

Class 8

1. Basic Concepts of Computer Network

Let's Relate (Page-5)

1. NETWORK, 2. INTERNET, 3. DEVICES, 4. PROTOCOL, 5. MULTIMEDIA

Brush Up (Page-9)

1. PAN, 2. LAN, 3. MAN, 4. WAN

Exercise

A. 1. (c), 2. (d), 3. (c), 4. (c), 5. (a)

B. 1. workstations, 2. modem, 3. router, 4. topology, 5. 3KHz, 3GHz

C. 1. T, 2. T, 3. F, 4. T, 5. T

D. 1. A computer network consists of a group of computers, user terminals and other system components that are linked together to share the resources. These shared resources can be data files, any application software or hardware like printers, modems, etc. 2. In order to establish a computer network, we need various devices which are as follows: (i) **Workstations**— In networking, individual computers that are connected to each other are called workstations. They are also called nodes. (ii) **Server**— The main computer that controls the whole network is called server. To access information over the network the workstation should have access to the server. The speed of the network depends on the capacity of the server. (iii) **Modem**— Modem stands for modulator-demodulator. Modem is required to convert the analog signal to digital signal and vice versa to make transmission of data possible. 3. **Personal Area Network (PAN)**— PAN is a computer network that is mainly created for an individual person. It provides a network range within a person's range typically within a range of 10 metres (33 feet). A Personal Area Network typically involves a computer, phone, tablet, printer, PDA (Personal Digital Assistant) and other entertainment devices like speakers, video game consoles, etc. **Campus Area Network (CAN)**— A campus area network (CAN) is a network of multiple interconnected local area networks (LAN) in a limited geographical area. A CAN is smaller than a wide area network (WAN) or metropolitan area network (MAN). 4. **Network Topology** defines an arrangement in which the computers are linked together to form a network. Arrangement of nodes is emphasized here through using the way of switches, routers and connections in a network. The different types of network topologies are as follows: (i) **Bus Topology**— In a bus topology, all the nodes are connected to a central cable called bus. In bus topology, a bus is a single continuous cable. Transmission from any node travels the length of the bus in both directions and can be received by all the other nodes in

the network. The bus has terminators at either ends which absorbs the signal, removing it from the bus. **Advantages of Bus Topology**– • It is quite easy to set up. • Failure of one node does not affect the rest of the network. **Disadvantages of Bus Topology**– • A signal on the bus must be strong enough to reach the receiver. • It offers limited flexibility for change. (ii) **Ring Topology**– In ring topology, all computers are linked in a circular way so that these make a closed loop circuit. Ring topology is used in LANs and WANs both. When a computer sends a message, it traverses along circular path as node by node till it finds the destination node. **Advantages of Ring Topology**– • Ring topology works well where there is no central site computer network. • Ring topology is moderately easy to install. **Disadvantages of Ring Topology**– • Ring topology requires more complicated control software. • Failure of one node results in the failure of the entire network. **5.** Infrared waves are used for short range communication in a variety of wireless communications, monitoring and control applications. These travel in straight line and cannot penetrate through solid objects and are therefore used in home-entertainment remote control devices. Cordless mouse and intrusion detectors are some of the devices that utilize infrared communication.

2. Introduction to Database Using MS Access 2016

Let's Relate (Page-17)

1. DATA, 2. DATABASE, 3. TABLE, 4. MS ACCESS

Brush Up (Page-24)

1. (e), 2. (a), 3. (d), 4. (c), 5. (b)

Exercise

A. 1. (b), 2. (a), 3. (d), 4. (c), 5. (a)

B. 1. database, 2. Data redundancy, 3. table, 4. Visual Basic, 5. Field Grid Pane, Field Properties Pane

C. 1. T, 2. F, 3. F, 4. T, 5. F

D. 1. (i) **Easy Sharing of Data**– DBMS allows users with authority to share the data in the database with multiple users. For example, in an airline reservation system, a database is maintained and stored (centrally) for the reservation and the cancellation of air tickets. (ii) **Reduction of Data Redundancy**– Data Redundancy refers to having multiple copies of the same data stored in two or more separate places. Most of the DBMS are designed to reduce data redundancy by maintaining all the data in a single repository (centralized location). **2.** The Datasheet view enables the user to enter data without defining the structure or the data type for the table. When the data is entered in the Datasheet view, the data type and the size of the field is determined automatically. Design view enables user to design and set up the database. In this view we can set

up the field names, their data types and description of the tables. **3.** A field's data type determines what kind of data it can store. MS Access supports different types of data, each with a specific purpose. Two most common data types are :

Long Text	This data type is used for lengthy text or combinations of text and numbers.	Up to 63,999 characters
Number	This data type stores numeric data for mathematical calculations.	Up to 16 bytes

4. It makes data entry easier and controls the values which a user can enter into it. For example, if a user needs to enter a telephone number, Input Mask can create the characters and structure with which we are all familiar. As the user types, the number automatically assumes a phone number format: (###) ###-####. **5.** To rename the field, follow the given steps: **Step 1:** Take the mouse pointer to a field that we want to rename. **Step 2:** Right-click on that field. A shortcut menu will appear. **Step 3:** Click on the **Rename Field** option and change the field name.

3. Creating a Query, Forms and Reports in MS Access

Let's Relate (Page-34)

1. Table, 2. Query, 3. Report, 4. Form

Brush Up (Page-40)

Do it yourself.

Exercise

A. 1. (b), 2. (b), 3. (b), 4. (a), 5. (b)

B. 1. criteria, 2. Design, 3. Relationships Window, 4. Form, 5. Report

C. 1. T, 2. F, 3. T, 4. F, 5. T

D. 1. Queries are used to retrieve and process the data of a table on the basis of certain criteria. **2.** To set the relationship between the tables, follow the given steps: **Step 1:** On the Ribbon, click on the **Database Tools** tab and select the **Relationships** button in the **Relationships** group. **Step 2:** The **Show Table** dialog box appears. Select the required table and click on the **Add** button. The selected table will appear as a small window in the **Relationships** window. Similarly, add another tables to the Relationships window. **Step 3 :** Click on the **Close** button to close the **Show Table** dialog box. **Step 4 :** Drag the primary key of the parent table (e.g., Students_Record) and drop it over the same field in the child table (e.g., Activity_Detail). **Step 5 :** The cursor changes to an arrow and the **Edit Relationships** dialog box appears. **Step 6:** Click on the **Create** button. Access creates the relationship between the tables. A line linking the two tables will appear indicating that both have been

linked. **Step 7:** Click on the **File** → **Save** button to save the relationship.

3. There are three views in which a form can be displayed : **Form View:** Form view is used to enter or edit data. **Layout View:** Layout view is used to change the format of our form. **Design View:** Design view is used to adjust the design of our form. **4.** To create a split form, follow the given steps : **Step 1:** In the **Navigation Pane**, click on the table we want to use as a form. **Step 2:** Click on the **Create** tab. **Step 3:** Click on **More Forms**. **Step 4:** Click on **Split Form**. **5.** The top portion of the report, called **page header**, contains a custom title. The contents of this page header displays at the top of each page. The **details lines**, which are the lines that are printed for each record, contain only those fields we specify. To create a report, follow the given steps: **Step 1:** Click on the table or the query on which we want to create a report. **Step 2:** Click on the **Create** tab. **Step 3:** Click on the **Report** option in the **Reports** group. **Step 4:** The report is displayed in the Layout View. **Step 5:** After creating the report, we can save it by clicking on the **File** → **Save** button. We will see that the Report object gets added in the Navigation Pane.

4. Introduction to Adobe Photoshop CC 2018

Let's Relate (Page-49)

Do it yourself.

Brush Up (Page-58)

1. Image window, 2. Adjustment Panel, 3. Tolerance, 4. Lasso tool,
5. Marquee tool

Exercise

- A.** 1. (b), 2. (a), 3. (a), 4. (b), 5. (d)
- B.** 1. Tools Panel, 2. Color Panel, 3. Single Row Marquee tool, 4. three, 5. Image window
- C.** 1. F, 2. F, 3. T, 4. F, 5. F
- D.** 1. There are many features of Adobe Photoshop CC 2018. Some of them are :
 - It is a very convenient and professional image editing software that is equipped with loads of tools.
 - It has some impressive features like intelligent auto-correction, HDR imaging, effects, color management, masks, animations, brushes, histogram palettes, and layer control, etc.
 - It allows us to make quick picture corrections like removing the chromatic unusualness, monograph and lens distortions.
 - It is equipped with Content-Aware tools which will enable the users to remove content from a photo and then replace it with modest fixed.
 - It has Mercury Graphics Engine which has enhanced productivity.
 - It allows the users to perform image as well as video editing at some impressive speeds.

2. Lasso Tool: It is a freehand drawing selection tool. **Polygonal Lasso Tool:** It allows us to click points around the image to create the selection. **Magnetic Lasso Tool:** It allows us to select an object by tracing its outline or selecting the areas which has complex edges.

3. We can change the canvas size of an image, by following the given steps: **Step 1:** Click on the **Image** tab in the address bar. **Step 2:** Click on the **Canvas Size**. The **Canvas Size** dialog box appears. **Step 3:** Type the dimensions for the new canvas. **Step 4:** Click an anchor point (such as the middle one). **Step 5:** Click on **OK**. Photoshop changes the canvas size of the image.

4. To move an image in workspace, follow the given steps: **Step 1:** Open the image. **Step 2:** Select a portion of the image we want to move using any of the selection tool. **Step 3:** Click on the **Move Tool** on the toolbox. **Step 4:** Place the mouse pointer on the selected area of the image and drag it to a new location. In case we have not selected any area of the image, the entire image moves on dragging.

5. To save a file in Photoshop CC, follow the given steps : **Step 1:** On the address bar, click the **File** → **Save As** option. The **Save As** dialog box will appear. **Step 2:** Select the location where we want to save the file and type the file name in the **File name** text box. **Step 3:** Select the appropriate file format for the file to be saved from the **Save as type** box. **Step 4:** Click on the **Save** button.

5. More on Adobe Photoshop CC 2018

Let's Relate (Page-66)

1. Application Bar, 2. Tools Panel, 3. Options Bar, 4. Document Window

Brush Up (Page-78)

1. SHAPE, 2. PAINT BUCKET, 3. PAINTING, 4. PATTERN, STAMP,
5. CONTENT AWARE MOVE

Exercise

A. 1. (a), 2. (c), 3. (b), 4. (a), 5. (b)

B. 1. Gradient, 2. Paint Bucket, 3. Brush, 4. Pattern Stamp, 5. Layers Panel

C. 1. F, 2. F, 3. F, 4. F, 5. F

D. 1. To use the Custom Shape Tool, follow the given steps: **Step 1:** Click on the **Rectangle Tool** on the Tools panel and select the **Custom Shape Tool** option. **Step 2:** Select a shape from the **Shape** pop-up panel in the **Options** bar. **Step 3:** Click and drag the mouse to draw the selected custom shape. **2. Dodge tool** increases the brightness of the photo. It is a great tool to lighten faces hiding in shadow. **Burn tool** darkens the pixels without affecting the colors. By using this tool, we can create greater contrast by deepening the shadows in certain areas of photo. **3.** To use the Spot Healing Brush tool, follow the given steps: **Step 1:** Open the image to be repaired. **Step 2:** Select the **Spot Healing Brush Tool** from the **Tools** panel. **Step 3:** Now, adjust the following settings

on the Options bar: **Brush Size:** Adjust the size and hardness of the brush by clicking on the slider. **Mode:** Set the mode to normal. **Type:** Choose the **Content Aware**, **Create Texture** or **Proximity Match**. Content Aware works in the similar way as Content-Aware fill does but in a particular area only. Create Texture will add texture from the surrounding area. Proximity Match will look at everything in the vicinity and decide what texture should be inside the brush. **Sample All Layers:** Check on Sample All Layers if working with two layers only, one is the original image and other is new layer for editing. **Step 4:** Click over the spots to remove errors. **4.** The Clone Stamp tool selects and samples an area of the image and then uses these pixels to paint over any other part of the image. It acts like a brush so we can change the size, allowing cloning from just one pixel wide to hundreds. **5.** A Photoshop image can consists of multiple layers, with each layer containing different objects in the image. When we open an image in Photoshop, it exists as a single layer known as the Background layer. We can add new layers on top of the Background layer as we work. Layered Photoshop files act like several image combined into one. Each layer of an image has its own set of pixels that we can move and transform independently of the pixels in other layers.

6. Images, Links, Forms and Frames in HTML 5

Let's Relate (Page-85)

1. tag, 2. <H1> tag, 3. <Body> tag, 4.
 tag, 5. <I> tag

Brush Up (Page-90)

1. (c), 2. (a), 3. (b)

Exercise

A. 1. (b), 2. (a), 3. (c), 4. (c), 5. (a)

B. 1. align, 2. Border, 3. Name, 4. Frameset, 5. <frameset>

C. 1. F, 2. F, 3. T, 4. T, 5. T

D. 1. The tag is used to add images to a web page. It is an empty tag which implies that it has only an opening tag that has various attributes. 2. When we browse the Internet, we mostly see the underlined text, that indicates the hyperlink. A hyperlink is a link that helps to navigate from one document (or position) to another. Hyperlink can point to HTML page, image, video, audio file, text, etc. 3. The <A> tag allows us to link various web pages or different sections of the same page. It specifies the destination of the hyperlink in order to create the linking. The text or image enclosed within the opening and closing tags of the <A> tag acts as a hyperlink.

Syntax:

<A> -----

Attribute of <A> tag are as follows:

Href (Hyperlink Reference) Attribute: This attribute specifies the location of the file or resource that we want to provide a link to.

Title Attribute: This attribute is used to give a title to any hyperlink. It contains some information about that link, in textual format.

Name Attribute: This attribute allows the user to create links within the same document. This attribute specifies the name of the anchor being set up.

4. Using Input tag we can insert several elements like text fields, radio button, etc. in the form. Using these elements the information of an user is submitted on a web server.

Text Field: The text field is a one line input field allowing the user to input text. Text Field input controls are created using the “input” element with a type attribute having value as “text”. In most browsers, the width of text field is 20 characters by default.

Password Field: The password field is a type of text field in which the text entered is masked using asterisk or dots for prevention of user identity from another person who is looking onto the screen. Password Field input controls are created using the “input” element with a type attribute having value as “password”.

Check Box: It enables the user to select multiple options. Checkbox input controls are created using the “Input” element with a type attribute having Value as “Checkbox”.

Radio Button: It enables the user to select one between multiple options. Radio Button input controls are created using the “Input” element with a type attribute having Value as “Radio”.

Submit Button: It is used to transfer content from the current page to the server. The action attribute of the form defines the name of the file to which the contents will be sent. This file usually processes the data.

5. HTML frames are used to divide the browser window into multiple sections where each section can load a separate HTML document.

7. Cyber Ethics

Let's Relate (Page-97)

1. Advanced Research Projects Agency Network,
2. International Network,
3. Vital Information Resources under Siege,
4. Transmission Control Protocol/Internet Protocol,
5. Domain Name System,
6. Virtual Private Network

Brush Up (Page-102)

1. Plagiarism,
2. Hacking,
3. Copyright,
4. Software piracy

Exercise

- A.** 1. (a), 2. (b), 3. (a), 4. (c), 5. (a)
- B.** 1. quotation marks, 2. Hackers, 3. spammer, 4. Software piracy, 5. patent rights
- C.** 1. T, 2. F, 3. T, 4. T, 5. T

D. **1.** Computer Ethics are the common guidelines that we need to follow while using the computer. These are also known as etiquettes that tell us how to use the internet wisely. **2.** Cyberbullying is a form of bullying or harassment using electronic media such as smartphones, computers and tablets to harass or attack a person. It includes sending, posting, or sharing negative, harmful, false, or mean content about someone else. It can include sharing personal or private information about someone else causing embarrassment or humiliation. **3.** Software piracy is the act of stealing software that is legally protected. This stealing includes copying, distributing, modifying or selling the software. **4.** Intellectual Property Rights can be classified into four types: **Copyright:** Copyright is a term that describes ownership or control of the rights to the use and distribution of certain works of creative expression, including books, videos, movies, music, and computer programs. **Patent:** A patent gives its owner the right to exclude others from making, using, selling and importing an invention for a limited period of time. The patent rights are granted in exchange for enabling public disclosure of the invention. **Trademark:** A trademark is a graphical representation that is used to distinguish the goods and services of one party from those of others. A trademark may consist of a letter, number, word, phrase, logo, graphic, shape, smell, sound or combination of these things. **Trade Secrets:** Trade secret describes about the general formula of any product and the key behind any organization's progress. It also includes various firm's different secret formulas for the same products which differ in quality. **5.** Digital footprint refers to one's unique set of traceable digital activities, actions, contributions and communications showed on the internet or digital devices. In other words, a digital footprint is an impression of a user leaves while using the internet. It is used to describe the mark, traces or footprints that a person leaves when he use internet. A digital footprint also known as digital dossier. Digital footprints can be classified as either Passive or Active. **Passive Digital Footprint–** A passive digital footprint is unintended by the user. For example, a shopper on an ecommerce site unintentionally provides the site information about their preferences and lifestyle by the products they browse. **Active Digital Footprint–** An active digital footprint displays information that an individual purposely shares with the public or network of contacts such as a blog post.

8. Know More About Python

Let's Relate (Page-107)

1. If statements, 2. If-else statements, 3. Nested statements

Brush Up (Page-111)

1. FLOAT, 2. RANGE, 3. SPLIT, 4. LEN

Exercise

A. 1. (c), 2. (b), 3. (a), 4. (d), 5. (d)

B. 1. 'def', 2. bin(), 3. slice, 4. commas, 5. Python string

C. 1. T, 2. T, 3. F, 4. F, 5. T

D. 1. Python function is a block of code which only runs when it is called. We can pass data, known as parameters, into a function. A function can return data as a result. **Elements of Functions**–

- The beginning of a function header starts with the keyword 'def' followed by the function name and parentheses.
- We pass arguments to the defined function using parameters.
- The function header is terminated by a colon (:).
- The body of the function is made up of several valid Python statements. The indentation depth of the whole code block must be the same.
- We can use a return expression to return a value from a defined function.

2. In Python, to call a function, use the function name followed by parentheses:

Example:

```
def welcome():  
    print("Welcome for using me")  
welcome()
```

3. Python tuple is another sequence data type that is similar to the list. A tuple consists of a number of values separated by commas. Unlike lists, however tuples are enclosed within parentheses. The main differences between lists and tuples are: Lists are enclosed in brackets ([]) and their elements and size can be changed, while tuples are enclosed in parentheses (()) and cannot be updated.

4. list_name= [item 1, item 2, item 3, -----] 5. Python string is the collection of the characters enclosed within quotes. Strings in python are surrounded by either single quotation marks or double quotation marks.

'Hello' is the same as "Hello".

Syntax:

Strng_name = "collection of characters"

Example:

```
str = 'Welcome to use Python!'  
print(str)           # Prints complete string  
print(str[0])        # Prints first character of the string  
print(str[4:6])      # Prints characters starting from 5th to 7th
```

9. Domains of AI

Let's Relate (Page-118)

1. George Devol, 2. David Hanson, 3. Ali Ahmed, 4. Marc Raibert

Brush Up (Page-121)

1. Data Science, 2. Speech Recognition, 3. Computer Vision, 4. Intelligence

Exercise

A. 1. (a), 2. (b), 3. (c), 4. (b), 5. (d)

B. 1. hardware, software, 2. Data Science, 3. acquiring, processing, 4. humans, electronic 5. Natural Language Processing

C. 1. T, 2. F, 3. F, 4. F, 5. T

D. 1. AI Domains refer to the main branches of Artificial Intelligence. In AI human-machine, interactions done through the following domains: (i) Data Science, (ii) Computer Vision (CV), (iii) Natural Language Processing (NLP) 2. Data Science is totally based on the following concepts which are as follows: • Asking the correct questions and analyzing the raw data. • Modeling the data using various complex and efficient algorithms. • Visualizing the data to get a better perspective. • Understanding the data to make better decisions and finding the final result. 3. Computer Vision is a field of Artificial Intelligence (AI) that enables computers and systems to derive meaningful information from digital images, videos and other visual inputs and take actions or make recommendations based on that information. If AI enables computers to think, computer vision enables them to see, observe and understand. 4. Natural language processing field is divided into three parts: **Speech Recognition:** It is used for translation of spoken language into Artificial Language text. **Natural Language Understanding (NLU):** It is used for spoken or written language to provide a link between natural language inputs and what they present. It analyses different aspects of language. **Natural Language Generation (NLG):** It helps to produce meaningful phrases and sentences along with Text planning, Sentence planning, and Text realization. 5. (i) Data Science is used by medical professionals to find the new ways to understand disease, practice preventive medicine, diagnose diseases faster and explore new treatment options. (ii) Data Science is used in self-driving cars to adjust the speed limits, avoid dangerous lane changes, and even take passengers on the quickest route.