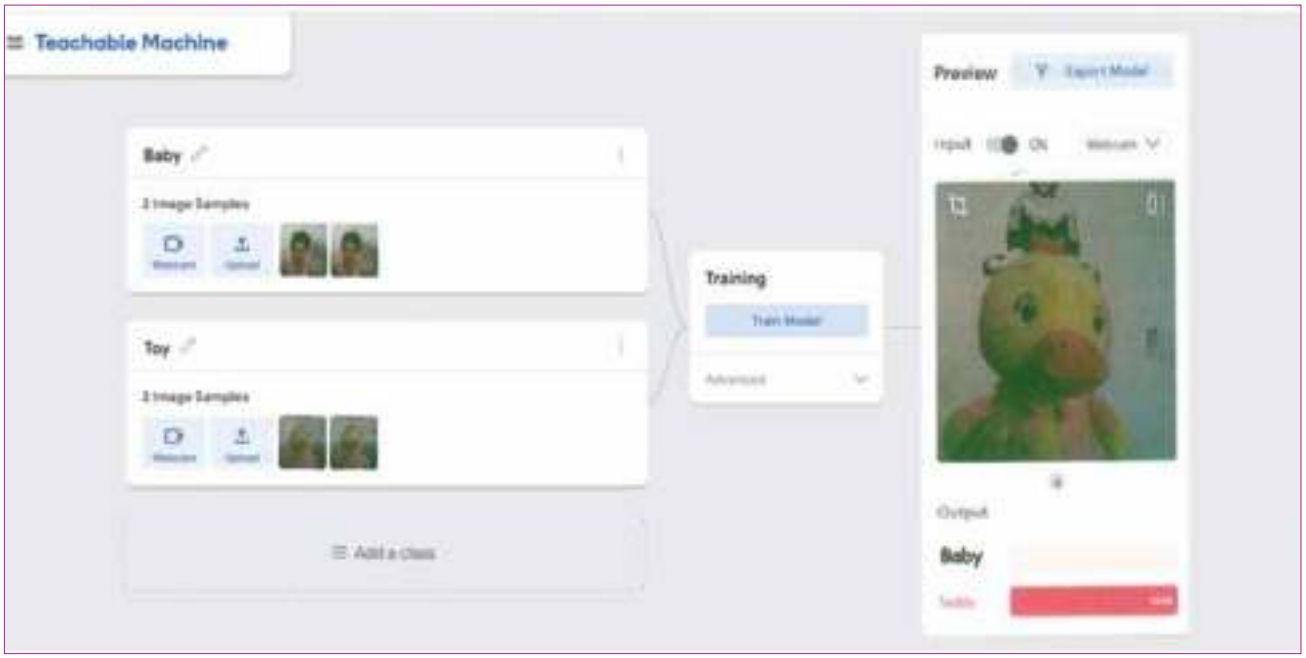
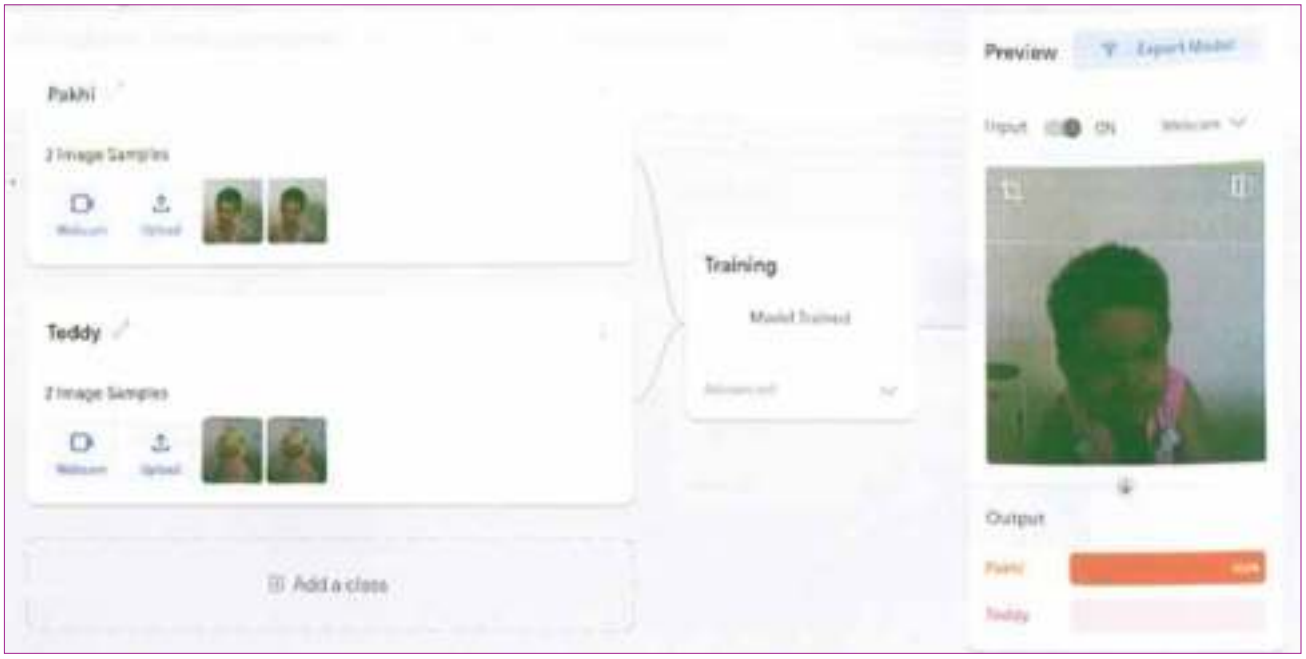


Figure 4.7: Model Training

Steps 7: After the model has finished being trained. See how the output bar is changing in the preview panel. The individual on the camera is being recognised by the machine.



Output 1



Output 2

Kids' IQ

Do you think machines should learn? What is AI learning?

Let's Recall

- Machine learning typically refers to the evolution of software used to carry out artificial intelligence-related tasks.
- Psychology is used to research and improve human performance in a variety of learning tasks.
- Unsupervised refers to understanding, learning, and adapting without any guidance or supervision.
- An agent (user) begins interacting with its environment by creating actions, discovering errors and rewards. This is a learning process.
- Supervised learning is achieved using the data that we have collected.

A. Fill in the blanks.

1. The machines have undergone extensive ..... improvement.
2. Machine learning typically refers to the evolution of ..... used to carry out AI-based tasks.
3. A lot of data is evaluated by ..... methods.
4. ..... the data is the first step in supervised learning.
5. ..... learning is achieved using the data we have collected.

B. Answer in one word.

1. The object with whom the agent interacts.

   .....

2. Real-life example of unsupervised learning.

   .....

3. Real-life example of supervised learning.

   .....

4. What do we leave when we are online.

   .....

5. A discipline of machine learning.

   .....

C. Answer the following questions.

1. What is machine learning?

.....

.....

2. Explain different disciplines of machine learning.

.....

.....

3. Why is machine learning important?

.....

.....

4. Brief about the types of machine learning.

.....

.....

5. Differentiate between supervised and unsupervised learning.

.....

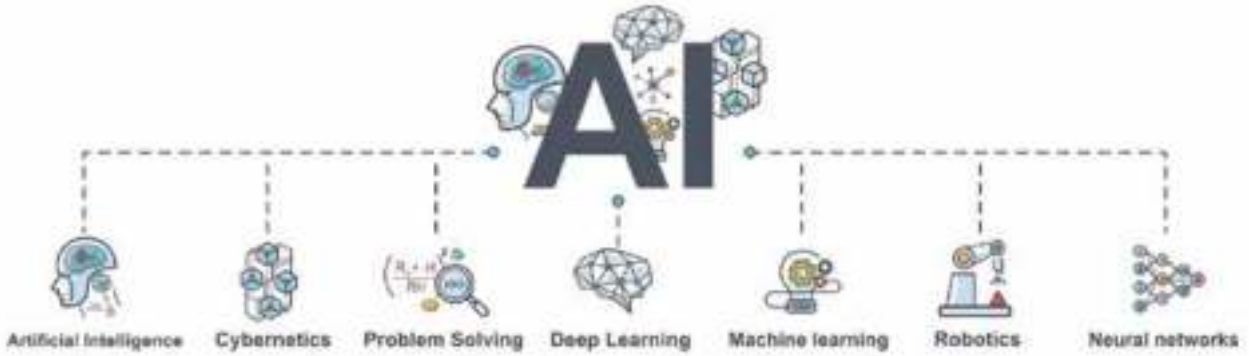
.....

Critical Thinking

Critically think and analyse what would happen if machines couldn't be programmed. Write in detail how machine's make difficult task easy.

Team Work

Team up with your partner and find out some information about other related fields of AI apart from machine learning.



5 THREATS, CRIMES AND SAFETY IN COMPUTING

Learning Outcomes

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

- Understand about Cyber safety.
- Recognise types of Cyberthreat.
- Know the ill effects of Cyberbullying.
- Overcome Cyberbullying, trolling.

Warm-up

Which of the following do you think is right? Put a tick (✓) in the right one and (✗) in the wrong ones.

1. Raman has seen Aman's facebook password and is checking Aman's facebook. ☐
2. Saumya has recorded the song in a movie hall using her mobile phone. ☐
3. Rahul is writing a book and included a poem written by some author by taking his permission. ☐
4. Naren has downloaded the presentation from the Net and submitted to his teaching by writing his own name. ☐
5. Sanchit has downloaded software from the Microsoft site for creating presentations. ☐

Teacher's Note: *Make note of the students' answers and make them understand the statements with reasons.*

Hello Friends! Let's learn about Cyber threats and how to be safe in Computing.

The most amazing developments in humankind's history have been brought about by technological advances.One of the most important inventions and technologies of the 20th century is the internet. It has grown to be an essential part of our daily life. It serves as a priceless source of information for contemporary society and a tool that makes a variety of jobs easier for us to complete.

The functions and purposes of the internet are becoming more complex and varied as its scope and dimensions expand and multiply. It has grown more difficult to maintain the security of sensitive data and stop internet abuse as a result of this expansion of purpose, scope, and user base.

We will learn about the numerous online threats in this chapter, as well as how to protect ourselves from potential dangers and crimes. Since students and young people are typically the targets of these dangers and crimes, it is crucial that we have adequate information and comprehension of the cyber environment.

REMEMBER IT!

It has been estimated that there will be over 6 billion Internet users by 2022.

CYBER SAFETY

We must protect ourselves against all types of cyber malice because the internet is full of risks. This is accomplished by making sure that online-available personal data is secure and safe. Staying safe and secure online is considered cyber safety. It deals with safeguards to keep sensitive data safe from manipulation or use for unauthorised actions that are thought up and carried out by hackers.

SAFELY BROWSING THE WEB

Safe internet browsing is the first step in cyber safety.

For safe browsing on the Internet, we must do the following.

Update the software

- We should update other programmes like antivirus software, reset security settings and browser plug-ins before we start browsing the web.
- When they identify us visiting a harmful website or potentially being exposed to malicious content, the majority of web browsers will display warnings. It is appropriate and strongly advised that we heed the browser's warning in order to eliminate any potential threats.

Let Me Answer

Does your computer or laptop have Antivirus installed in it?

Cautious Online Behaviour

- Use secure and distinctive passwords.
- Only download software and tools from reliable websites.
- Before clicking on links in emails, chats, or social media postings, pause and consider your next move.
- Offers that look too good to be true should be avoided. Avoid visiting websites that request your personal or banking information in exchange for cash or freebies; these are spams.

TYPES OF CYBER THREATS

Phishing

Phishing is the sending of emails to trick a recipient into handing over money or sensitive personal information like their bank account details or a username and password. Once we enter personal-information, this critical Once we enter personal information, the hacker's database stores this crucial information either momentarily or permanently, where they can use it to get unauthorised access to our social media accounts, bank accounts, and other accounts.

Trojans

Trojans are viruses that replicate themselves automatically and take advantage of security flaws in computer systems. Trojans do not affix to pre-existing programmes or change files, in contrast to many viruses. They usually go unreported until replication scales to the point that important system settings are altered.

Juice Jacking

It is a cyberattack which uses charging ports. The hacker implants malware in this that has the ability to stealthily copy private information from our phone. It is advised that we stay away from charging stations in public spaces like malls, restaurants, and train stations.

Cyberbullying

The act of harassing a person through electronic media is known as cyberbullying. In this case, the attacker uses intimidating messages to attempt to corner the victim.

Do You Know?

Instagram is the social media site where most young people report experiencing cyberbullying.

Cyber Stalking

Stalking is the recurrent practice of unwanted monitoring or harassment with the intent to manipulate or influence the victim. Online and offline stalking are both against the law.

Impersonation

The act of pretending to be someone you are not. They attempt to obtain our personal information by posing as someone else, and then hackers utilise this information against us. This is referred to as an impersonating act.

Flaming

It refers to sending hatred or rage messages electronically.

Outing

An act of revealing other people's secrets or images without their consent.

Ill-effects of cyberbullying

- Anxious thoughts.
- Depression.
- Being absent from class.
- Significant decreases in children' grades or test scores.
- Lack of involvement and enthusiasm in class activities.
- Experiencing loneliness.
- Lack of Confidence.

How to overcome Cyberbullying and Trolling

- Don't abandon the proof.
- Until instructed by your parents or teachers, wait to answer.
- Don't simply follow your friend's recommendations; instead, seek elders' counsel.
- Block the individual and report the message.
- Use social networking platforms only after reaching the recommended age.
- Never engage in online bullying.

Some Useful Links to Counter Cyberbullying

http://www.cyberbullying.org

The world's first website about cyberbullying.

http://www.bullyingawarenessweek.org

The official website of the annual Bullying Awareness Week.

IDENTITY THEFT

It is an act of obtaining someone's personal or financial information and pretending to be someone else.

We must be very careful about sharing our personal information on the internet like contact number, home address, passwords, OPTs, bank account details, our ID proof nos. like Adhaar no., Driving licence no, Voter ID card no, Pan no, etc.

Most common identity thefts are:

- Credit Card information
- Bank Account Details
- Personal Identification
- Password spoofing

PROTECTING YOUR PASSWORD

It is important that we must ensure that our passwords and secret pins are not stolen. To protect our passwords and pins in the best possible way, follow these steps:

- Have alpha-numeric passwords with special symbols.
- Have passwords which look random but are logical for you.
- Better the mix of the alpha-numeric values, better is the password.
- Never use your personal details like date of birth, your pet name, your vehicle no etc. as password.
- Use the two-step verification on for different sites.
- Never share your password with anyone and keep chaning it after certain intervals. Do not keep the same password for all your accounts on the internet.
- Use SUPR criterion i.e. a password should be Strong, Unique, Practical. and Recent.
- Keep checking the transaction history at regular intervals.
- You can report cybercrime at the national website www.cybercrime.gov.in

GAMES ADDICTION

Teenagers enjoy playing video games, and many of them eventually even develop a dependence on them. Teenagers become addicted to a number of games due to immersive technologies and appealing images, audio, and designs.

Games like Blue Whale, Pokemon Go, PubG, and others that have an immersive nature and an effect on kids' psyches are risky.

Let Me Answer

Do you play any of the above games? If yes, then why?

Ill-Effects of Excessing Gaming

- Interference with studies.
- Exposure to violent, content.
- Financial concerns; many apps have hidden charges or subscription fees, which get automatically charged/renewed, thus spending money in unnecessary things.
- Losing friends in real life due to anger, isolation, depression etc.

- Repetitive Strain Injury (RSI), poor posture, headaches, lack of physical activity, poor nutrition, or self-care.
- Poor quality of sleep.

Tips to avoid Bad Gaming Habits in Children

- Playing outdoor games with friends.
- Taking a family trip to historical or cultural sites.
- Putting yourself on regular Digital Detox.
- Enhancing emotional intelligence and self awareness.
- Engaging in charitable work or volunteering activities.

ONLINE CHALLENGES AND PRANKS

Some prevalent online challenges exposes student life in danger.

There are several insane challenges on the internet which are affecting children's mind and health.

Children who do marathon gaming are victims of anxiety, a flase sense of control, loneliness, and more violence.

Gaming over the internet should be avoided, as it may lead to different type of psychological disorders.

CYBER LAWS

The constitution of India contains many regulations that address cybercrimes. The main law governing cybercrime and electronic computers is the Information Technology Act, 2000, often known as ITA-2000 or the IT Act. This Act had a considerable revision in 2008. It created Section 66A, which makes sending "offensive texts" illegal. Additionally, Section 69 was created, giving authorities the power to "intercept or monitor any message received from any computer."

Kids' IQ

Ragini has been receiving some hate messages on the social media websites. Being her friend, what would you suggest to her?

Let's Recall

- One of the most important inventions and technologies of the 20th century is the internet.
- We must protect ourselves against all types of cyber malice because the internet is full of risks.
- Staying safe and secure online is considered cyber safety.
- The act of harassing a person through electronic media is known as cyberbullying.
- Outing is an act of revealing other people's secrets or images without their consent.
- The main law governing cybercrime and electronic computers is the Information Technology Act, 2000, often known as ITA-2000 or the IT Act.

Upskill Your Intelligence

A. Fill in the blanks

1. Staying safe and secure online is considered .....
2. We should update programme like ..... software.
3. ..... is the sending of emails to trick a recipient.
4. ..... are viruses that replicate themselves automatically.
5. ..... is a cyber attack which uses charging ports.

B. Answer in one word.

1. The act of harassing a person through electronic media.

.....

2. The recurrent practice of unwanted monitoring.

.....

3. The act of pretending to be someone you are not.

.....

4. Sending hatred or rage messages electronically.

.....

5. The main law governing cyber crime.

.....

C. Answer the following questions.

1. What is Cyber safety?

.....

.....

2. How can we do safe Internet browsing?

.....

.....

3. Explain any two types of cyber threats.

.....

.....

4. Write ill-effects of cyber bullying.

.....

.....

5. Write the tips to avoid Bad gaming habits in children.

.....

.....

Critical Thinking

Saksham was receiving online threats. Help him to overcome cyberbullying and trolling.

Team Work

Work in pairs. Create a poster to make everyone aware about cyber security.

6 MORE ON HTML

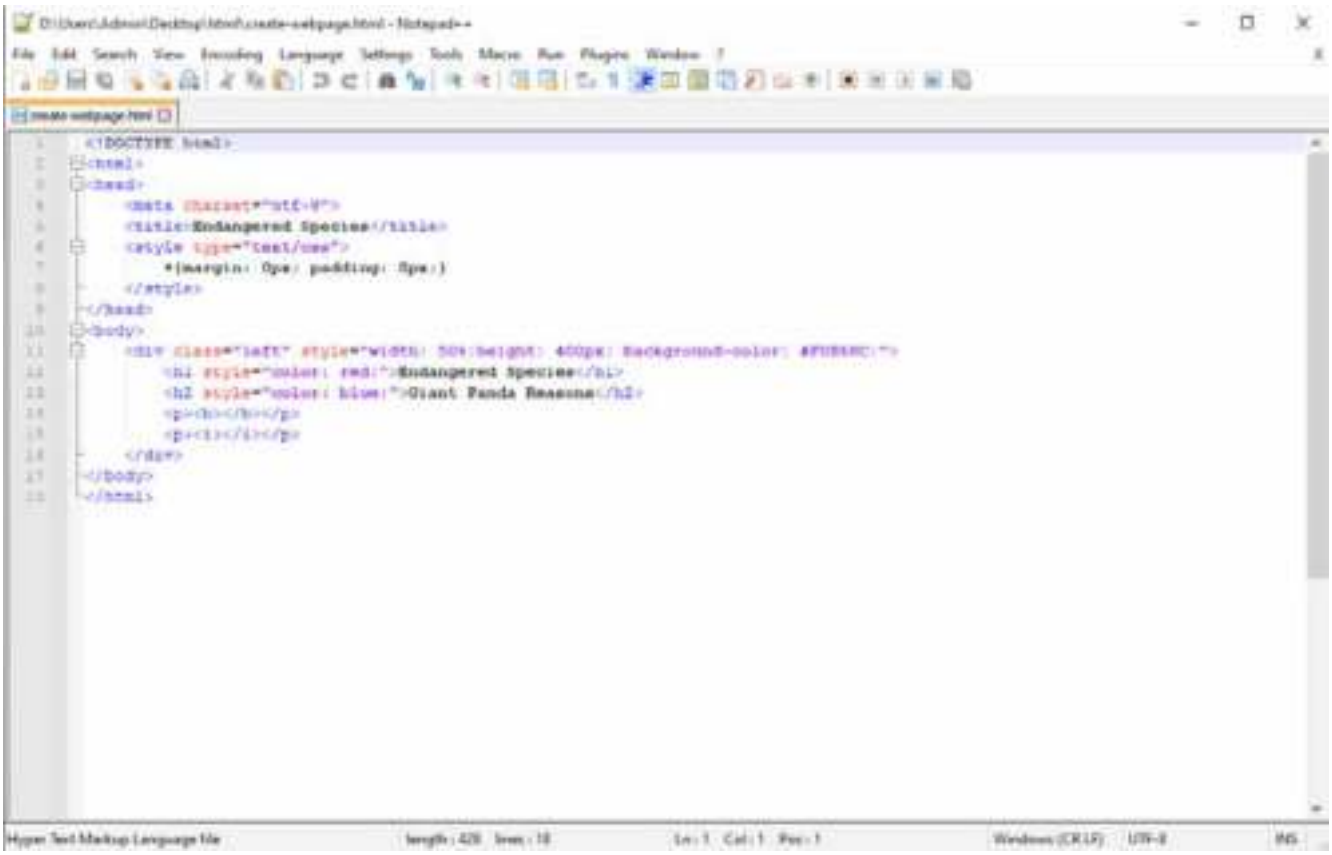
Learning Outcomes

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

- Construct table using table tag and its attributes.
- Make ordered and unordered lists in html.
- Use anchor tags to create links.

Warm-up

Create a web page using HTML to give description about 'Endangered Species'.



Teacher's Note: *Take students to the computer lab and guide them to make the above website using the instructions given.*

Hello Friends! Let's learn to create tables and lists in HTML.

Use the <table> tag to include a table on your website. As we are all aware, a table is divided into rows and columns. The <tr> tag in HTML can be used to construct a table's rows. Data values are stored in table cells. A table's cells are created using the <td> tag.

Do You Know?

The first version of HTML was written by Tim Berners- Lee in 1993.

Now let's quickly create a table with the <table> tag and fill it with rows and data with the <tr> and <td> tags.The code for creating the HTML table is shown in the figure.

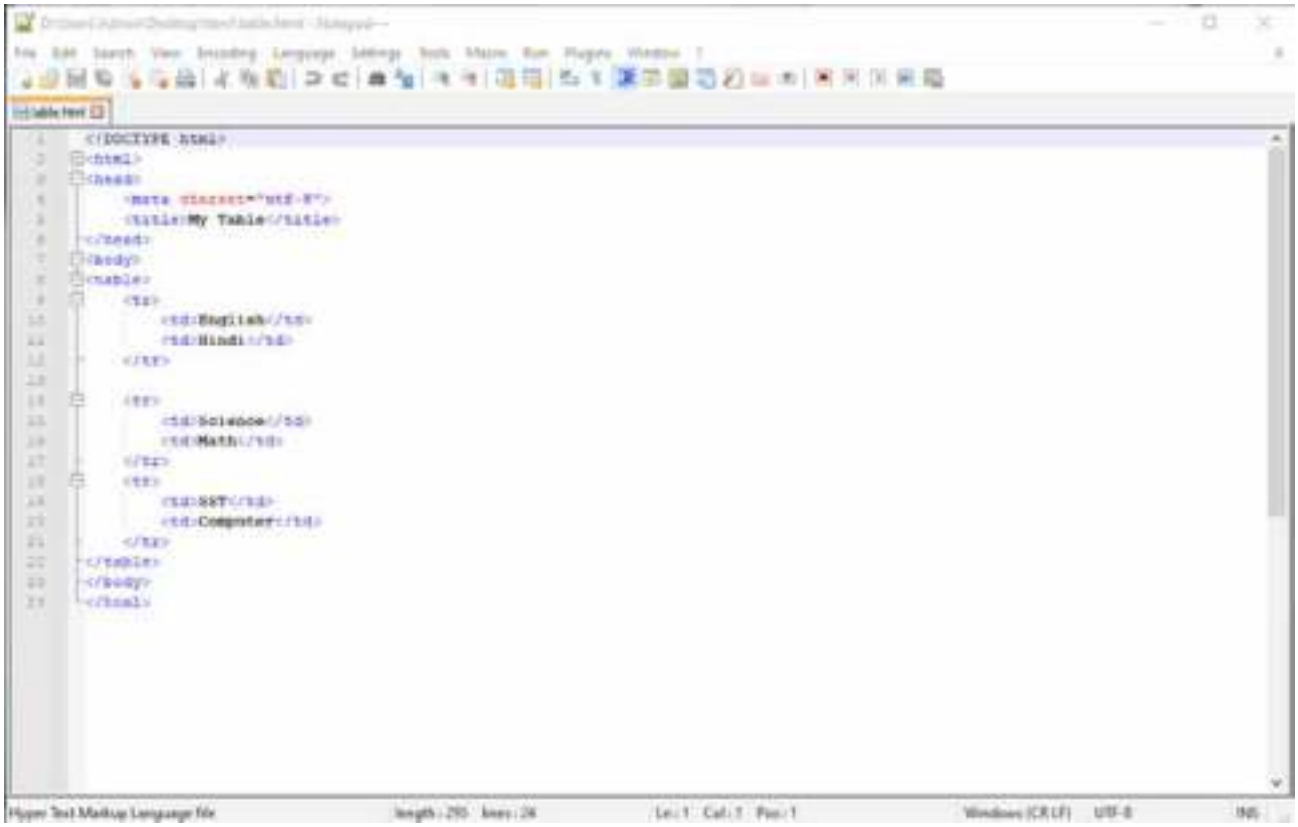


Figure 6.1: Creating Table in HTML

ATTRIBUTES AND THE TABLE TAG

A set of table attributes that can be utilised to improve a table's appearance is shown in the following table.

Attributes of Table Tag
Border
Height and Width attribute
Cellpadding
Colspan
Rowspan

Let Me Answer

What do you mean by attributes?

BORDER ATTRIBUTE

A border can be specified using the table tag's border attribute. A number is required for the border attribute. The border attribute is used in the following code.

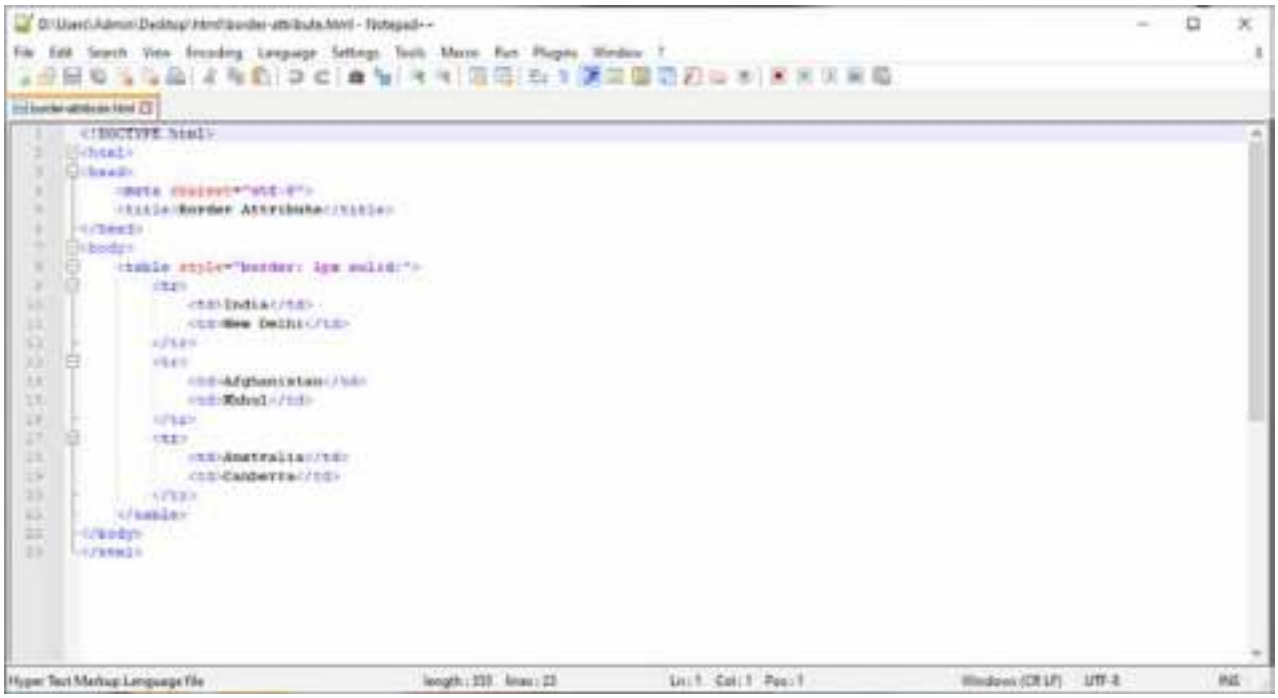
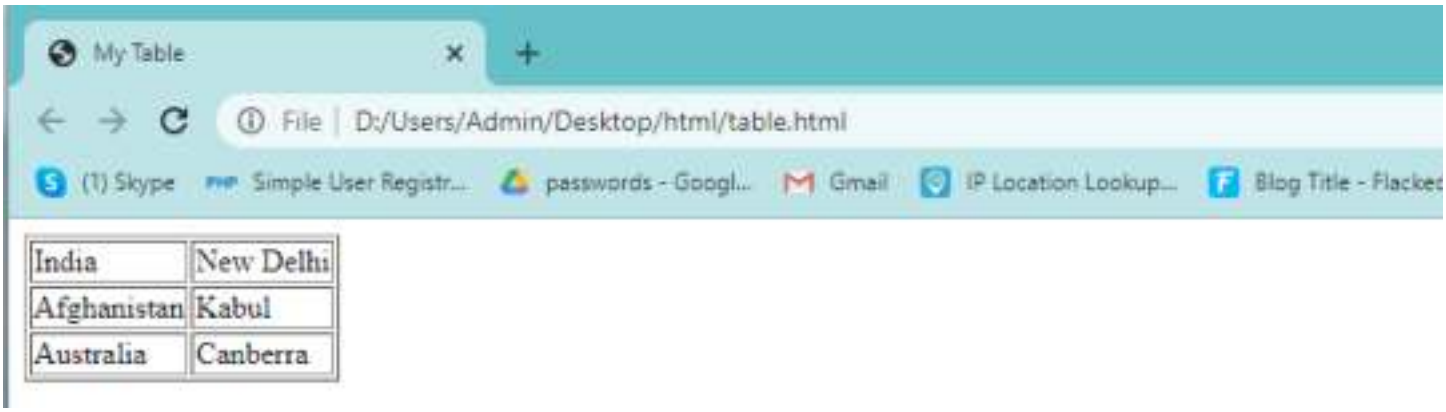


Figure 6.2: Border Attribute



Output

HEIGHT AND WIDTH ATTRIBUTE

Using the width and height attributes, we can define the width and height of an HTML table.The values of width and height attributes can be specified in pixels or percentages.

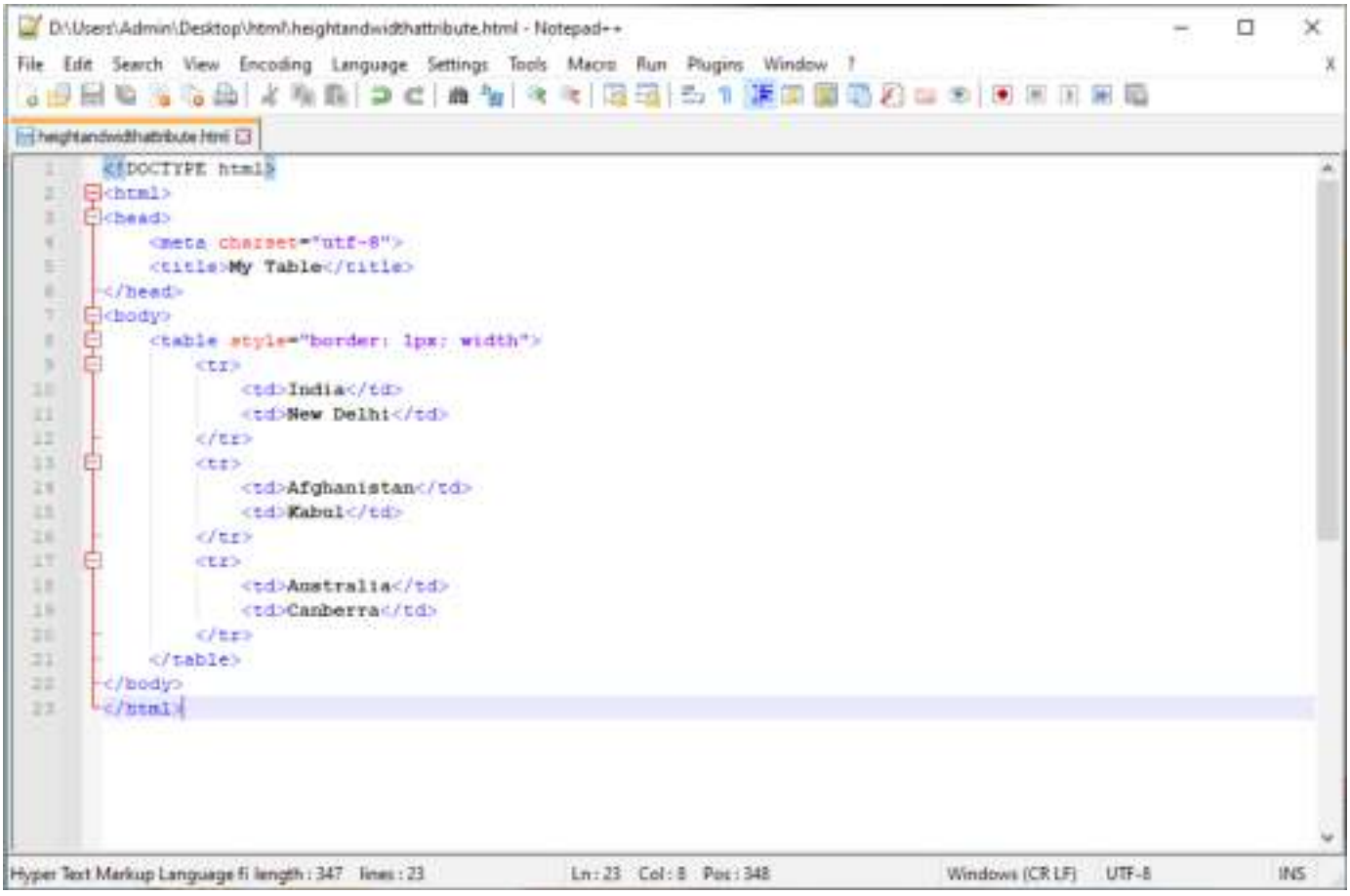
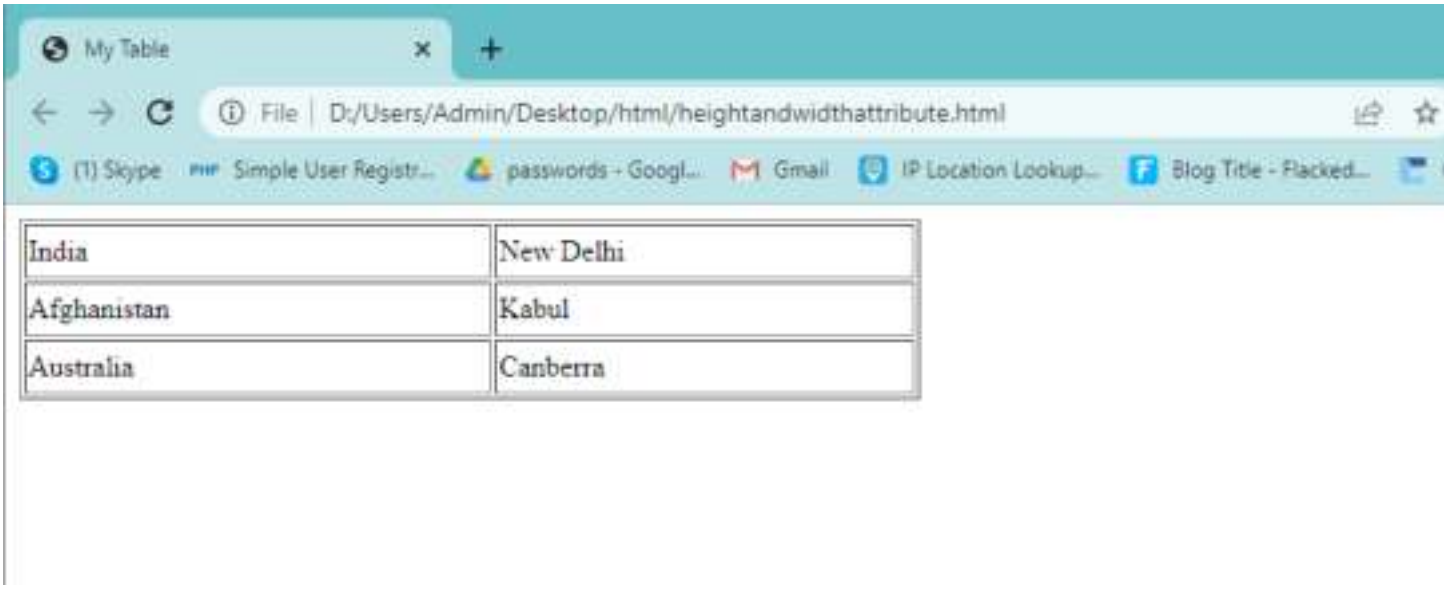


Figure 6.3: Height and Width Attribute



Output

CELLPADDING

Sometimes we wish to position the cell data such that it is farther from the cell borders for better clarity. This improves the readability of the table's content. Cellpadding is the appropriate attribute if you want to modify where cell data is placed in relation to the borders of the cells. Let's quickly review how cellpadding in HTML functions.

Let Me Answer

Do you like the text in the cell far from the border or near to it?

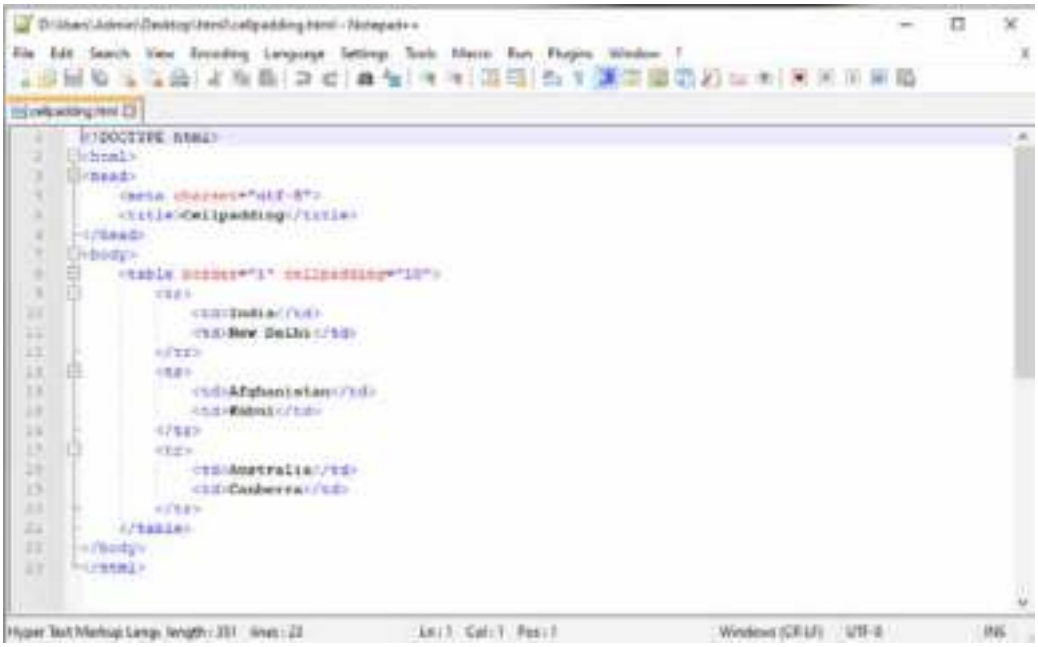


Figure 6.4: Cellpadding

Output

HMTL Code without Cellpadding

Output

COLSPAN

The colspan attribute can be used to make a cell span multiple columns. Depending on the value of the colspan attribute, it will divide a single cell or row into several columns.

Let's see the example that spans two columns:

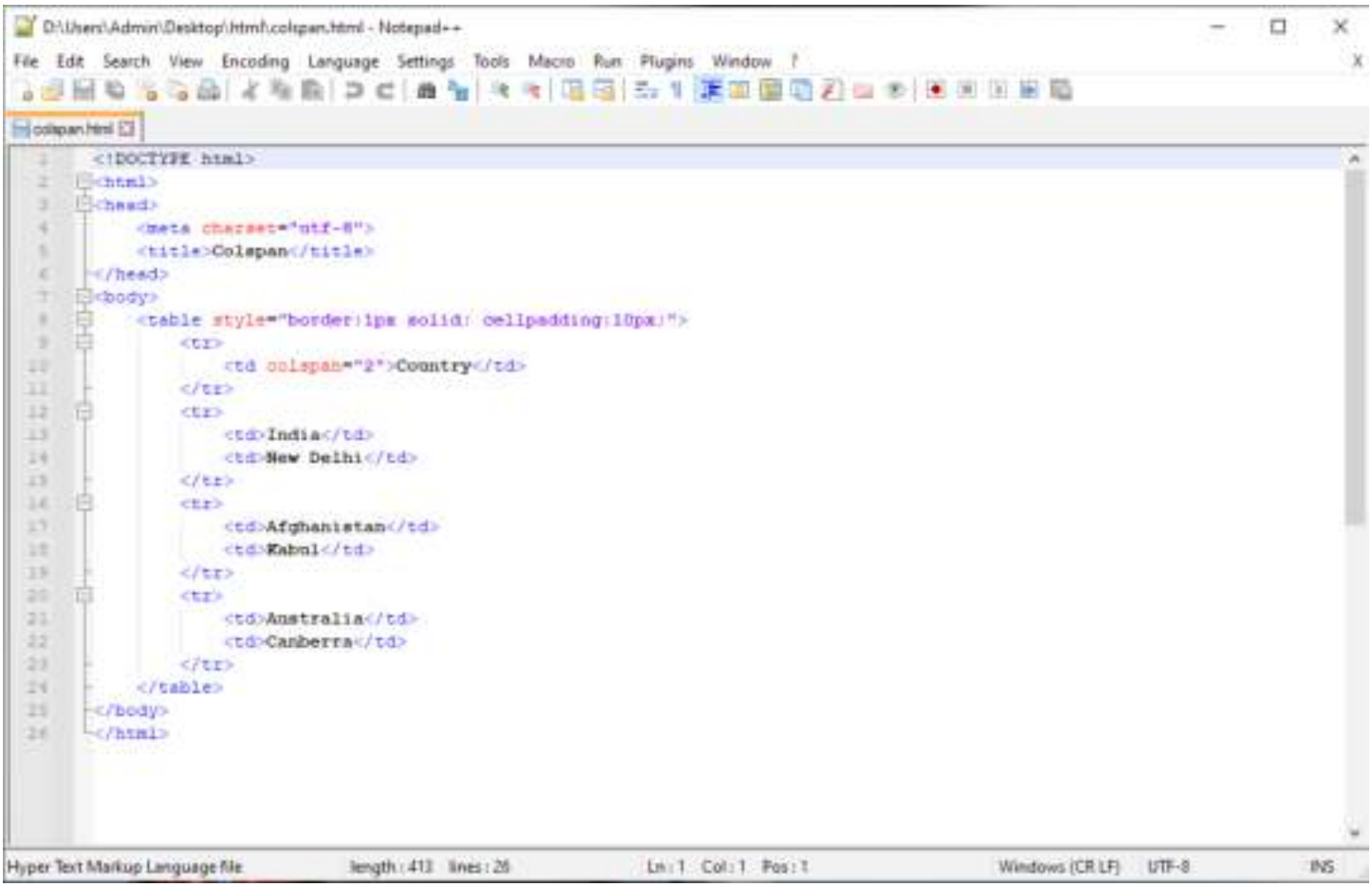
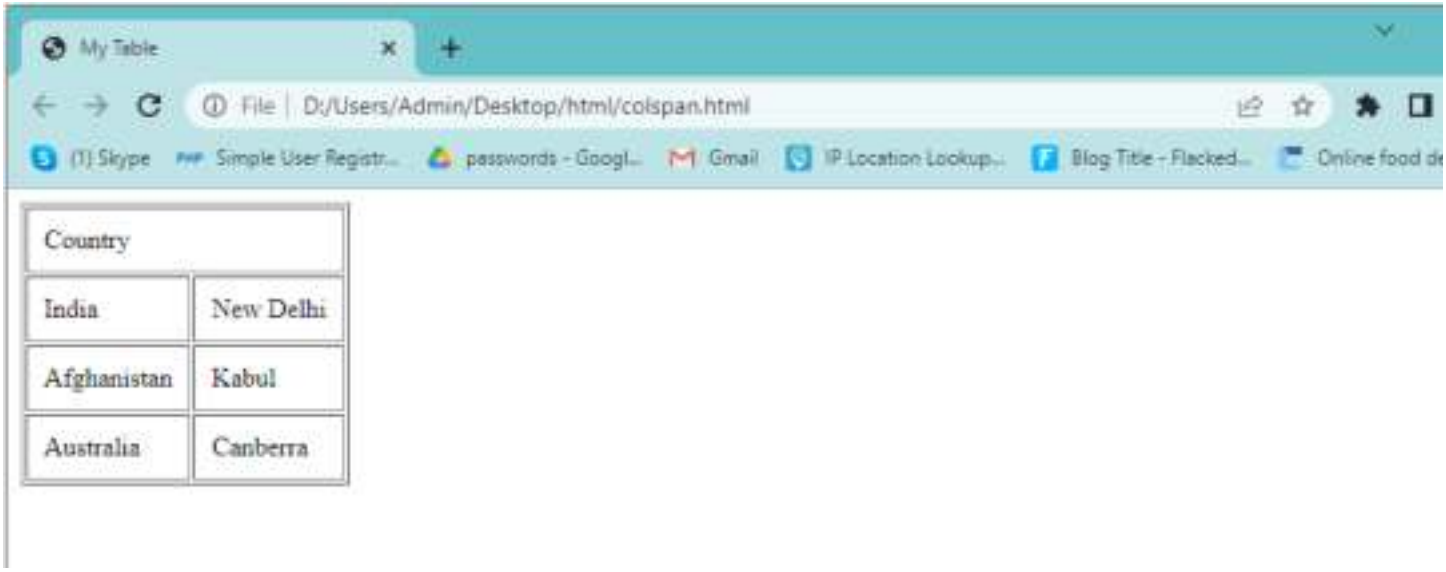


Figure 6.5: Colspan

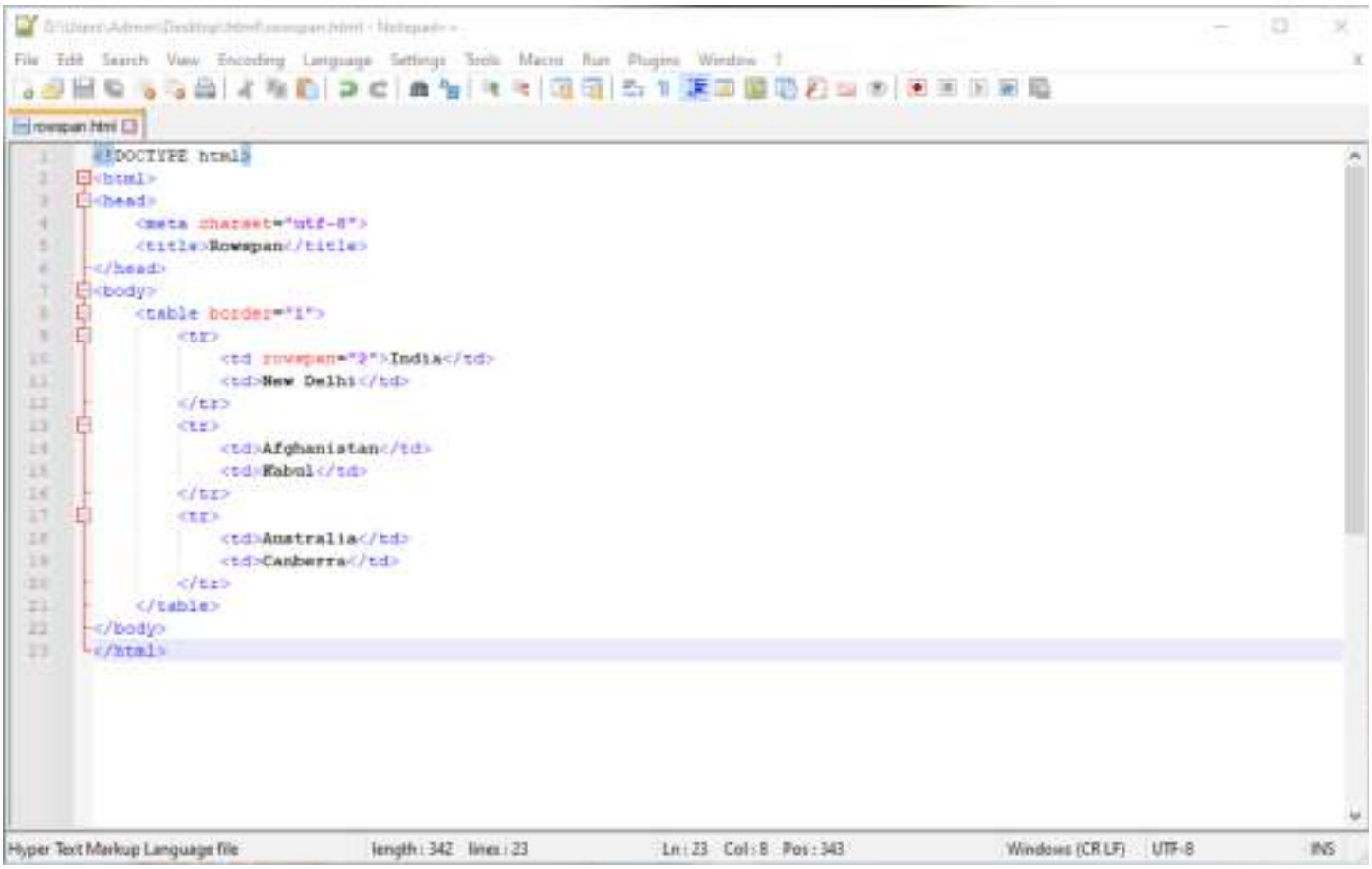


Output

ROWSPAN

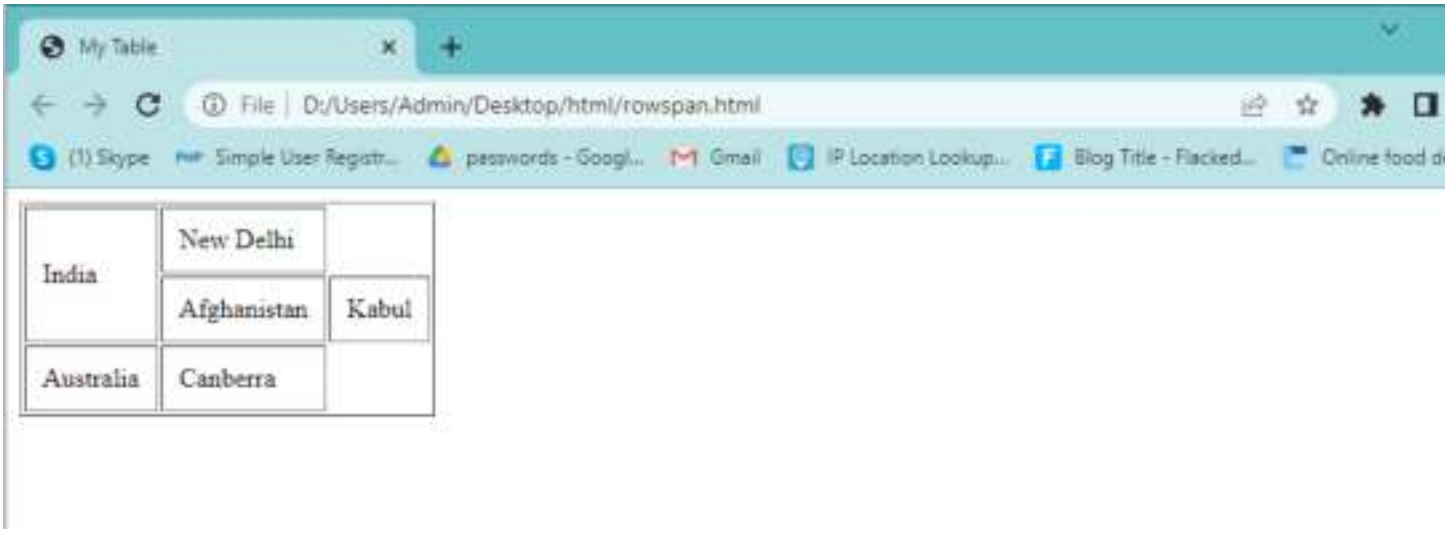
The rowspan attribute will create many rows within a cell. Rowspan values will determine the number of divided rows.

Let's see the example that spans two rows:



```
<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8">
    <title>Rowspan</title>
</head>
<body>
    <table border="1">
        <tr>
            <td rowspan="2">India</td>
            <td>New Delhi</td>
        </tr>
        <tr>
            <td>Afghanistan</td>
            <td>Kabul</td>
        </tr>
        <tr>
            <td>Australia</td>
            <td>Canberra</td>
        </tr>
    </table>
</body>
</html>
```

Figure 6.6: Rowspan



Output

TH TAG

For an HTML table, a cell header is defined using the <th> tag. The cell header is boldly displayed and typically centred.

Figure 6.7: TH Tag

CAPTION TAG

A table's caption can be specified using the caption tag. A table's caption aids in better understanding of the table and clarifies the data it contains for the user.

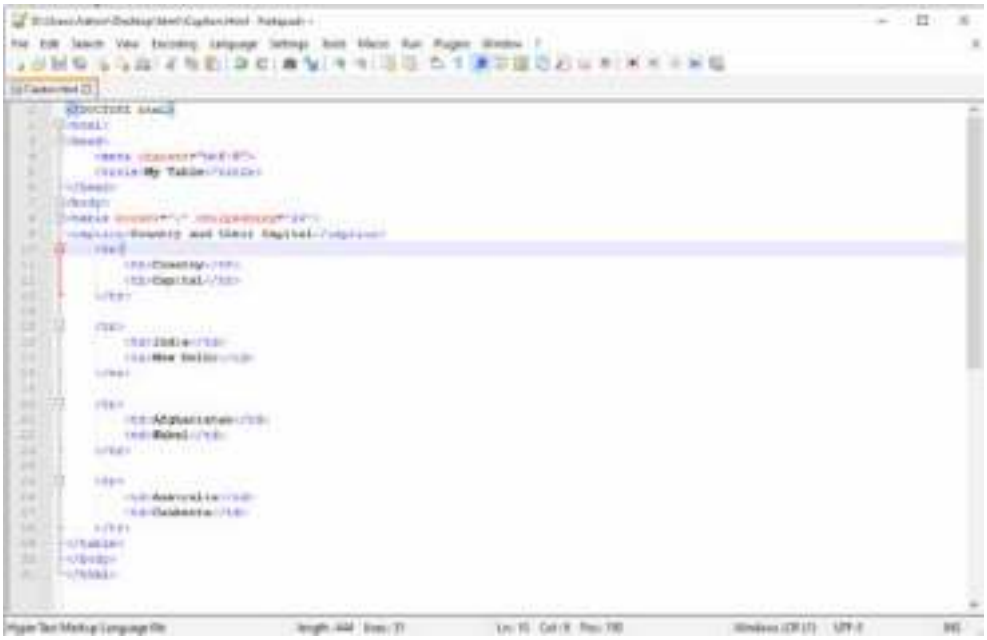


Figure 6.8: Caption

REMEMBER IT!

HTML is also called a tag-based language.

Output

LISTS IN HTML

The list may take various forms and sizes. Some are organised, while others aren't. Making lists might help us remember many topics that interest us. Using HTML tags, we can make several lists in various orders.

TYPES OF LISTS IN HTML

In HTML, there are three distinct list kinds. Unordered lists employ bullet points, while ordered lists—the second kind of list—mark each item with a number or letter. The description list, the third list, is used to help break down information into its pieces.

ORDERED LIST

All of the list items are by default designated with numbers in ordered HTML lists. It is also referred to as a numbered list. The <ol> tag denotes an ordered list, and the <li> tag denotes a list item.

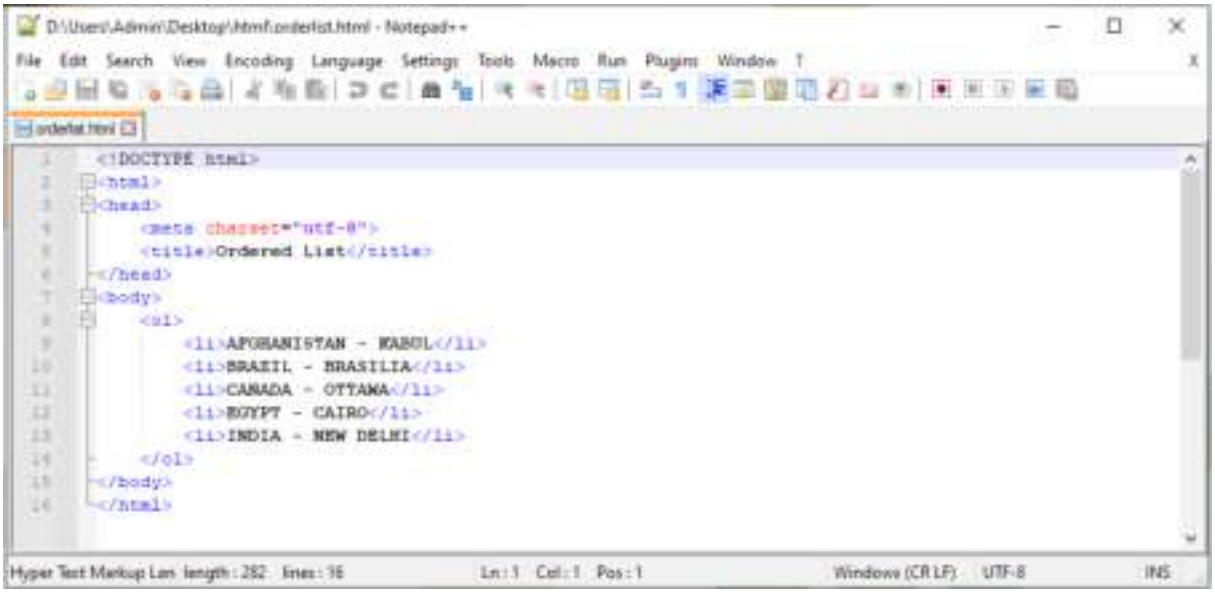


Figure 6.9: Ordered List

Output

TYPE ATTRIBUTE

You can order your list using numbers, upper-case letters and lowercase letters. Use the type attribute to add numbers and letters to the ordered list.

Syntax:

< ol type = “number/letter”>

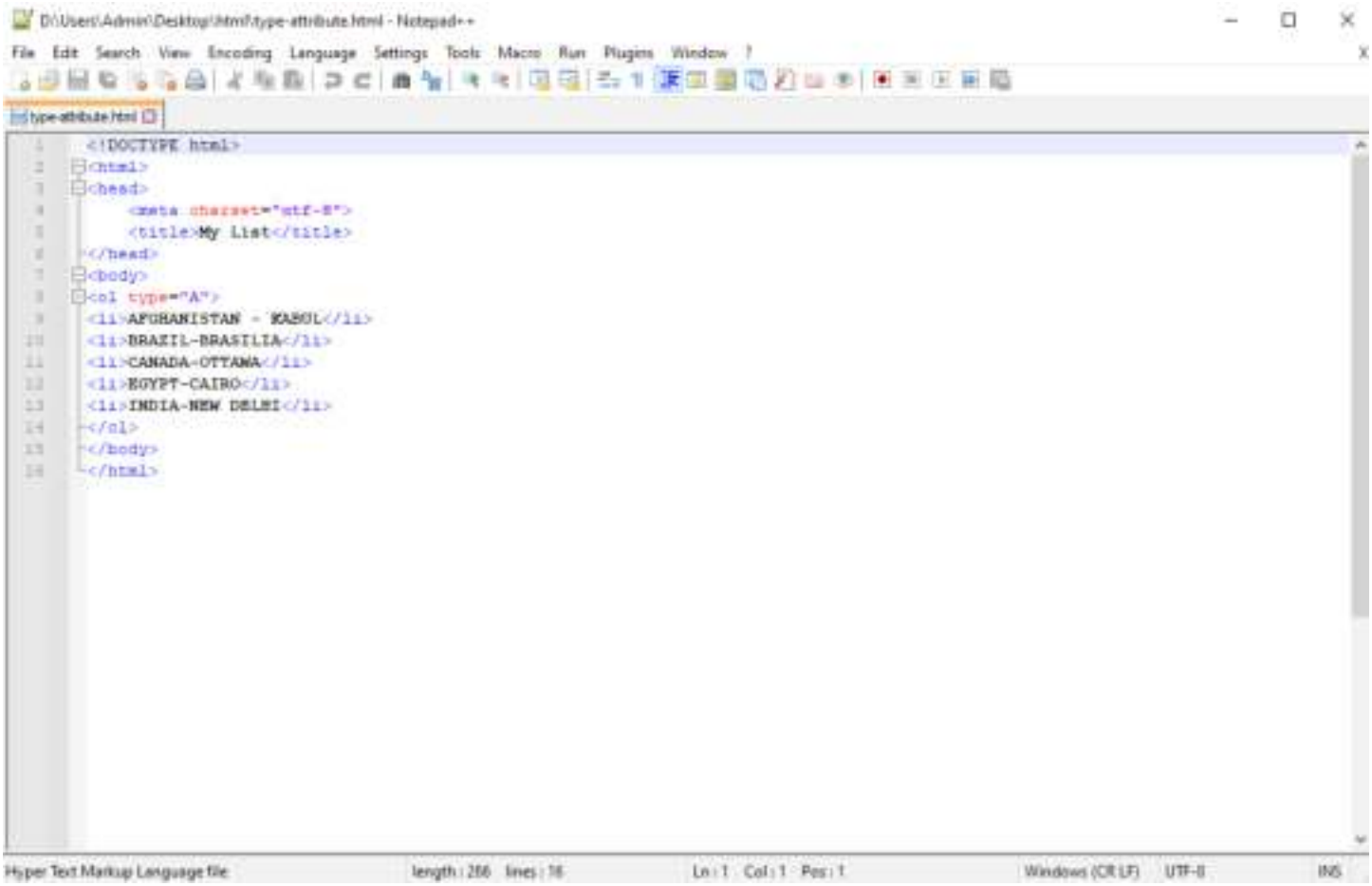


Figure 6.10: Type Attribute

Output

HTML UNORDERED LISTS

The list items in an unordered list do not follow any particular order or sequence. With the help of the HTML <ul> tag, this list was made. A bullet denotes each item in the list.

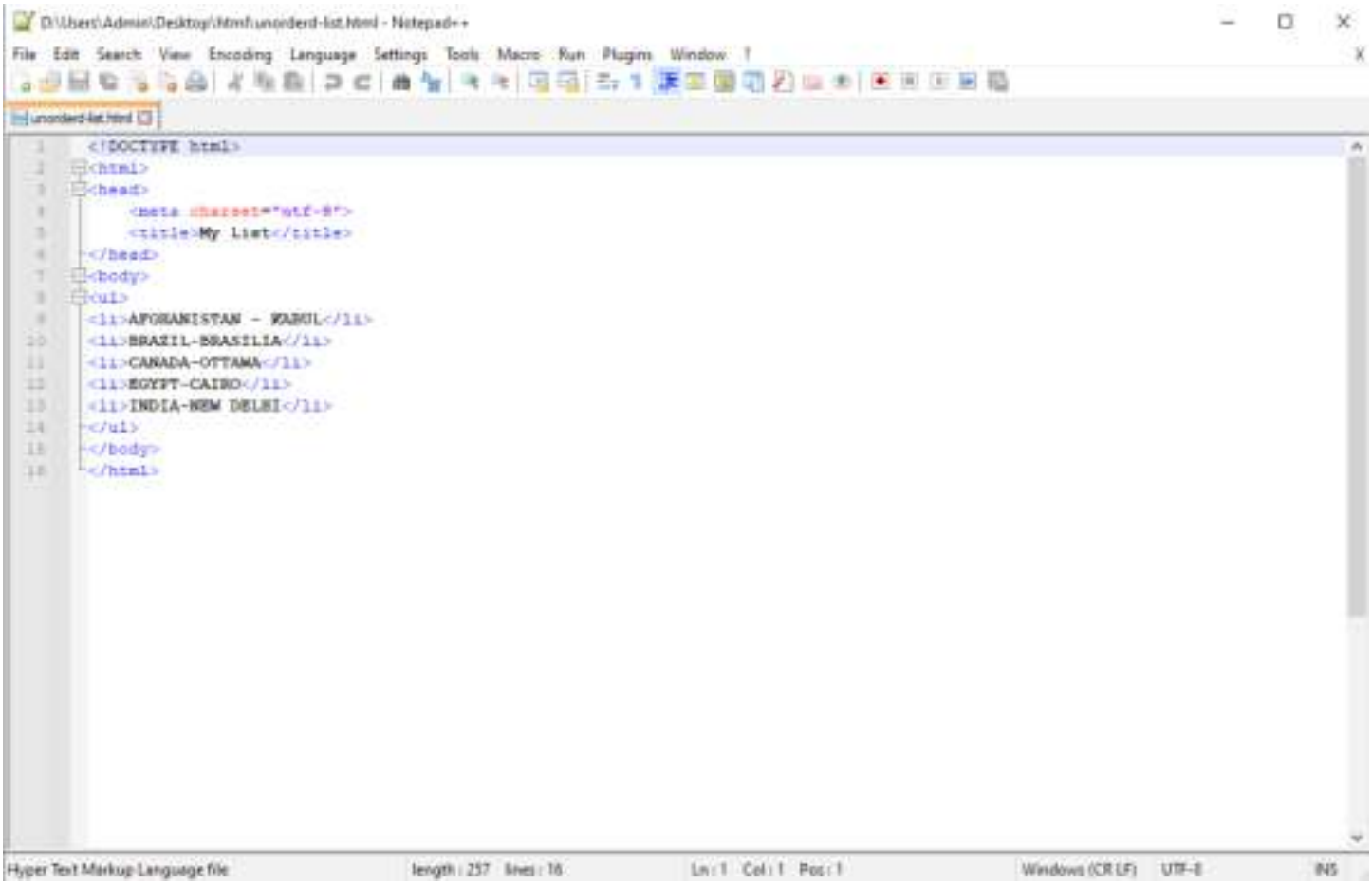
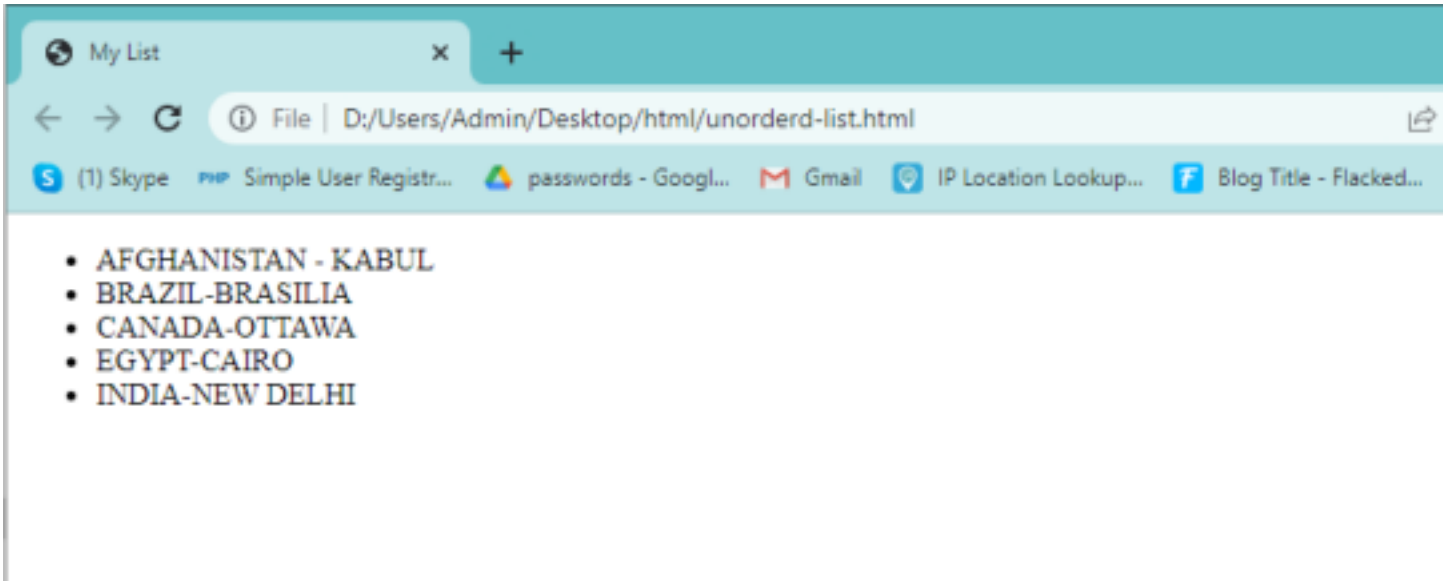


Figure 6.11: Unordered List



Output

TYPES IN UNORDERED LIST

You can add a sequence to your ordered list using the following types of bullets shown in the table.

Value	Description
disc	Sets the list item marker to a bullet (default)
circle	Sets the list item marker to a circle
square	Sets the list item marker to a square
none	The list items will not be marked

The following code makes use of the type attribute with the value square.

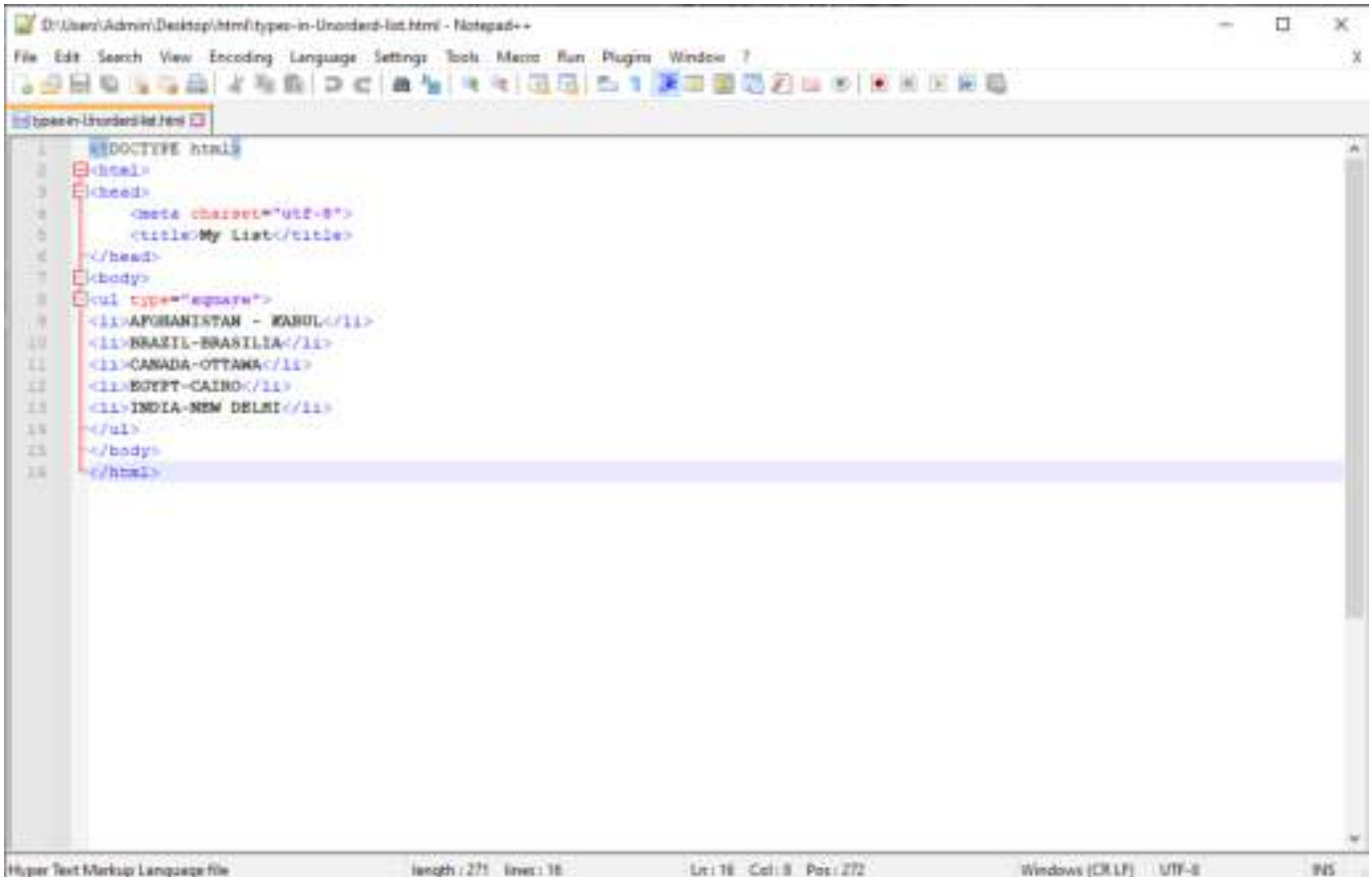


Figure 6.12: Types of Unordered List

Output

CREATING A DESCRIPTION LIST

The list given below is the description list.

Ball

- A round object that you hit, kick, throw etc.

Cricket

- a game that is played with a bat and ball on a large area of grass by two teams of eleven players

We create a description list with <dl> tag. Then use the <dt> tag to define the item name, and then the <dd> tag is used to describe it.

Figure 6.13: Description List

Output

HTML LINKS- HYPERLINKS

There are links on almost every web page. Links enable visitors to navigate between pages by clicking. Hyperlinks are the term for HTML links. You can access another page by clicking on a link.

The mouse arrow will change into a hand-like icon when you move the mouse pointer over a link.

The HTML <a> tag defines a hyperlink.

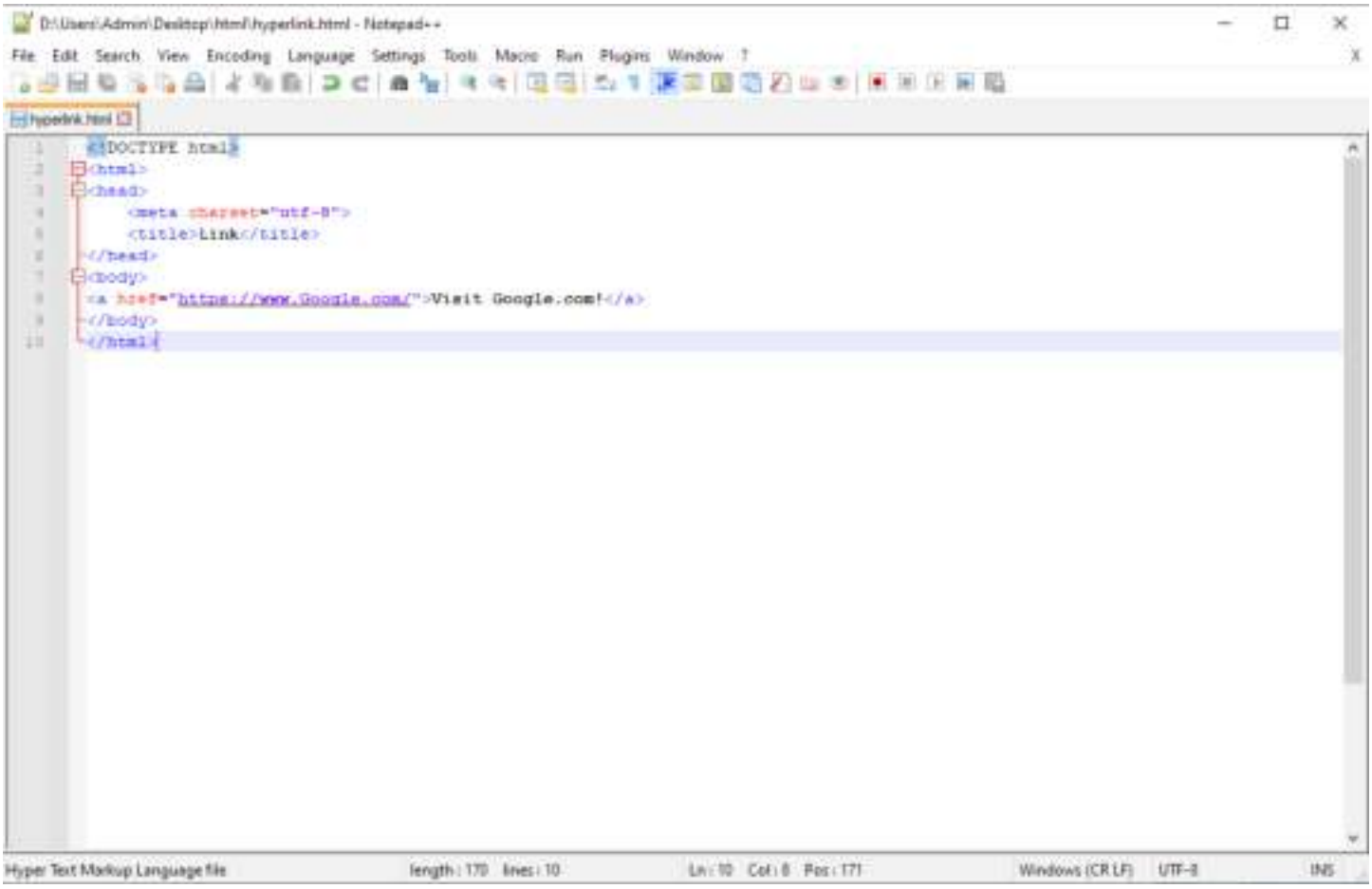


Figure 6.14: Creating Links in HTML

Output

FRAMES IN HTML

To understand the concept of the frame, we must first understand the concept of container and component.

A chocolate box is a container, and the small piece of chocolates are its components. We can edit or change the container's components (chocolates), and we can also change them according to our needs and requirements.

In HTML we can add a webpage with another webpage. The HTML iframe tag is used to display a web page within a web page. You can define an inline frame with HTML tag <iframe>. The <iframe> tag defines a rectangular region with the document in which the browser can display a separtate document, including scrollbars and borders.

Let's now learn to use <iframe> tag with and example.

We need at least two webpages to make <iframe> work. Write the following code in the code windows for the first page.

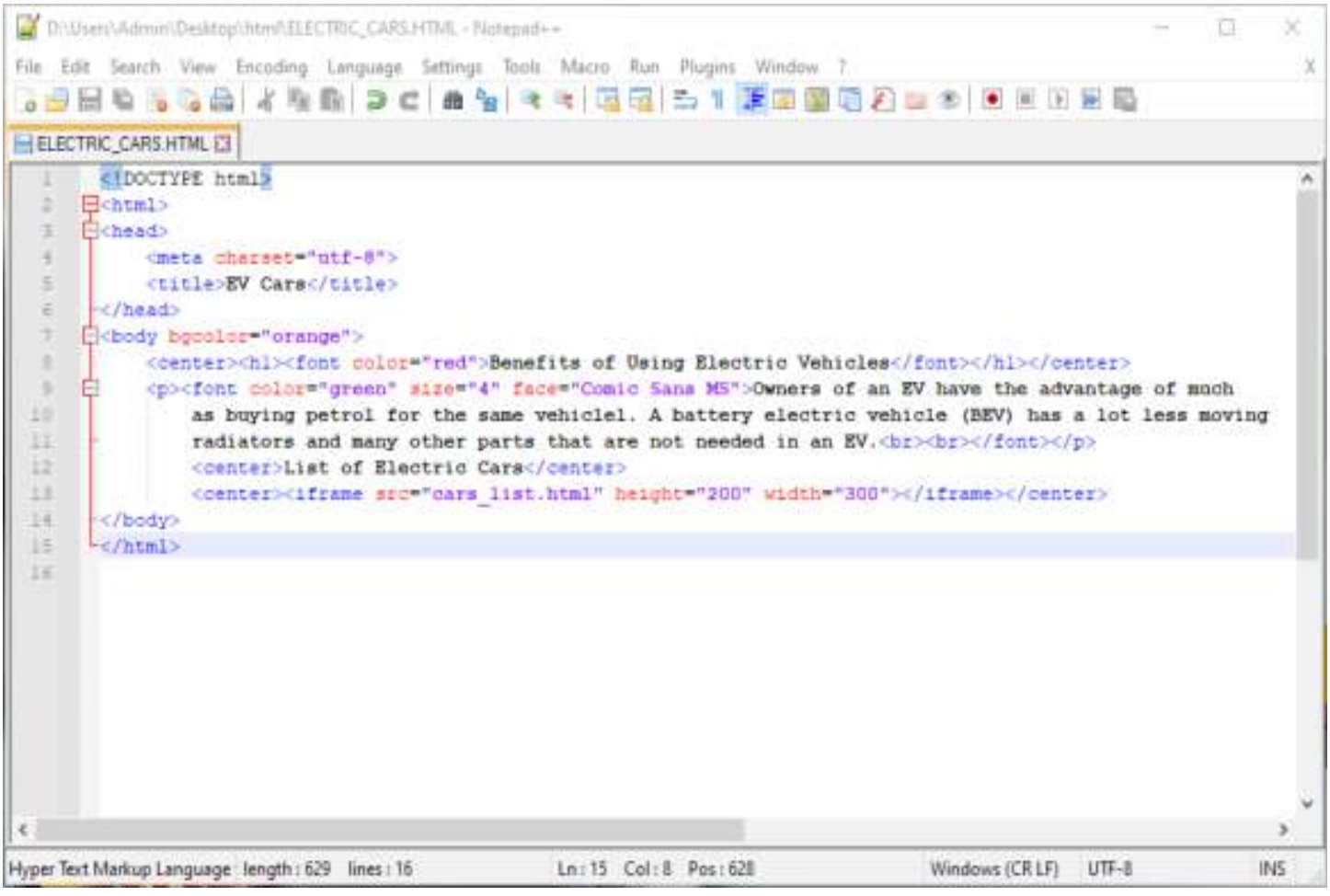


Figure 6.15: electric_cars.html

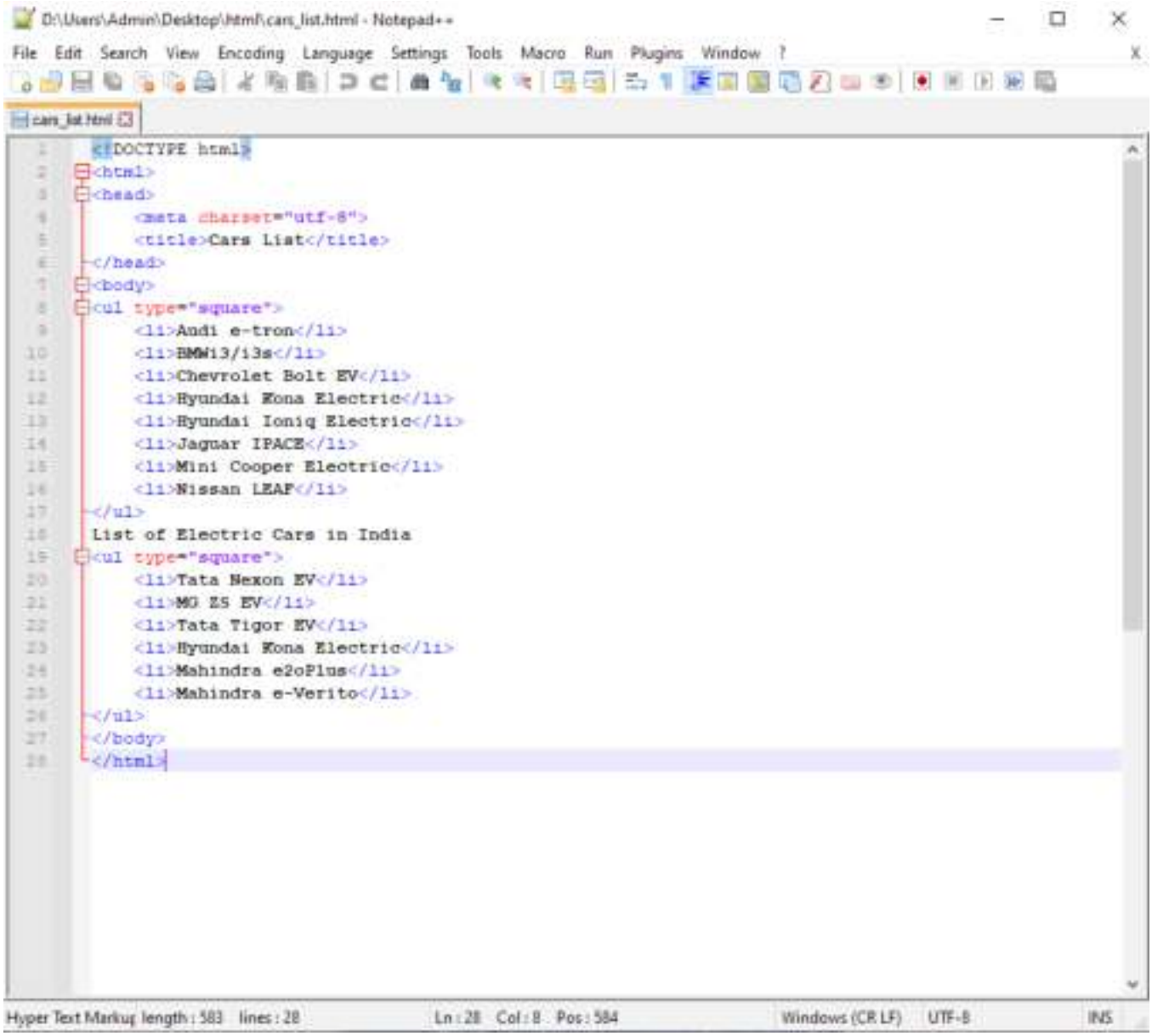


Figure 6.16: cars_list.html

Now let's add Page2 that has a list of different Electric vehicles i page1 using <iframe> tag.

Let's walk through the code.

Line 12: In the electric_cars.html page, observe that the <iframe> tag is used with three attributes.

The SRC attribute holds the target page (cars_list html) that will be displayed as a component (inline page) in the electric_cars.html.

The height and width attributes are used to specify the height and width of the inline frame.

Kids' IQ

Find out can we use roman numbers in ordered lists?

Let's Recall

- The <tr> tag in HTML can be used to construct a table's rows.
- The values of width and height attributes can be specified in pixels or percentages.
- The cell header is boldly displayed and typically centred.
- All of the list items are by default designated with numbers in ordered HTML lists.
- The HTML <a> tag defines a hyperlink.

A. Fill in the blanks.

1. ..... tag in HTML can be used to construct a table's rows.
2. Data values are stored in ..... cells.
3. A ..... is required for the border attribute.
4. The values of width and height can be specified in .....
5. ..... attribute can be used to make a cell span multiple columns.
6. The cell header is boldly displayed and typically .....

B. Answer in one word.

1. A tag used to create a description list.

   .....

2. Attribute used to set the border of a table.

   .....

3. A tag used to make rows in a table.

   .....

4. The attribute which divides a cell into multiple rows.

   .....

5. It allows users to click their way from page to page.

.....

C. Answer the following questions.

1. Write the attributes of the table tag.

.....

.....

2. What is a border attribute?

.....

.....

3. Explain cell padding.

.....

.....

4. What is the use of <th> tag?

.....

.....

5. State the difference between <tr> tag and <td> tag.

.....

.....

Critical Thinking

Guess who I am?

1. I divide a single cell or row into several columns.
2. It aids in better understanding of the table and classifies the data it contains for the users.

Team Work

Pair up with your partner. Create a webpage that displays your examination schedule. Save the file with the name my_datesheet.html

7

CASCADING STYLE SHEETS

Learning Outcomes

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

- Comprehend the significance of CSS in web development.
- Learn the advantages of CSS.
- Know to style tables, lists, text and add images using CSS.

Warm-up

Write 5 lines on HTML.

Teacher's Note: *Elucidate students that in this chapter we will learn to style the HTML Tags using CSS.*

Hello Friends! In this chapter we will learn about CSS.

The HTML Tags are styled using the style sheet language CSS. In basic terms, it's a language designed to improve the functionality of HTML tags. When you wish to add uniform styling to all of a website's web pages, CSS comes in handy. All you need to do to complete this work is specify the font style and background colour in a CSS style sheet using CSS code, then call the style sheet in each webpage.

Let Me Answer

What is the full form of CSS?

ADVANTAGES OF USING CSS CODE

Pages load faster

As CSS stylesheet code needs to be written once, it means the actual code a browser has to work on is less. The page will download more quickly if there is less code.

CSS saves time

With CSS, a tag's style only needs to be defined once; thereafter, if you use the tag at anyplace on the webpage, styling will be done automatically.

Easy Maintenance

You only need to make modifications to the Stylesheet if you wish to alter the styling of a specific tab.

Superior Styles to HTML

CSS was built for styles. HTML was not. While browsers usually display HTML element in a certain way, you can override this with CSS.

Before we learn how to write CSS code, let's take a look at the code.

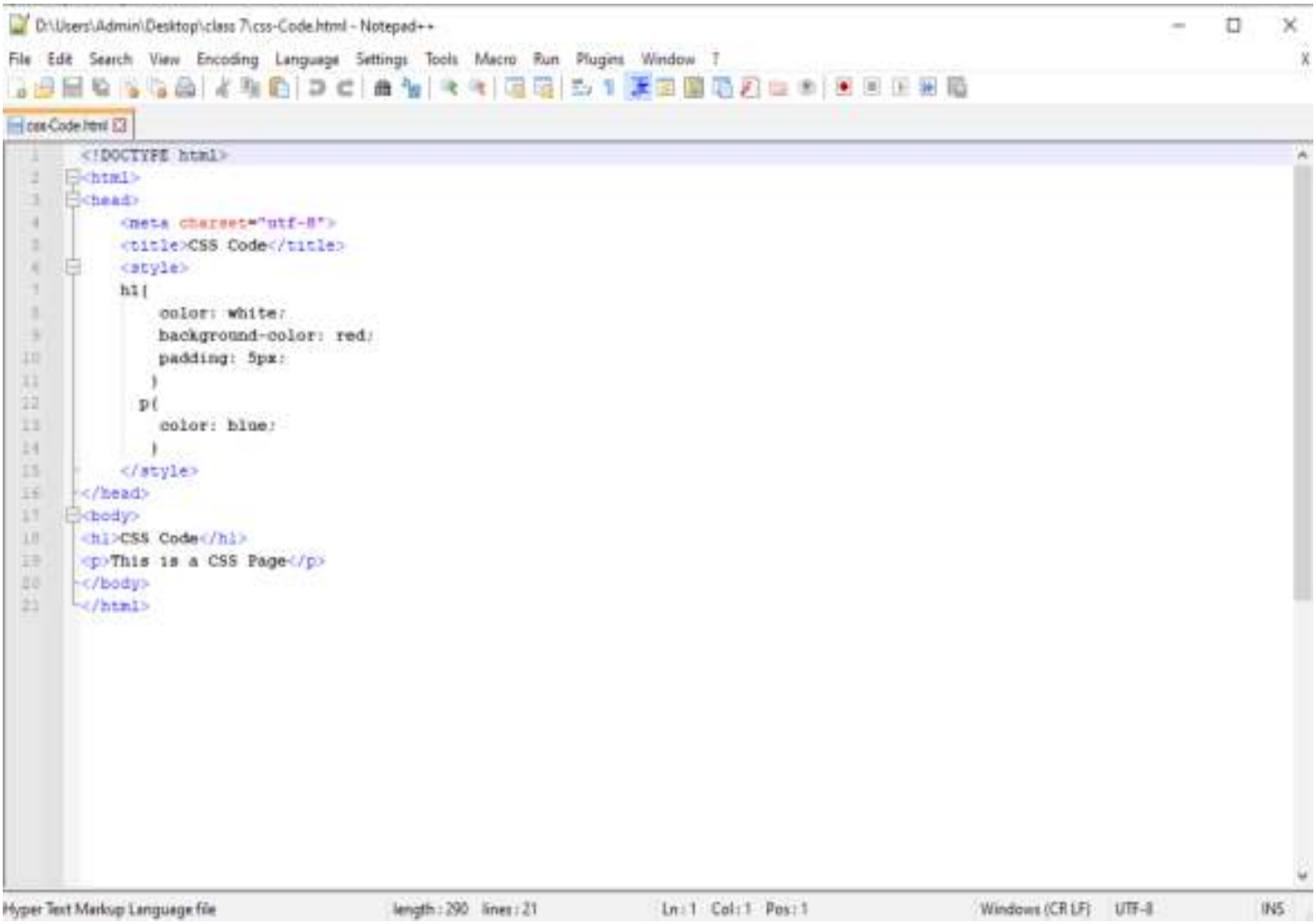


Figure 7.1: CSS Code

Some part of the above given code may look similar to you. In the above code, we can see some lines of HTML code. The code enclosed within the curly braces {} is the CSS code.

CSS SYNTAX

Like all other languages, CSS has a syntax of its own. In the past, we discovered that syntax is a set of guidelines used when writing code in a certain language.

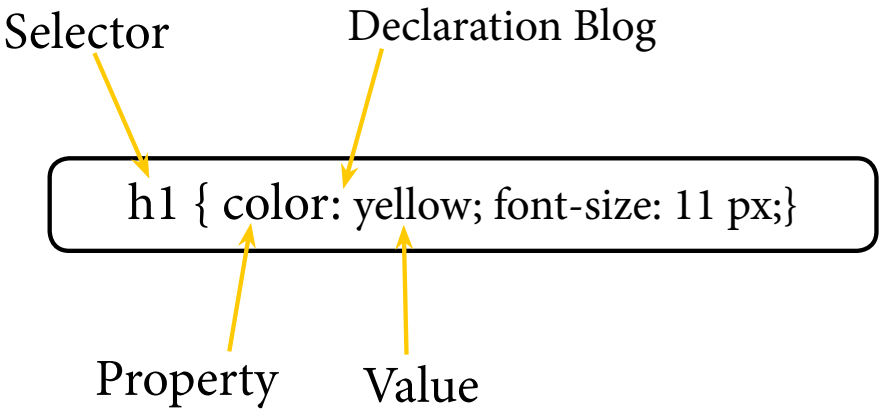


Figure 7.2: CSS Code Syntax

Let Me Answer

Can you think of one more advantage of using CSS?

CSS ELEMENTS

A CSS code consists of three important tags - the selector, property, and the values.

Selector: A selector is any HTML element that needs to be styled. Tags like <p>,<h1>,<title>,etc can be formatted using CSS.

Property: The properties of CSS are like HTML attributes. The output of an HTML element can be modified by attributes. For example, colour, size, border, height, weight are all examples of attributes.

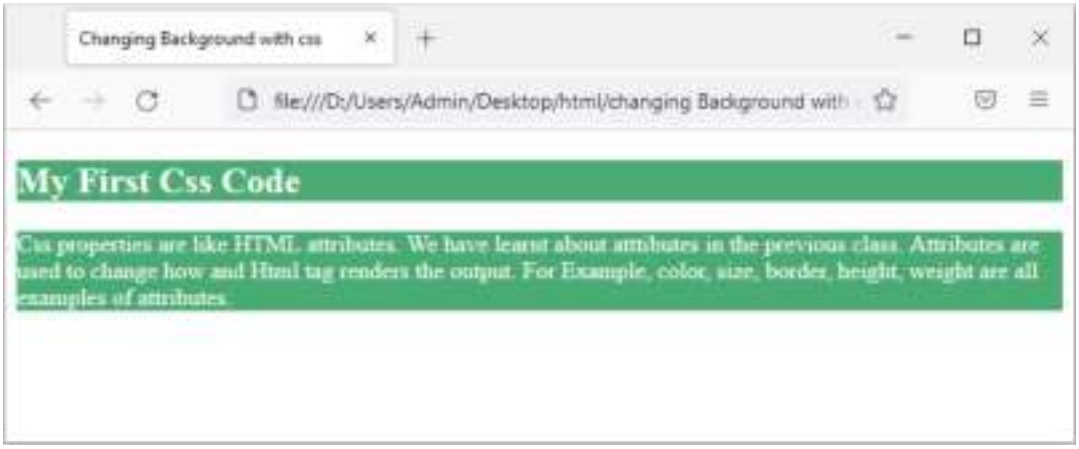
Value: Values are assigned to CSS properties.

Let's create our first CSS code. To alter a paragraph's background colour, use the following code.

Do You Know?

The first version of CSS was invented in 1996.

Figure 7.3: Changing Background with CSS



Output

CSS FONT

The text's font style can be altered with this property. In CSS, changing the font style can be done in one of three different ways.

- By only entering a colour's name as a value.
- Additionally, you can utilise predetermined hexadecimal colour values.
- Use the RGB colour code.

REMEMBER IT!

Håkon Wium Lie proposed the idea of CSS.

The following code displays three different ways of changing font-style.

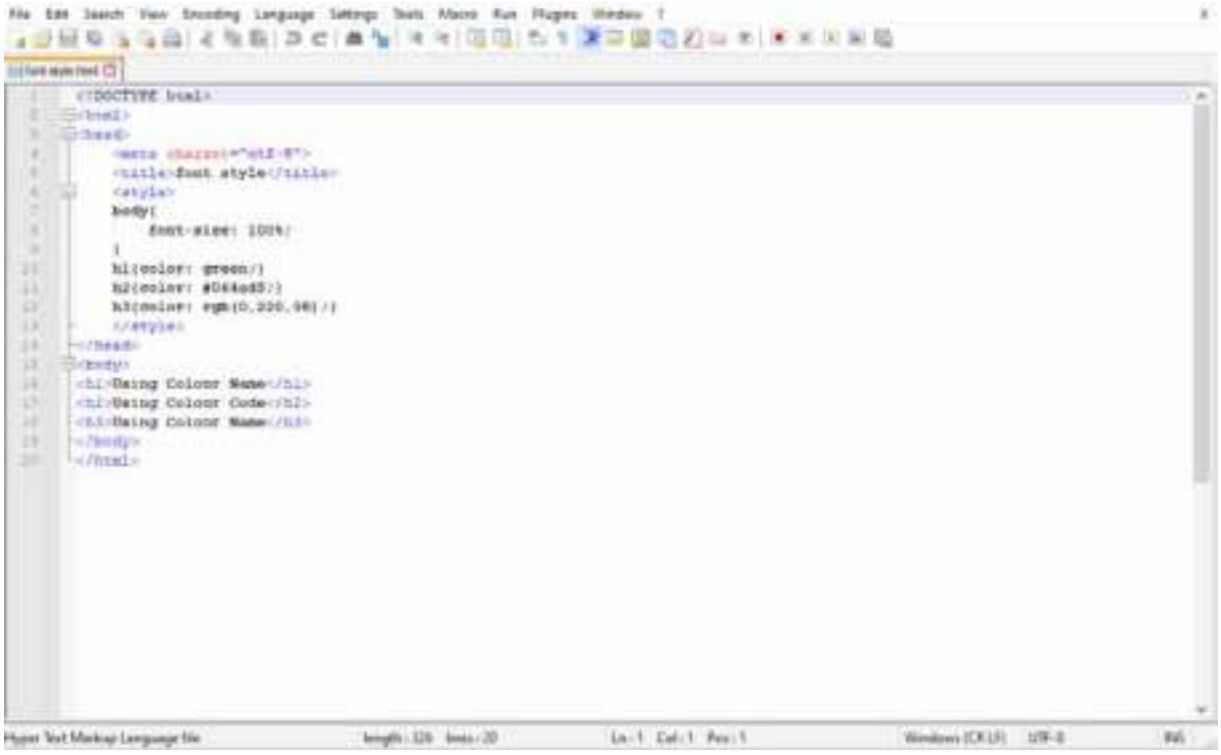


Figure 7.4: Changing Font with CSS

Output

CSS FONT-FACE

The text's font face can be changed with this property. Since this property might hold multiple font names, the values are separated by commas.

There are two types of font-family names in CSS which are defined below:

Family Name: It is the name of a family of fonts that includes "Arial," "Times," etc.

Generic - family: It is the name of the generic family that includes five categories, which are "serif", "sans-serif", "cursive", "fantasy", and "monospace". It should be placed at last in the list of the font family names.

The following code shows how the font-family property can be used to define font-style for text.

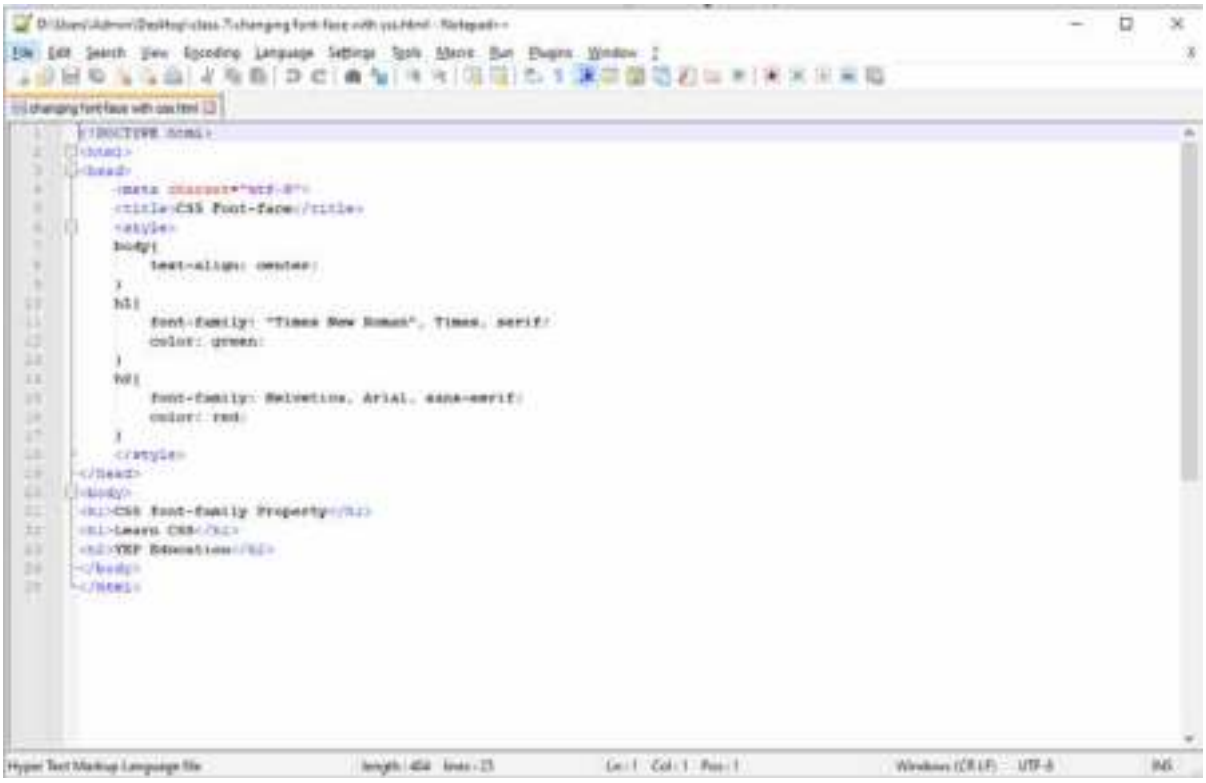


Figure 7.5: Changing Font-face with CSS

Output

CSS BACKGROUND IMAGE

A website's style is greatly influenced by the images on it. Images improve a webpage's aesthetic appeal and aid our viewers in better comprehending the concept.

Sometimes, we want to upload a lovely image to the website. We can use the background-image attribute to add a background picture to the webpage.

Syntax:

Background-image: url("image name");

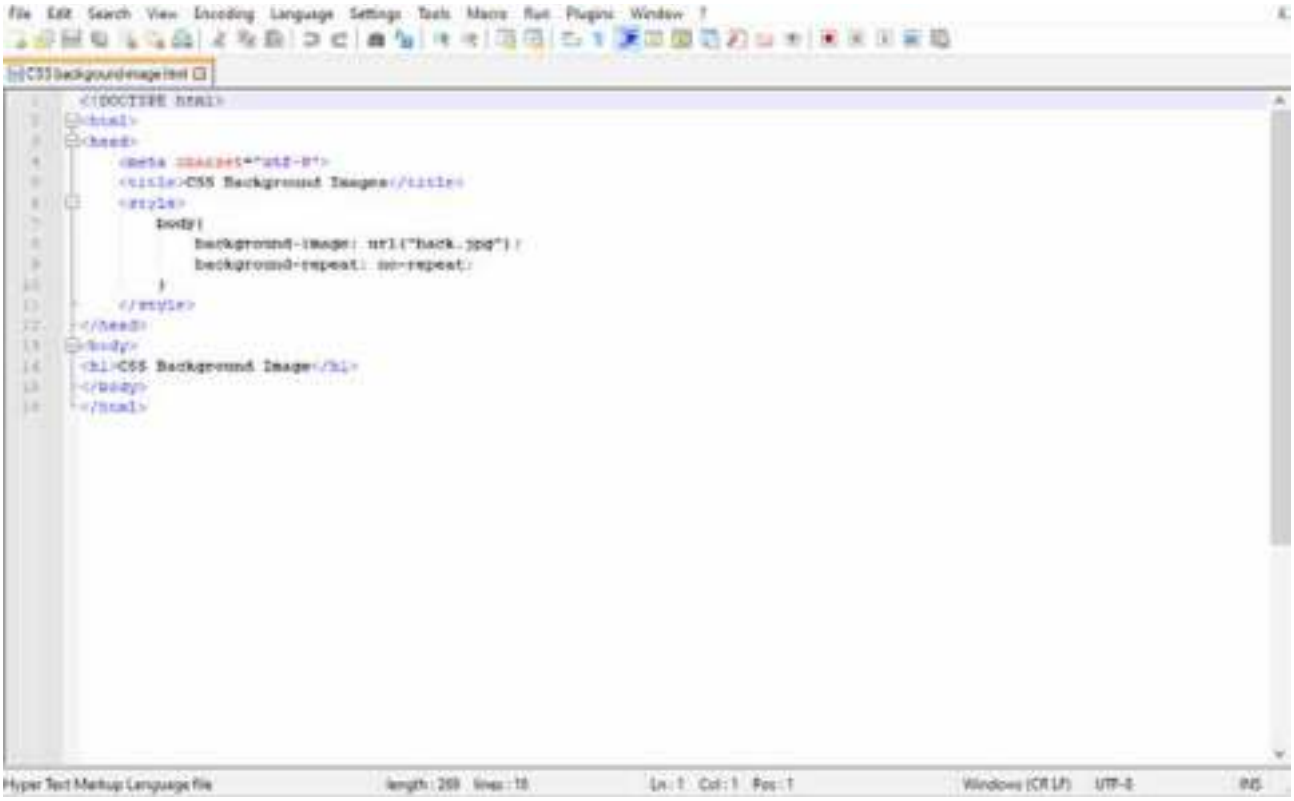


Figure 7.6: Changing Background with CSS

Output

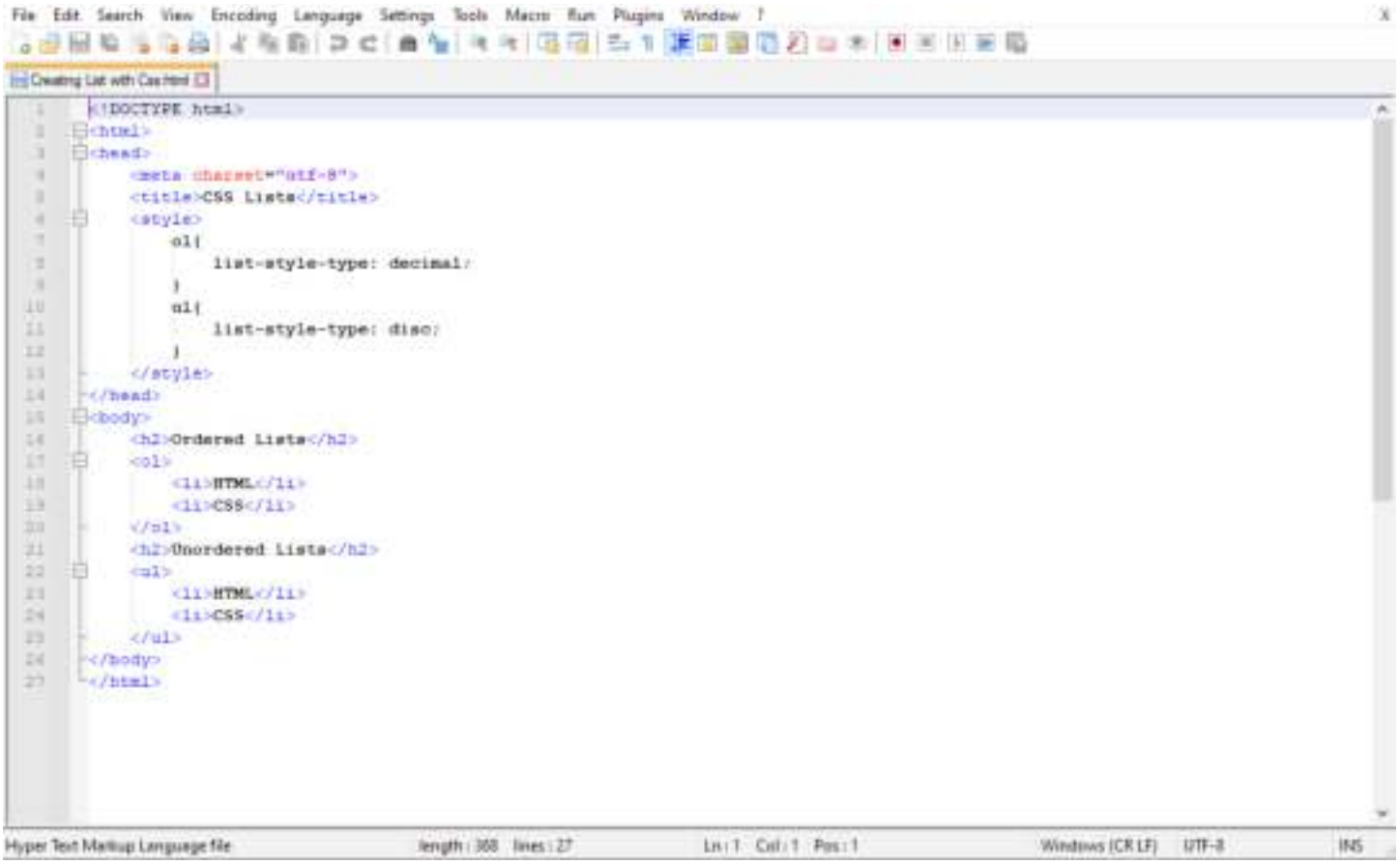
CSS LISTS

A list is a wonderful tool that helps in organising data. The list can be ordered or unordered. An ordered list displays the list items arranged in an ordered manner, and the unordered list displays the list items in an unordered form.

Figure 7.7: CSS Lists

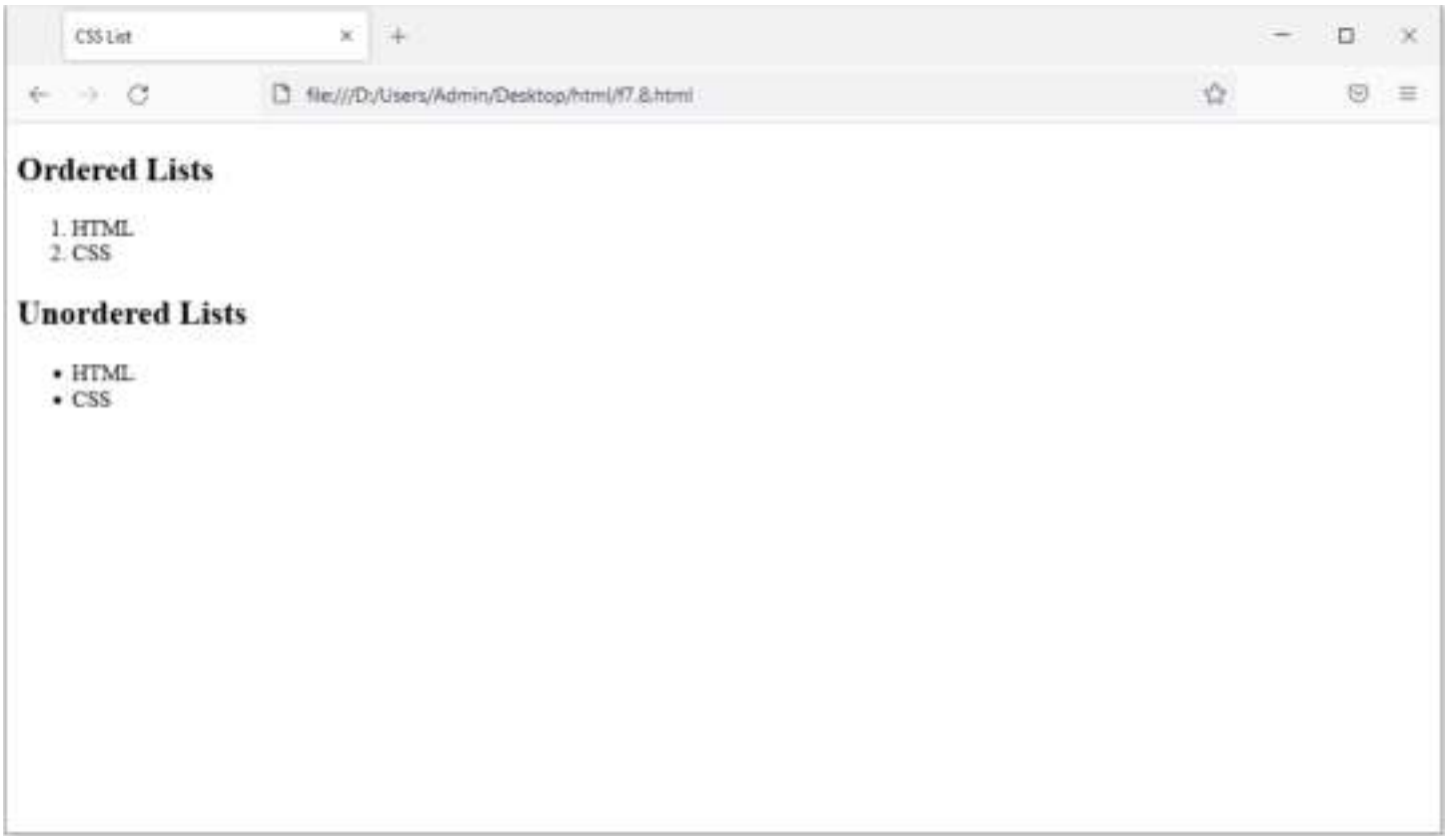
The CSS properties to style the lists are given below:

- **List-style-type:** This property is responsible for controlling the appearance and shape of the bullet.
- **List-style-image:** It sets an image for the bullet instead of the number or a bullet point.
- **List-style-position:** It specifies the position on the bullet.
- **List-style:** It is the shorthand property of all the above properties.



```
<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8">
    <title>CSS Lists</title>
    <style>
        ol{
            list-style-type: decimal;
        }
        ul{
            list-style-type: disc;
        }
    </style>
</head>
<body>
    <h2>Ordered Lists</h2>
    <ol>
        <li>HTML</li>
        <li>CSS</li>
    </ol>
    <h2>Unordered Lists</h2>
    <ul>
        <li>HTML</li>
        <li>CSS</li>
    </ul>
</body>
</html>
```

Figure 7.8: Creating List with CSS



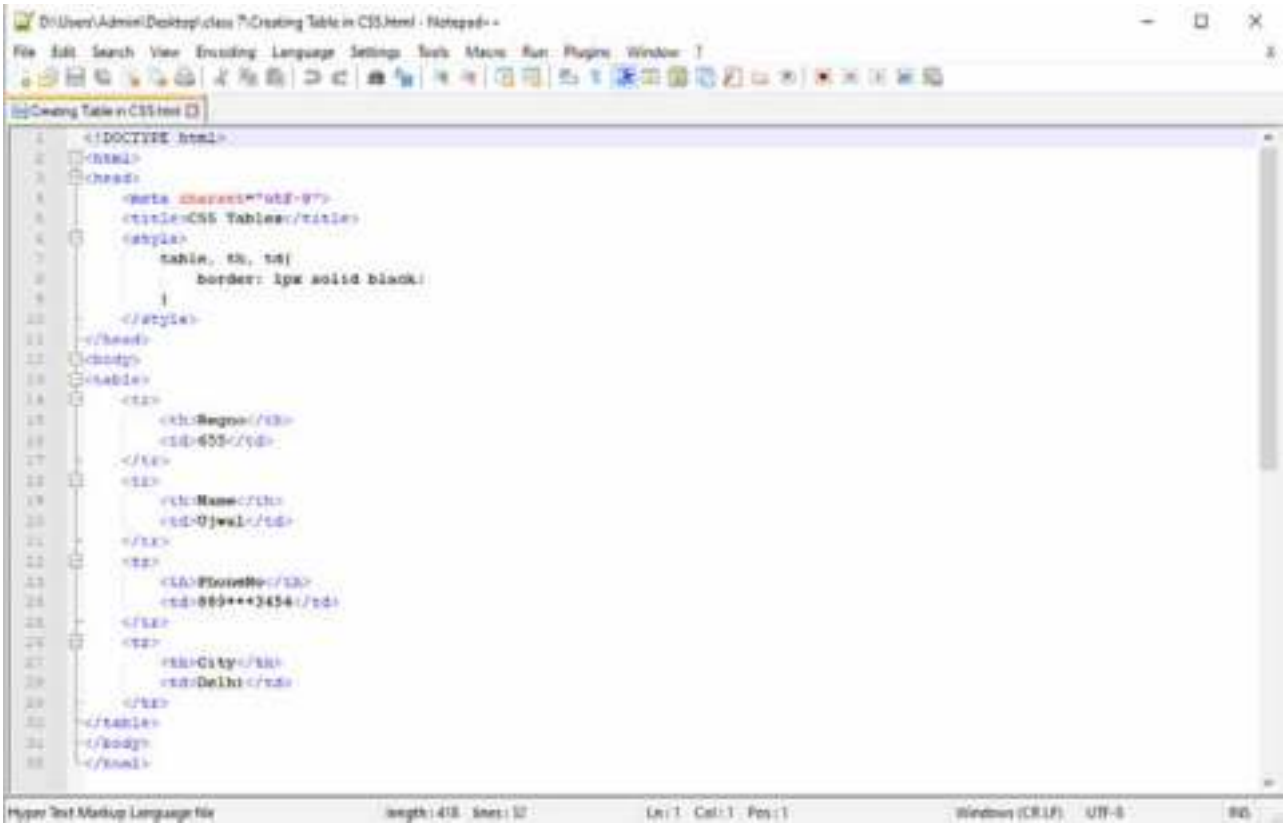
Output

CSS TABLES

Tables assist us in organising the information to be presented. Let's examine how CSS can be used to enhance a table's visual appeal.

Some CSS properties are widely used in designing table using CSS.

- Border
- Text-align
- Background-colour
- Width
- Border-collapse
- Colour
- Padding
- Height

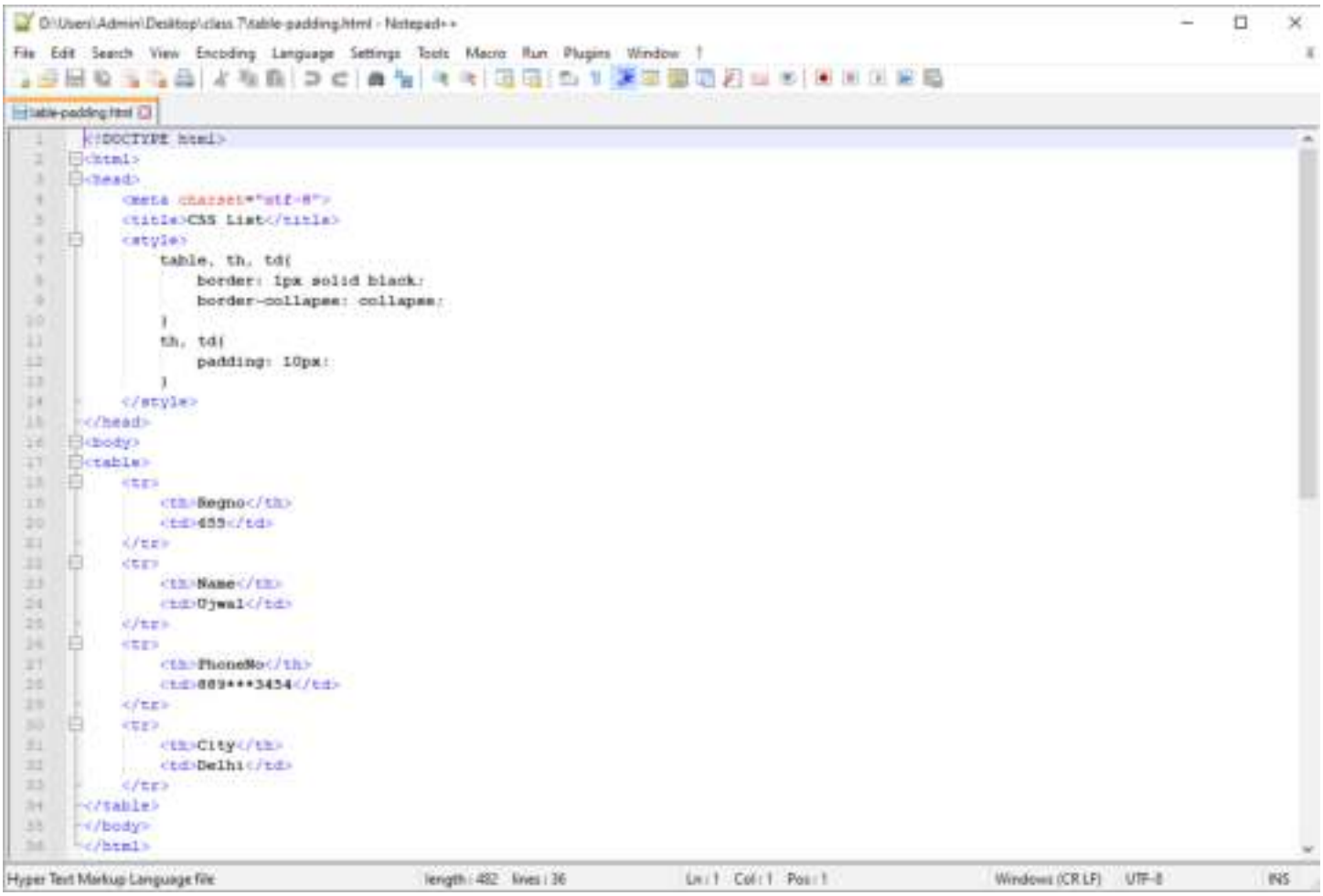


```
<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8">
    <title>CSS Tables</title>
    <style>
        table, th, td{
            border: 1px solid black;
        }
    </style>
</head>
<body>
<table>
    <tr>
        <th>Regno</th>
        <td>655</td>
    </tr>
    <tr>
        <th>Name</th>
        <td>Ojwal</td>
    </tr>
    <tr>
        <th>PhoneNo</th>
        <td>869****3454</td>
    </tr>
    <tr>
        <th>City</th>
        <td>Delhi</td>
    </tr>
</table>
</body>
</html>
```

Figure 7.9: Creating Table in CSS

Output

CSS TABLE PADDING



```
<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8">
    <title>CSS List</title>
    <style>
        table, th, td{
            border: 1px solid black;
            border-collapse: collapse;
        }
        th, td{
            padding: 10px;
        }
    </style>
</head>
<body>
<table>
    <tr>
        <th>Regno</th>
        <td>655</td>
    </tr>
    <tr>
        <th>Name</th>
        <td>Ujwal</td>
    </tr>
    <tr>
        <th>PhoneNo</th>
        <td>889***3454</td>
    </tr>
    <tr>
        <th>City</th>
        <td>Delhi</td>
    </tr>
</table>
</body>
</html>
```

Figure 7.10: Table Padding

Regno	655
Name	Pradeep
Phone No	900***8971
City	New Delhi

Output

Kids' IQ

For her tea business, Ravisha is building a website. She has a list that she created with the names of several tea varieties; she wants to utilise pictures as list bullets. Provide Ravisha with a CSS property that she can use to make bullets with images.

Let's Recall

- The HTML Tags are styled using the style sheet language CSS.
- The page will download more quickly if there is less code.
- The text's font style can be altered with CSS font property.
- We can use the background-image attribute to add a background picture to the webpage.
- Tables assist us in organising the information to be presented.

A. Fill in the blanks.

1. The HTML tags are styled using the style sheet language .....
2. CSS stands for .....
3. A tag's style only needs to be defined .....
4. CSS has a ..... of its own.
5. The properties of CSS are like ..... attributes.

B. Answer in one word.

1. The property used to define the font face of the text in CSS.

.....

2. Any HTML elements that need to be styled.

.....

3. Which colour code can be used to change font style in CSS?

.....

4. "Arial, Times" are included in this.

.....

5. Syntax for the background image in CSS.

.....

C. Answer the following questions.

1. How does CSS load the page faster?

.....

.....

2. What is CSS syntax?

.....

.....

3. Explain the elements of CSS.

.....

.....

4. Write about CSS font?

.....

.....

5. Brief about two types of font-family names in CSS.

.....

.....

Critical Thinking

Using CSS and HTML table properties, create the following table.

Reality Shows	Released	Worldwide Gross	Domestic Gross	Budget
Big Boss 15	2021	10 Crore	1.50 crore	1 crore
Splitsvilla	2016	2.5 crore	2 crore	50 lakh
Roadies	2010	1.25 crore	1 crore	1 crore
Master Chef	2015	3.5 crore	2 crore	2 crore
Indian Idol	2012	3 crore	1.5 crore	5 crore
Dance Plus	2020	4 crore	2 crore	7 crore

Team Work

Work in pairs. Visit the following site and write down the properties in the space provided.

http://www,htmlhelp.com/reference/css/properties.html

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

8

CONDITIONAL STATEMENT IN PYTHON

Learning Outcomes

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

- Know the importance of conditional statements in Python.
- Comprehend the working of if, if-else and if-elif-else statements.

Warm-up

Given below are some different Arithmetic Operators. Write a description about them and their examples.

Operator	Description	Example
+ Addition		
- Subtraction		
* Multiplication		
/ Division		

Teacher's Note: *Revise the concept of Operators with students that they are special symbols which operate on variables and constants to manipulate data.*

Hello Friends! *Let us learn some conditional statements in Python programming.*

Most companies today create a secure method of granting access to sensitive information in order to safeguard the safety of people using the internet. A password is needed to access this information on the web site.

User ID and password are the first things you type when logging into your email account. You won't be able to access your account if you can recall your user ID but are unsure of your password or if you input the wrong password.

Let's examine how Python programming produces these conditional statements.

Let Me Answer

Have you ever put a wrong password to log in? What message did you get?

CONDITIONAL STATEMENTS

The statements of a programme are carried out sequentially, one after the other. Control statements can be used to reorder the execution of the statements, which is something we would want to do occasionally.

Let Me Answer

Tell some more if and then statements you use in daily life.

Nothing more than a few checks or constraints make up conditional statements. We frequently use conditional statements in our everyday speech. Humans are able to analyse circumstances and make choices based on what they see, know, or believe to be true or incorrect. For example, "if it is storm outside, then we will have to stay inside." or "If it is dark, then we have to switch the headlights of our car." In programming, conditional statements handle cause and effect: "If this, then that".

IF STATEMENT

The simple If statement tests a condition and if it is true, performs some steps, otherwise it does nothing.

Syntax:

If condition:

statement(s)

Program 1: Create a program to check whether the Pin no. entered by a user is correct or not. Assume the correct pin is 2534.

Figure 8.1 if statement.py - D:/Users/Admin/Desktop/python lession 9/Figure 8.1 if statement...

File Edit Format Run Options Window Help

```
Pin_no="4553"
p=input("Please Enter Your Pin No:")
if(p == Pin_no):
    print("Valid Pin No")
```

Ln: 5 Col: 0

Figure 8.1: If Statement

IDLE Shell 3.10.7

File Edit Shell Debug Options Window Help

```
Python 3.10.7 (tags/v3.10.7:6cc6b13, Sep  5 2022, 14:08:36) [MSC v.1933 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
== RESTART: D:/Users/Admin/Desktop/python lession 9/Figure 8.1 if statement.py =
Please Enter Your Pin No:4553
Valid Pin No
>>>
```

Ln: 7 Col: 0

Output

Program 2: Create a program to check if a is greater than b.

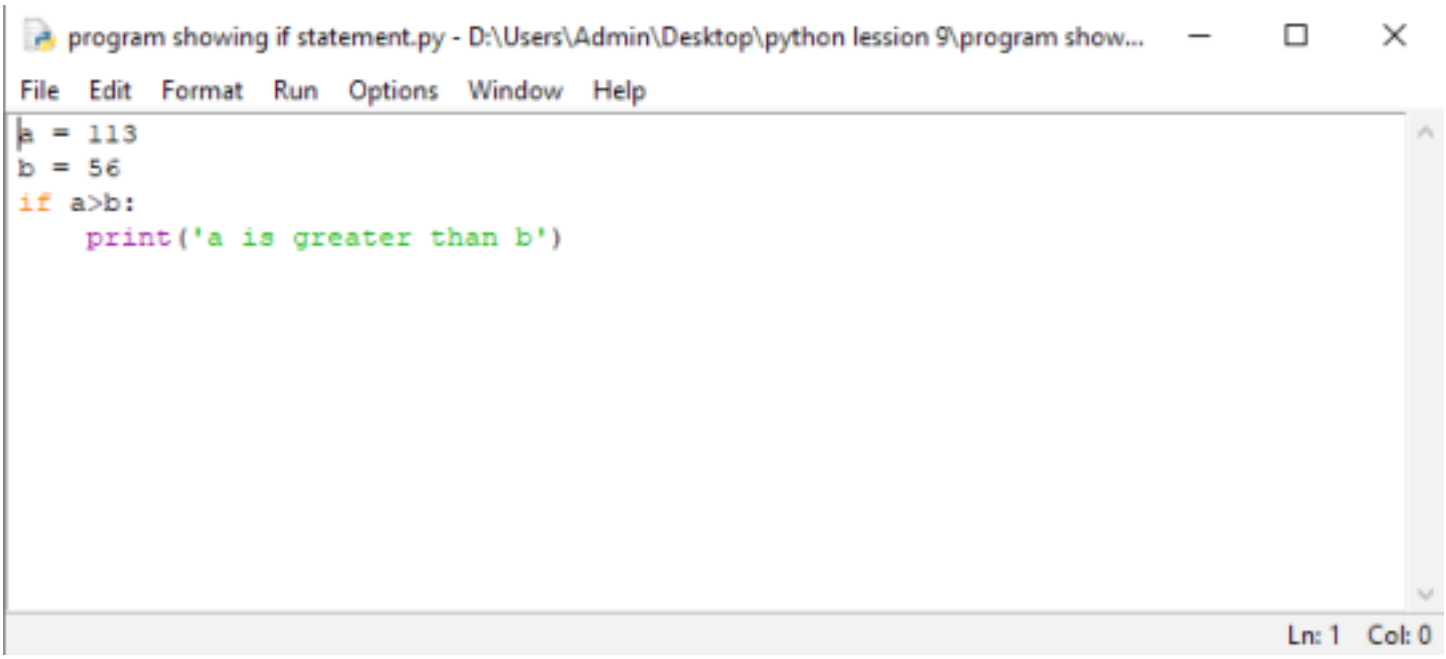


Figure 8.2: Program showing if statement

Output

At first the if statement seems to be perfectly working, but what if the pin no. entered by the user is incorrect or what if a is not greater than b. In that case no error message will be displayed to the user. This may lead to a lot of confusion. The if-else statements in Python can easily handle such situations.

Do You Know?

Python was a hobby project by Guido Van to keep him occupied in the week around Christmas.

IF-ELSE STATEMENT

This is similar to the 'if statement'. In this case when the condition tests to false, the statements after the else are executed.

Let us modify our above example.

Syntax:

if<condition>

Statement(s)

else:

Statement(s)

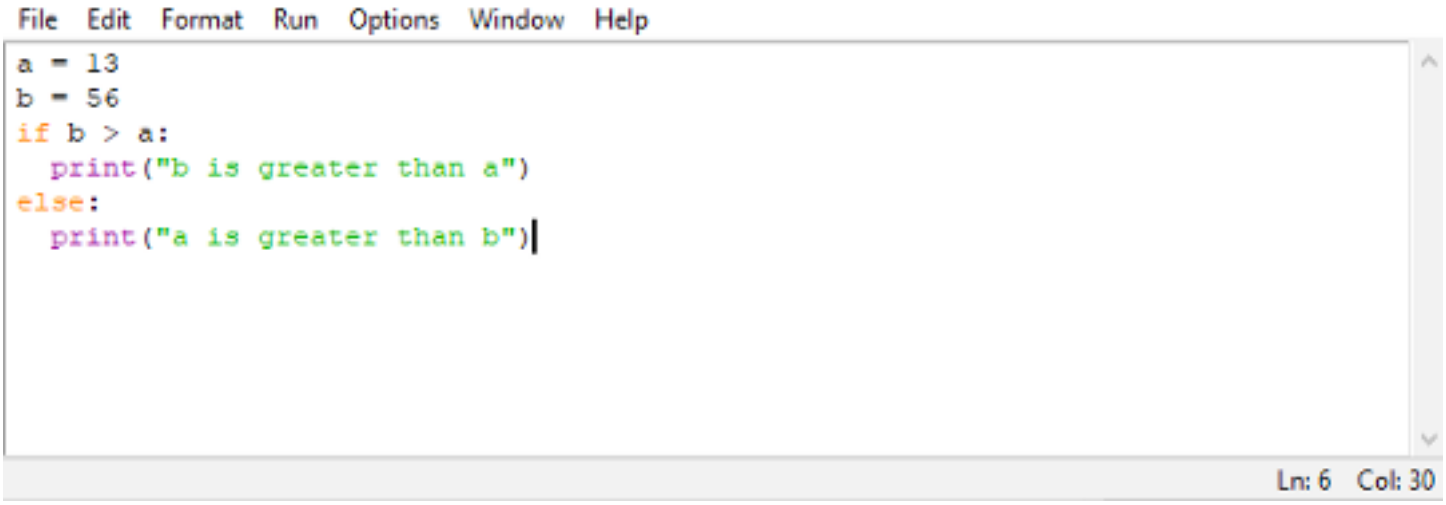
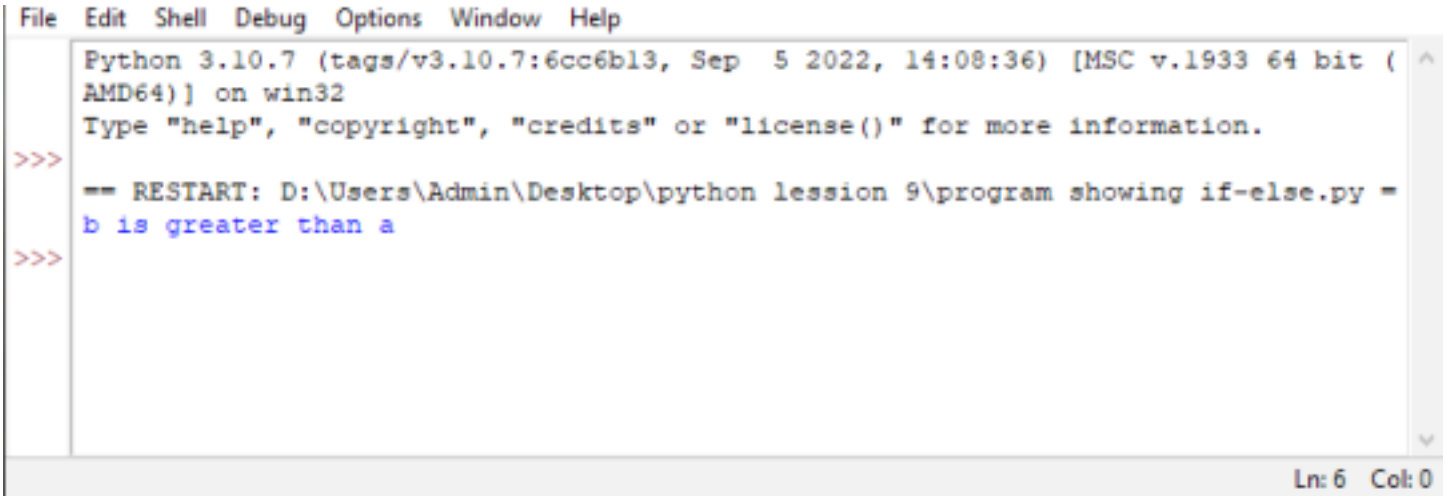


Figure 8.3: If-else Statement



Output

This will compare the values of a and b, and since b is greater than a , it will skip the statement after the if-statement and go to the statement after else and display 'b is greater than a'.

IF-ELIF-ELSE

In a real-world scenario, we would need to solve a number of issues with various conditions.

For instance, you might wish to develop a programme that can rate students in accordance with the grades they receive. The if-elif-else statement is used in Python to handle multiple conditions.

In this statement if the first condition after 'if' is false, then it will check the condition after 'elif'.

Syntax:

if<condition1>

Statement(s)

elif<condition2>:

Statement(s)

else:

Statement(s)

The zen of Python is a poem written by Tim Peters to highlight the philosophies of Python.

Program 1.
```
x = -9
    If x > 0 :
    print ( 'x is a positive number')
    elif x < 0:
    print ('x is a negative number')
```

Since the first condition is false, then the second condition will be tested. The number is less than 0, so the message after elif will be displayed.

FEW SOLVED EXAMPLES

1. Write a program in python to multiply two numbers.

Solution:
```
print ('Enter any two numbers:')
num1 = input ()
num2 = input ()
ch = input ( 'Enter operator '*' ')
if ch = '*':
res = int(num1)* int(num2)
print ( num1, '*', num2, '=', res)
```

```
File  Edit  Format  Run  Options  Window  Help
num1=int(input("Enter the first number: "))
num2=int(input("Enter the second number: "))
result=num1*num2;
print("Multiplying two number: ",result)

                                                    Ln: 6  Col: 0
```

2. Create a program to enter a number and check whether it's a positive or negative number.

Solution: num = int(input("Enter the first number:"))

If num>0:

print (num, "is a positive number")

else:

print (num, "is a negative number")

```
File  Edit  Format  Run  Options  Window  Help
num = int(input("Enter a number: "))
if num > 0:
   print("Positive number")
elif num == 0:
   print("Zero")
else:
   print("Negative number")

                                                    Ln: 8  Col: 0
```

Kids' IQ

Richa has written the following program.

Marks = 23

IF marks > 33;

print "Congratulations You cleared the Test"

else; print "Oops better luck next time"

Find the errors in her code.

Let's Recall

- Control statements can be used to reorder the execution of the statements.
- In programming conditional statements handle cause and effect: "If this, then that".
- The simple If statement tests a condition and if it is true, performs some steps, otherwise it does nothing.
- The if-elif-else is used when we need to work with multiple conditions.
- Conditional statements are checks or constraints.

A. Fill in the blanks.

1. ..... and ..... are the first things you type when logging into your email account.
2. ..... statements can be used to reorder the execution of the statement.
3. In programming, conditional statements handle ..... and .....
4. The simple ..... tests a condition and if it is true then perform some steps.
5. In ..... statement, the statements after else are executed.

B. Write 'T' for True statements and 'F' for False statements.

1. After evaluation, the if statement returns 0 or 1.

2. If-elif-else used to work with multiple conditions. ☐
3. In the If statement, if a condition tests false, it does nothing. ☐
4. In a program, the statements are executed one by one in a sequential manner. ☐
5. Conditional statements are constraints. ☐

C. Answer the following questions.

1. Write the syntax of if else statement.

.....

.....

2. Explain the working of the if statement.

.....

.....

3. Write the syntax of if else if statement.

.....

.....

4. Write a program to find the smallest of 3 numbers.

Input Data: 252 175 320

Expected Output:

The 1st number is the smallest among them.

.....

.....

5. In case the if condition evaluates to false, then which block statements will work?

.....

.....

Critical Thinking

Samiksha wants to create a program that would help him display grades a student has scored. These grades are based on the students' marks in a Mid Term examination. The grades scale from A to E. Suggest Samiksha a conditional construct to calculate the grades.

Team Work

Work in pairs. Find the errors in the given statements and rewrite the correct statements.

1. a = 43
   b = 234
   if & print must start from here

```
if (b>a);
print("b is greater than a")
```

9

COMPUTER VIRUS

Learning Outcomes

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

- Know about viruses and how they spread.
- Comprehend the significance of Antivirus software.

Warm-up

Find the name of Five antivirus programs in the letter grid given below.

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

Help List
Kaspersky
Mcafee
Norton
Avg
Eset

Teacher's Note: *Apprise students about different antivirus softwares and elucidate them about why we need them.*

Hello Friends! Let's learn about viruses and how we can protect our computer against them.

COMPUTER VIRUS

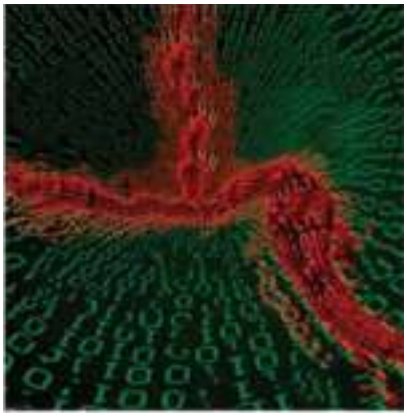
Small software applications known as computer viruses are created with the intention of spreading from one computer to another and interfering with computer functions.

A computer virus can damage or remove crucial data from your computer, spread to other computers through email or another application, slow down your computer, or even destroy all the data on your hard drive.

TYPES OF VIRUS

Computer viruses along with worms, trojan horses, keyloggers, spyware, adware, and other malicious software are all examples of malware that can harm your computer or allow third parties access to your computer.

People frequently misunderstand while talking about computer viruses. They refer to a virus as a worm or Trojan horse. Although the terms virus, worm, and trojan are frequently used interchangeably, they are not the same entity.



VIRUS

All computer viruses are produced by humans. They are computer programmes created by programmers and are meant to operate secretly on the user's computer system.

They are able to reproduce and propagate to different machines. By planting copies of itself into other software applications, data files, or the hard drive's boot region, viruses can also attack other programmes and files. When this occurs, it is said that the affected areas are contaminated. Computer viruses come in many different varieties, and they can be grouped according to how they attack, where they come from, the kinds of data they damage, or where they hide.

HOW A VIRUS SPREADS

Computer viruses are frequently transmitted by attachments in email or instant message conversations, as well as through portable storage devices like pen drives, when they are connected to the computer.

When you download anything from the internet, viruses can be concealed as attachments of amusing photos, greeting cards, or audio and video files.

These days, a computer system is highly likely to be attacked by a virus due to the overuse of the internet. As long as the computer is turned on, the virus is active.

Do You Know?

When your computer is infected with a virus, the frequency of pop-up windows increases.

HARM CAUSED BY A VIRUS

A simple virus poses a threat since it will swiftly exhaust all available memory and crash the computer system. Another kind of virus has the ability to spread across networks by escaping security measures.

- A computer virus might corrupt or delete data on your computer.
- It can use your email program to spread itself to other computers.

- It can even erase everything on your hard disk.
- Virus can harm the computer by destroying the files and finally crashing the system.

Sign of being Infected by a virus

- Your computer begins to operate more slowly than usual.
- Your PC frequently stops.
- Application programmes begin acting strangely or can abruptly shut down.
- You are unable to access your disc drives or data.
- The computer becomes unresponsive or hangs up.
- Shortcuts can be created for files and directories, and file sizes can alter.

Let Me Answer

Has your computer ever been infected by a virus?

WORM

A programme that can duplicate itself, or create copies of itself, is referred to as a worm. It does not need to be carried by a host. It has the ability to move between networks.

Some Well Known Worms

- Slammer- This fast -moving worm managed to temporarily bring down the Internet in January 2003.
- Nimda in 2001 was a mass-mailing worm. The name of the virus came from the reversed spelling of 'admin'.

Let Me Answer

Explore and tell some more Worms.

TROJAN HORSE

A Trojan horse is a program downloaded and installed on a computer that appears harmless, but is, in fact, malicious. Unexpected changes to computer settings and unusual activity, even when the computer should be idle, are strong indications that a Trojan is residing on a computer. The user is usually tricked into opening them because they appear to be genuine software or files. It usually spreads with email attachments and removable hardware devices.

Some Examples of Trojans

- ZeroAccess
- Zeus
- Beast

ANTIVIRUS SOFTWARE

Antivirus or anti-virus software are also known as anti-malware software. They are parts of computer software that are used to stop, recognise, find, and get rid of all forms of dangerous malware.

Some Popular Antivirus

- Kaspersky

- Mcafee

- AVG

- Norton Security

- Avira

Antivirus software scans files and utilises a virus vocabulary to seek for known infections. Additionally, it recognises any computer program's suspicious behaviour, which may be abnormal and suggest infection.

REMEMBER IT!

Update your antivirus regularly.

Kids' IQ

Create a table in the excel and list the best antivirus available.

Let's Recall

- A computer virus can damage or remove crucial data from your computer.
- Computer viruses along with worms, trojan horses, keyloggers, spyware, adware, and other malicious software are all examples of malware that can harm your computer.
- A simple virus poses a threat since it will swiftly exhaust all available memory and crash the computer system.
- A Trojan horse is a program downloaded and installed on a computer that appears harmless, but is, in fact, malicious.
- A programme that can duplicate itself, or create copies of itself, is referred to as a worm.

A. Fill in the blanks.

1. A computer ..... can damage or remove crucial data from your computer.
2. All computer viruses are produced by .....
3. As long as the computer is turned on, the ..... is active.
4. A programme that can duplicate itself is referred to as .....
5. ..... in 2021 was a mass-mailing worm.

B. Answer in one word.

1. Software to detect and remove viruses.

   .....

2. Name any one Antivirus.

   .....

3. The worm which managed to bring down the internet in January 2003.

   .....

4. It usually spreads with email attachments and removable hardware devices.

.....

5. Examples of a virus.

.....

C. Answer the following questions.

1. What is a computer virus?

.....

.....

2. How do you get to know your computer is infected?

.....

.....

3. Explain about the Trojan horse.

.....

.....

4. How does a virus spread?

.....

.....

5. What are the harm caused by a virus?

.....

.....

Critical Thinking

If your computer is infected by a virus, then what steps would you take? Mention them in detail.

Team Work

Pair up with your friend and write the following details.

1. Which antivirus do you use?
2. Which antivirus does your friend use?
3. Which antivirus does your school's computer have?

Guess Who am I?

The horizontal area of a chart.

1.82 billion people log on to this site daily.

If you wish to change the placement of cell data corresponding to the cell borders the, I am the right attribute you should choose.

A cyber-attack that involves the use of charging pots.

Set of rules that needs to be followed for writing programming statements.

Fun GAME 2

Start!

What is computer virus?

How does CSS save time?

How do you organise your files?

What is the big data?

What is the trojan horse?

Can you live without computers?

Move ahead 3 spaces

Name the componenets of a chart

Miss a turn

What is cyberbullying?

Do you know a lot about computers?

Move 1 step ahead

What are identifiers?

Go back to start

Go back 1 step

Miss a turn

What is data science?

What do you mean by juice jacking?

Define cyber safety.

What are psychological models ?

Explain the skills required to become a data scientist

What is the best thing about computers?