

1. Number System

ASSESS YOURSELF

1. a. (i) b. (iv) c. (ii) d. (i) e. (i)
2. a. Byte b. 8 c. 0 and 1 d. Base-10 e. A to F
3. a. F b. T c. F d. T e. T
4. a. Bit b. 4 c. 10 d. 4
5. a. A number system is a way to express quantities used for counting, comparing amounts, performing calculations and representing values.

b.

Decimal Number system

A number system made up of 10 digits from 0 to 9, is known as decimal number system.

Hexadecimal Number system

A number system made up of sixteen symbols, 0 to 9, and A to F is known as the hexadecimal number system.

c. To convert a binary number into a decimal number, follow the given steps:

- 1 Multiply each digit of the binary number by 2 to the power of n, where n is the position of the digit starting from 0 on the right.
- 2 Add the result.

d. A number system made up of eight digits from 0 to 7, is known as the octal number system. The base of the octal number system is 8. It is also known as the base-8 system.

e.

| Decimal | Binary |
|-----------------------|-----------|
| 22 | 10110 |
| 29 | 11101 |
| 95 | 1011111 |
| Invalid Binary Number | 101110112 |

6. a. (i) $(14)_{10}$ (ii) $(1001011)_2$
 (iii) $(101)_{10}$ (iv) $(78)_{10}$
 b. (i) $(11100)_2 - (1010)_2 = (10010)_2$ (ii) $(1101)_2 + (1010)_2 = (10111)_2$
 (iii) $(100110)_2 - (11001)_2 = (1101)_2$ (iv) $(1000)_2 + (101)_2 = (1101)_2$
7. a. Do it yourself b. Do it yourself c. Do it yourself
8. a. Nilay should follow the given steps to convert a decimal number into a binary number:
- 1 Divide the decimal number by 2 while keeping track of the quotient and remainder.
 - 2 Continue dividing the quotient by 2 until you get a quotient of less than 2.
 - 3 Then write the remainder in the reverse order (from bottom to top) to obtain the binary equivalent.
- b. Hexadecimal Number System has been used here. The hexadecimal number system has made the representation of large values easy. The hexadecimal numbers are used to represent colours on a webpage, that's why programmers now prefer hexadecimal numbers.



{CODING ZONE}

=

Coding Zone

Coding Zone

Do it yourself.

2. Advanced Features of Excel

ASSESS YOURSELF

1. a. (i) b. (iii) c. (iv) d. (ii) e. (iii)
2. a. Filter b. IF c. Custom Sort d. Sort A to Z
3. a. F b. T c. F d. T
4. a. Sorting b. Filtering c. Conditional Formatting
d. Formulas
5. a. To apply filters, follow the steps given below:
 - 1 Click on the Sort & Filter command.
 - 2 Select the Filter option from the drop-down list.
The list appears with the drop-down controls or the Filter switches on the right side of the column headings.
 - 3 Click on Filter Switch.



4 Tick the desired checkbox.

5 Click on the OK button.

b. To use Custom Sorting, follow the steps given below:

1 Select a column or range of the data to be sorted.

2 Click on the Sort & Filter command.

3 Select the Custom Sort option.

4 Click on the Add Level button to add another column to sort.

5 Click on Then by down arrow in the Column section.

6 Click on the OK button.

c. Conditional formatting in Excel automatically changes cell appearance based on specified rules or conditions.

To apply conditional formatting to a series of data, follow the given steps:

1 Select the data and click on the Conditional Formatting command.

2 Select the desired option.

3 Choose desired fill effect.

d. Data can be sorted in two ways:

Ascending order: Arranging data in increasing order, for example, letters from A to Z, numbers from lowest to highest, etc.

Descending order: Arranging data in decreasing order, for example, letters from Z to A, numbers from highest to lowest, etc.

6. a. (i) Result: 135 (ii) Result: 5

b. Result: Fail

7. a. Sara can use Conditional Formatting to highlight the scores above 90.

b. To use the IF() function to label each student as "Pass" if their score is 60 or above and "Fail" if below, Raj should follow the given steps:

1 Enter the students' names in column A and their scores in column B.

2 Enter the following formula in column C (or any other column):

=IF(B1>=60, "Pass", "Fail") and press Enter key.

3 Drag down to apply it to all students.



{CODING ZONE}

=

Coding Zone

]

Coding Zone

1. =SUM(D3:D10)



2. =IF(E1>=18, "Eligible", "Not Eligible")
3. Sort a dataset by two columns: first by 'Grade' in ascending order, and then by 'Name' in alphabetical order, follow the given steps:
 - 1 Select a column or range of the data to be sorted.
 - 2 Click on the Sort & Filter command.
 - 3 Select the Custom Sort option.
A Sort dialog box will open.
 - 4 Click on the Add Level button to add another column to sort.
 - 5 Click on Then by down arrow in the Column section. Select Name in this case.
 - 6 Click on the OK button.

Further, more levels can be added to the Sort dialog box for sorting the given data in a spreadsheet.

3. Adobe Illustrator

ASSESS YOURSELF

1. a. (ii) b. (i) c. (iii) d. (iv) e. (i)
2. a. T b. F c. T d. T e. F
3. a. Branding b. Product Branding c. Service Branding d. Scalability e. Logo
4. a. Branding is like giving a business, product or person a special identity so that people can easily recognise them.
- b. Corporate branding is when a big company creates a strong and unique identity that people can easily recognise. Personal branding is when a person creates a unique identity and becomes famous for their skills or work. Product branding is when a specific product gets its own name, logo, design and special features that make it different from others. Online branding is used by businesses, influencers and content creators who work mainly on the Internet.
- c. A good logo should have these special features such as simplicity, scalability, versatility and relevance.
- d. A business card is a small piece of paper or plastic that includes a person's name, job title, company and contact information. The main purpose of business card is that it helps people remember a person or company and make it easy to share contact details.



- e. A poster is a big piece of paper or a digital design that has pictures, colours and words to share a message. It can be used to tell people about an event, spread awareness or advertise something. Posters come in different types based on their purpose such as infomercial, campaign, corporate, event, movie and minimalist posters.
5. a. Event poster, because it provides information about upcoming events, including date and venue.
b. Corporate poster, because it is used by businesses to advertise products and services.



1. (c)

4. Digital Presence

ASSESS YOURSELF

1. a. (ii) b. (i) c. (ii) d. (iii) e. (iv)
2. a. Privacy settings b. Digital communication c. Internet
d. Cyber Threats e. Malware
3. a. T b. F c. T d. F e. T
4. a. To stay safe and healthy online, be aware of these risks such as:
 - Overuse of Technology: Too much screen time can cause eye strain, sleep issues, and less physical activity.
 - Cyberbullying: Hurtful online behaviour can damage self-esteem and relationships.
- b. Cybersecurity is all about ensuring that your devices, data, and information are safe from online threats such as viruses, hackers, or phishing attacks.
- c. Two tips for building a positive online persona are:
 - Share positivity: Post kind, joyful, and helpful messages that show the best of your character.
 - Think first: Ask yourself if your post reflects your true self and how others may see it.
- d. When someone illegally accesses your accounts or devices. Use strong, unique passwords and enable two-factor authentication to increase security.
- e. Two measures to stay safe from cyber threats are:
 - Privacy Control: Review privacy settings on your accounts to ensure only trusted people

can access your information.

- Antivirus Protection: Install antivirus software to detect and remove harmful viruses that can steal your data.
5. a. Too much screen time can cause eye strain, sleep issues and less physical activity. Ravi can take regular screen breaks to protect your eyes and health.
- b. Arush is most likely facing Spyware.



{CODING ZONE}

=

Coding Zone

}

Coding Zone

Do it yourself.

5. Touch to Motion with MIT

ASSESS YOURSELF

- a. (iii) b. (iii) c. (iii) d. (ii) e. (i)
- a. Blocks b. Gyroscope c. Ball d. Data
- e. Brightness
- a. T b. F c. F d. T e. T
- a. MIT App Inventor is a free online tool that lets you create your own mobile apps for Android devices. Instead of writing long codes, you use colourful blocks that fit together like a puzzle.
- b. The Canvas is like a blank paper in your app where you can draw with fingers or code and detect touch events like tap, drag and swipe for interactive visuals.
- c. Two sensors are:
 - Pedometer Sensor: It counts the steps you take while walking or running.
 - Magnetic Field Sensor: It detects magnetic fields around the device.
- d. Touch Down: This event happens when the user first touches the screen or an element, starting an action like drawing or detecting the touch.
Touch Up: This event occurs when the user lifts their finger, ending or stopping the action.
- e. Use of buttons and labels are:
 - Buttons change something on the Canvas, like colour or position, when clicked.
 - Labels display messages based on Canvas events, like a touch in a specific area.



5. a. Nikumb should use the ImageSprite component in MIT App Inventor to make pictures move across the screen.
- b. Aarav should add the Ball component to the Canvas in MIT App Inventor to create a bouncing ball game.



{CODING ZONE}

=

Coding Zone

□

Coding Zone

Do it yourself.

6. Lists and Tables in HTML5

ASSESS YOURSELF

1. a. (i) b. (iv) c. (ii) d. (iii) e. (ii)
2. a. Style b. Terms c. Cells d. Border e. Tabular
3. a. F b. T c. F d. F e. T
4. a. list-style-type: value; b. <DD> c. Nested list
d. <TH> e. Padding
5. a. An ordered list is used when the items in the list are required to be in a particular order and need to be numbered. It is also known as a numbered list. An ordered list is enclosed within the tag. While an unordered list is used when the items in the list are not required to be in a specific order. It is also called a bulleted list. An unordered list is enclosed within the tag.
- b. An item on a list can contain another list. The list within a list is known as a nested list or sub-list.

HTML code to create a nested list.

```
<!DOCTYPE html>
<HTML>
<HEAD><TITLE> Nested List</TITLE></HEAD>
<BODY>
<H1>List of Fruits and Vegetables</H1>
<OL>
<LI> List of Fruits
<UL>
```

```

<LI>Apple</LI>
<LI>Watermelon</LI>
<LI>Orange</LI>
<LI>Strawberry</LI>
</UL>
</LI>
<LI> List of Vegetables
<UL>
<LI>Mushroom</LI>
<LI>Potato</LI>
<LI>Carrot</LI>
<LI>Sweet Potato</LI>
</UL>
</LI>
</OL>
</BODY>
</HTML>

```

c. <DL> (Definition List): This tag indicates the beginning of a definition list, grouping terms and their corresponding descriptions.

<DT> (Definition Term): This tag specifies the name or terms being defined within the list.

<DD> (Definition Description): This tag provides a description or explanation for each term listed, following the <DT> tag.

d. We can organise the content on a web page using lists. Lists are used to group related pieces of information together to make it convenient and easy to read. Tables are used in HTML to display data in a tabular format. Presenting information in a tabular form makes it easy to understand.

e. The default type of bullet that appears in an unordered list is a disc. We can change the default item marking of an unordered list to disc, circle, square, none.

Syntax: <UL style="list-style-type:value">

6. a. Sachin should use the CSS property `border-collapse: collapse;` inside the <style> tag.

b. Ayushi can use the border property to define the border of a table.





- a.
 - i. Mangoes
 - ii. Apples
 - iii. Oranges
 - iv. Bananas
- b.
 - Monday
 - Tuesday
 - Wednesday
 - Thursday
 - Friday

7. Images, Links and Forms in HTML5

ASSESS YOURSELF

1.
 - a. (i)
 - b. (iv)
 - c. (iii)
 - d. (i)
 - e. (ii)
2.
 - a. ALT
 - b. Inline
 - c. Audio
 - d. Hyperlink
 - e. Frameset
3.
 - a. F
 - b. F
 - c. F
 - d. T
 - e. T
4.
 - a. ALT
 - b. <A>
 - c. WAV, MP3, and OGG
 - d. Input
 - e. Inline Frame
5.
 - a. A website is a collection of web pages that are interlinked with each other and contains related information. These web pages are linked with the help of a feature of HTML called a hyperlink. HTML allows us to create two types of linking which are: Interlinking (Local): The process of linking a particular section of the same web page is called interlinking. In this case, the hyperlink and the linked section appear on the same web page. Hence, interlinking is also known as internal linking. Intralinking (Global): The process of linking a web page to another web page of the same website or another website is called intralinking. It is also known as external linking.
 - b. The two types of input controls used in HTML forms are: Text Input Controls and Checkbox Input Control.
 - (i) Text Input Controls: There are three types of text input controls used on forms:
 - a. Single-line text input control: It is used as a search box or name. The two attributes associated with single-line text input controls are: SIZE and MAXLENGTH.



b. Password input control: When selected, the checkbox is marked with a tick mark.

c. Multi-line text input control: This control allows us to enter multiple lines.

(ii) Checkbox Input Control: This control is used when multiple options from a group are required to be selected by the site-visitor. When selected, the checkbox is marked with a tick mark.

c. In HTML5, Frames(inline) are created using `<iframe>` tag, which embeds an independent HTML document into the current document.

Syntax: `<iframe src="url" title="description"></iframe>`

We use the `src` attribute to specify the URL of the document that contains the inline frame and the `title` attribute to describe the content of the `iframe`. Other attributes of `<iframe>` tag are `Height` and `Width`.

Example: `<iframe src="https://www.youtube.com/embed/VIDEO_ID" width="560" height="315"> </iframe>`

d. The HTML5 `<AUDIO>` and `<VIDEO>` and tags allow us to add media to a website. To add media, we are required to set the `SRC` attribute to identify the media source and include the `controls` attribute so the user can play and pause the media whenever required. We use `<AUDIO>` tag to embed sound content in an HTML document whereas `<VIDEO>` tag is used to embed video in an HTML document.

e. The two types of input controls used in HTML forms are: Text Input Controls and Checkbox Input Control.

(i) Text Input Controls: There are three types of text input controls used on forms:

a. Single-line text input control: It is used as a search box or name. The two attributes associated with single-line text input controls are: `SIZE` and `MAXLENGTH`.

b. Password input control: When selected, the checkbox is marked with a tick mark.

c. Multi-line text input control: This control allows us to enter multiple lines.

(ii) Checkbox Input Control: This control is used when multiple options from a group are required to be selected by the site-visitor. When selected, the checkbox is marked with a tick mark.

6. a. Vyom should use checkboxes using the `<input type="checkbox">` control. This allows users to select more than one option from a group.

b. Manvi can use the `` tag to insert images into her website.

``



{ CODING ZONE }

=

Coding Zone

Coding Zone

`<audio src="D:/Song.mp3" controls></audio>`



10

DigiMind (Ver. 5.0)-VII (Answer Key)



8. Tokens and Data Types in Python

ASSESS YOURSELF

- (iii)
 - (ii)
 - (ii)
 - (i)
 - (iv)
- Valid
 - Boolean
 - Syntax
 - Int()
 - Token
- F
 - T
 - T
 - F
 - F
- A set of valid characters recognised by a language is called a character set. The characters used in the Python source program belong to the Unicode standard.
 - Constants are fixed values that do not change during the execution of a program. Literals are the type of constant. Literals refer to any number, text and other information that represents a value. For example 10 (integer literal) and "hello" (string literal).
 - The rules for identifiers are:
 - Only letters, digits and an underscore are permitted.
 - Must start with a letter between A to Z or between a to z or an underscore (_).
 - Keywords are the reserved words. They are predefined words. Keywords cannot be used as an identifiers because they already represent specific actions or logic in Python, using them as identifiers would confuse the interpreter and lead to errors.
 - Type conversion in Python refers to changing the data type of a variable from one type to another. In Implicit type conversion Python automatically converts one data type to another when there is no risk of data loss. For example:

```
num_int = 10 # Integer
num_float = 10.5 # Float
result = num_int + num_float # Integer is converted to Float
print(result)
print(type(result))
```

- (i) The suitable data type for item price (int), discount (float), and customer_name (string).
 - (ii)

```
item_price = 100 # Price of items (integer)
discount = 15.5 # Discount amount (float)
customer_name = "Rohit" # Customer's name (string)
total_bill = item_price - discount # Subtracting discount from item price
print(f"Customer: {customer_name}")
print(f"Total Bill (after {discount}% discount): {total_bill:.2f}")
```

(iii) In Implicit type conversion Python automatically converts one data type to another when there is no risk of data loss. This process is also known as automatic type casting. In Explicit type conversion is done manually using built-in functions. The user specifies the required data type using type conversion functions.

b. In Python, constants are fixed values, conventionally written in uppercase that remain unchanged to prevent accidental errors and improve code readability. These are defined using literals, which are direct values like integers (100), floats (15.5), strings ("Discount"), booleans (True/False), list literals ([1, 2, 3]), or the special literal None. For Anjali, using constants ensures that critical sales data stays consistent and is easy to update in one central location.



{CODING ZONE}

=

Coding Zone

}

Do it yourself.

9. Control Structures in Python

ASSESS YOURSELF

- (iii)
 - (ii)
 - (i)
 - (iv)
 - (iii)
- Sequentially
 - Control
 - if
 - Multiple
 - Nested
- Computer program
 - Nested if
 - The if-elif-else statements
 - Control structure
 - A conditional expression
- A computer program is a set of instructions given to the computer to perform a specific task.
 - A control structure is a programming construct that affects the flow of the execution of a program.
 - The statements that are executed in sequential order, i.e., one after the other without any jumps, are called sequential statements. Some problems cannot be solved by performing a set of ordered steps as seen in sequential execution. When programmers are required to execute a particular set of statements depending on a particular test condition, a selection or decision making statement is required.
 - Sometimes, we need to evaluate multiple statements to get a certain result. In such scenarios, we can use the if-elif-else statements to evaluate multiple scenarios. First, it checks and evaluates the first condition. If it is true, it will execute the respective statement(s). However, if the condition is false, it moves to the elif statement and evaluates those conditions. Finally, if none of the conditions evaluates to true, it executes the else block.
 - If the given condition is false, then statements within the else block are executed.



5.
 - a. y is greater than or equal to x
 - b. The sum of the first 10 natural numbers is: 55
 - c. 10
 - 8
 - 6
 - 4
 - 2
 - d. Factorial of 7 is 5040
6.
 - a. Sequential structure
 - b. if-elif-else statements



{CODING ZONE}

=

Coding Zone

Coding Zone

Do it yourself.

10. Introduction to Blender

ASSESS YOURSELF

1.
 - a. (ii)
 - b. (iii)
 - c. (ii)
 - d. (iv)
 - e. (i)
2.
 - a. 3D Viewport
 - b. Outliner
 - c. Zoom, Pan
 - d. Frames
 - e. HDRI
3.
 - a. T
 - b. F
 - c. T
 - d. T
 - e. F
4.
 - a. Tab
 - b. Loop Cut
 - c. Point Light
 - d. Principled BSDF
5.
 - a. The different components of Blender window are as follows:
 - 3D Viewport: The 3D Viewport is the area where you can interact with your 3D scene.
 - Outliner: The Outliner is a structured list that organises everything in your project, displaying all objects and data within your file.
 - b. The Shader Editor, located in the bottom part of the Shading Workspace in Blender, is a dedicated tool for creating and editing materials using a node-based system. It allows users to define how objects interact with light, achieving realistic or stylised appearances.
 - c. Properties Panel
 - d. The Timeline in Blender is an essential editor for working with animations. It helps you manage the timing and playback of your animation, making it easier to create smooth and realistic movements. The Timeline is located at the bottom of Blender's interface (by default). It is a horizontal strip showing frames (time) and tools to control animation playback.

- e. Extrusion is used to extend surfaces to create new shapes. It's useful for making walls, extending arms of characters or creating unique designs.
- 6.
 - a. Move Tool (or Grab tool, typically activated by pressing G in Blender)
 - b. Shading and Lighting (Bhavesh should use Shading Modes like Smooth Shading and apply proper lighting setups, such as three-point lighting or HDRI lighting for realistic shadows and highlights.)



Do it yourself.

11. Future of Artificial Intelligence

ASSESS YOURSELF

1.
 - a. (i)
 - b. (iii)
 - c. (ii)
 - d. (iv)
 - e. (iii)
2.
 - a. CCTV
 - b. Credit cards
 - c. Safety
 - d. Smart highway
 - e. 2012
3.
 - a. T
 - b. T
 - c. T
 - d. F
 - e. F
4.
 - a. AI can revolutionise how traffic can be controlled and managed in cities. Congestion can be reduced by route selection, predictive alerts and route deviation.
 - b. Smart highway is a type of road in which AI-enabled devices are used for monitoring the condition of the road, traffic levels and the speed of vehicles.
 - c. A smart home is an AI-enabled home that lets us turn on our lights, play our our favourite music, or change the temperature of a room by tapping the app on our smartphones. It also has devices like Alexa to control the lighting and other devices in the home and to save energy, as well as AI-enabled security cameras.
 - d. AI-enabled CCTV can help in building surveillance systems to keep a check on potential criminal incidents and security of the residents. When someone tries to break into your home through the door or window, the motion sensor will send notifications to you. You will get instant alerts on your smartphones when your home is hit by fire, flood or any other disaster. You can configure a central automation system to take necessary actions instantly. You will receive instant alerts in case of any security breaches.
5.
 - a. AI-enabled CCTV surveillance systems
 - b. AI-powered chatbot or virtual assistant that uses natural language processing (NLP) to understand customer queries and provide instant, accurate responses 24/7.





1. Do it yourself.
2.
 - 1 Start
 - 2 Input number_of_vehicles
 - 3 Input time_of_day (e.g., "8AM", "5PM")
 - 4 Check if number_of_vehicles > 100 and time_of_day is in peak hours (8AM–10AM or 5PM–7PM)
If true, go to Step 5
Else if number_of_vehicles > 60, go to Step 6
Else, go to Step 7
 - 5 Print "High traffic congestion likely" → Go to Step 8
 - 6 Print "Moderate traffic" → Go to Step 8
 - 7 Print "Low traffic"
 - 8 End

