Answer Key

Touchpad PRIME Ver 2.2

1. Latest Technological Developments

Warm Up!

1. Healthcare   2. Insurance   3. Telecom   4. Travel

Rapid Fire

1. a. (ii)   b. (ii)   c. (i)   d. (i)   e. (ii)

2. a. F   b. T   c. F   d. F

Evaluation Time

1. a. Augmented Reality   b. RPA   c. Shakey

d. Virtual   e. RP

2. a. AI is the branch of computer science that aims at creating expert and intelligent computer systems which simulate certain human qualities such as, learning, reasoning, communicating, seeing, hearing, and sensation.

b. Pattern Recognition software comprises of a camera and software which together identify repetitive patterns and establish connections between the patterns stored in the database and the perceived patterns.

c. Rapid prototyping is used to create models to quickly test a new product before mass production. 3D Printing can be termed as a RP method.

d. RPA refers to the process of automating certain tasks in an industry through the use of robots. The purpose of RPA is to transfer the execution of the process from humans to robots.

e. Intelligent Apps are software written for mobile devices based on artificial intelligence and machine learning technology, aimed at making everyday tasks easier.

3. a. (i) Expert system can be defined as a communicating computer program that can solve problems which would otherwise require human assistance. These programs replicate the reasoning process of experts in certain areas.

(ii) Intelligent agent is a type of computer program that has built-in intelligence which keeps a check on the work patterns, asks questions and performs tasks on the behalf of the user.

(iii) 3D Printing or 3-Dimensional Printing is a technology which was first developed at Massachusetts Institute of Technology (MIT) in the 1980s. It is the process of making a physical object from a digital design. In this technology, we use the 3D digital data on the computer to build 3D objects by adding layers of material which could be polymers, metals, concrete or even plant and human tissue.

(iv) NLP is the method by which computers can recognise and understand spoken or written human language. Speech recognition software is an example of NLP where computers translate spoken speech into text.

b. There are many 3D Printing methods:

- Direct 3D Printing: Uses inkjet technology, emitting waxes and polymers to create a solid object.

- Binder 3D Printing: Uses nozzles and the materials that come together to act as a glue.

- Multi-Jet-Modeling (MJM): Uses multiple materials to form an object.

- Fused Deposition Modeling (FDM): A patented technique like Direct 3D Printing.

- Photo-polymerization: Here ultra-violet laser beam acts on liquid plastic drops and converts them into solid-state, thus forming a 3D object.

c. IoT are the system of connected computing devices, mechanical and digital machines for creating a virtual network where a monitoring center ensures that everything is working smoothly. Each connected device has a unique identifier and can transfer data over the network without any human intervention. The connected devices gather and share data about their usage and their operative environment. The devices can be your smartphones, refrigerators, televisions, washing machines, etc. Example: BeClose, Smart thermostats like Nestuse sensors, etc.

d. AR stands for Augmented Reality. In this technology virtual objects are created and visualized alongside with real life objects. Whereas VR or Virtual Reality is completely virtual yet it feels real. While using the AR tech, you can partially see the real world, whereas the VR tech completely cuts you off from the real world. It takes you to a virtual world where everything is just a simulation.

4. a. Gunjan can use 3D printing technology to quickly create a physical prototype of her jewelry design.

b. Rohan should use Augmented Reality (AR) to allow users to visualize furniture in their homes before purchasing.

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

Find Out

Do it yourself.

In The Lab

Do it yourself.

2. Computer Networking

Warm Up!

1. Hypertext Transfer Protocol
2. File Transfer Protocol
3. Internet Message Access Protocol
4. Simple Mail Transfer Protocol

Rapid Fire

1. a. (i)   b. (ii)   c. (iii)   d. (ii)

2. a. T   b. T   c. T   d. T
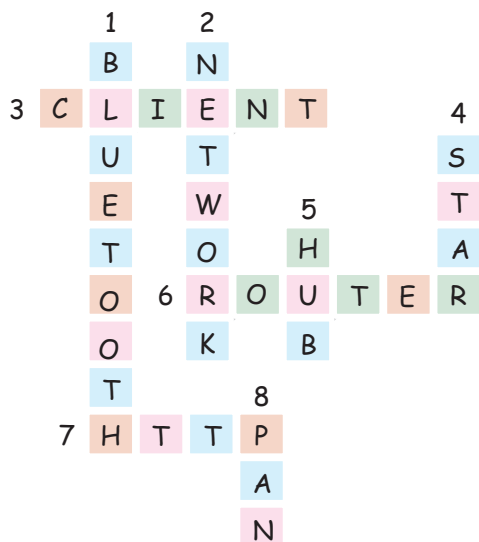
Evaluation Time

1. a. Protocol   b. SMTP   c. Router   d. Mesh   e. NIC

2. a. In a wireless networking technology, no wires or physical media is used for connecting computers. It uses electromagnetic waves like infrared, microwave and radio waves for transmission of the data.

   b. A bandwidth is generally measured in bits per second (bps) or Bytes per second (Bps), Kilobytes per second (KBps) and Megabytes per second (MBps)

   c. A client is a computer which depends on the server for all the resources.

   A server controls the access to the hardware and software on the network.

   d. Topology refers to the geometric arrangement of computers or nodes in a network.

   e. A gateway is a network device that allows to data to flow between two different networks which may use different protocols.

3. a. The computer network means a system of interconnected computers. The advantages of computer network are:
   - The information can be easily shared by the people.
   - It helps in reducing the cost of hardware.
   - Store information on one centralised location.
   - Reliability implies backing up of information. If a system crashes, then the information is accessible on another workstation for future use.
   - Reduction in installation cost.
   - User authentication process to secure the data.
   - People will have the accessibility to all the information they need to get and share through e-mails

   b. A LAN is a digital communication system that interconnects a larger number of computers and other peripheral devices within a radius of less than 1 km.

   MAN consists of two or more local area networks or campus area networks together that usually spans several buildings in the same city or town.

   c. A single digital page on the World Wide Web (WWW) that contains information and links of another pages is called a web page. Web pages are created by using the Hyper Text Markup Language (HTML).

   Whereas, A website is a collection of web pages which are interlinked to each other. A website may contains thousands of web pages.

   d. A sender is a computer that wants to send information to other computer connected to the network.

   Whereas, A receiver is a computer which is expecting the data from other computer on the network.

4. a. Ring Topology

   b. Network Server

Activity Time

```
        1           2
        B           N
  3  C  L  I  E  N  T        4
        U     T              S
        E     W        5     T
        T     O        H     A
        O  6  R  O  U  T  E  R
        O     K        B
        T              
  7  H  T  T  P     8
                    A
                    N
```

Find Out

Do it yourself.

In The Lab

Do it yourself.

Periodic Assessment 1
(Based on chapters 1 & 2)

A. 1. Augmented Reality
  2. Virtual Reality
  3. Global Positioning System
  4. Natural Language Processing
  5. Portable Document Format
  6. Internet Protocol

B. 1. Ring   2. Tree   3. Bus   4. Star

C. 1. Construction and Art & Jwellery.

  2. • Assists in medical diagnosis.   • Automates customer service support.

  3. • Face recognition   • Voice recognition

  4. • Google glass   • Star walk

  5. • Patient registration   • Calculation of sales

3. Working with Access 2016

Rapid Fire

1. a. (iii)   b. (i)   c. (ii)   d. (ii)   e. (iv)

2. a. T   b. F   c. F   d. T

Evaluation Time

1. a. Hyperlink   b. Fields   c. Data type   d. Field name   e. Navigation

2. a. Perform the following steps to add a record:

   Step 1: Open the required table in Datasheet view.

   Step 2: Place the pointer where you want to add the new record.

   Step 3: Type data in the field. Similarly, you can add more records in a table.

   Step 4: Press Ctrl + S to save the table.

   Perform the following steps to delete a record:

   Step 1: Open the desired table in Datasheet view.

   Step 2: Select the record that you want to delete.

   Step 3: Right-click and select the Delete Record option from the context menu. The Confirmation dialog box appears.

   Step 4: Click on the Yes button to delete the record.

   Step 5: Press Ctrl + S to save the table.

   b. Short text, Long Text, Number and Currency are the four data types of Access.

3. a. Advantages of a Database System are:

   • It minimises the duplication of data by organising data in a structured manner. This ensures that data is not unnecessarily repeated across tables.

   • It saves the storage space.

   • All the users are provided with some access rights or privileges and permissions.

   • The files can be easily updated whenever any changes are made.

   b. 1. Datasheet view is the default view of the table. It shows all the fields and the records as entered by the user.

2. The Table Design View allows users to define and modify the structure of a table, including field types, properties, etc.

   c. Following naming conventions you should remember while writing field names:

   - Field name can be up to 64 characters long.
   - Field name can include any combination of letters, numbers, spaces, and special characters except a period (.), an exclamation mark (!), an accent grave (') and brackets ([ ]).
   - Field name cannot begin with the leading spaces.
   - Field name cannot include a double quotation mark (").

4. a. Sorting feature in Access will allow Ranjeet to view all records in sequential order, either in ascending or descending order.

   b. Neha should use the following data types:

   Customer Name: Short Text

   Phone Number: Number

   Registration Date: Date/Time

Activity Time

P	A	B	E	A	U	T	B	D	E	Z	L
R	S	N	L	S	O	M	E	M	N	D	O
I	M	O	O	Z	N	L	A	D	F	A	R
M	T	Q	U	E	R	Y	L	M	L	T	Q
A	L	M	S	F	E	T	O	M	Q	A	B
R	Z	Y	U	L	P	M	T	A	Q	B	F
Y	X	L	N	M	O	S	A	L	A	A	M
K	S	U	V	P	R	T	B	M	R	S	Z
E	L	L	O	P	T	S	L	N	F	E	A
Y	M	N	F	O	R	M	E	L	Z	Y	B

In The Lab

Do it yourself.

4. More on Access

1. (iii)　　　　2. (i)　　　　3. (iv)　　　　4. (ii)

Rapid Fire

1. a. (iii)　　　b. (iii)　　　c. (ii)　　　d. (iii)
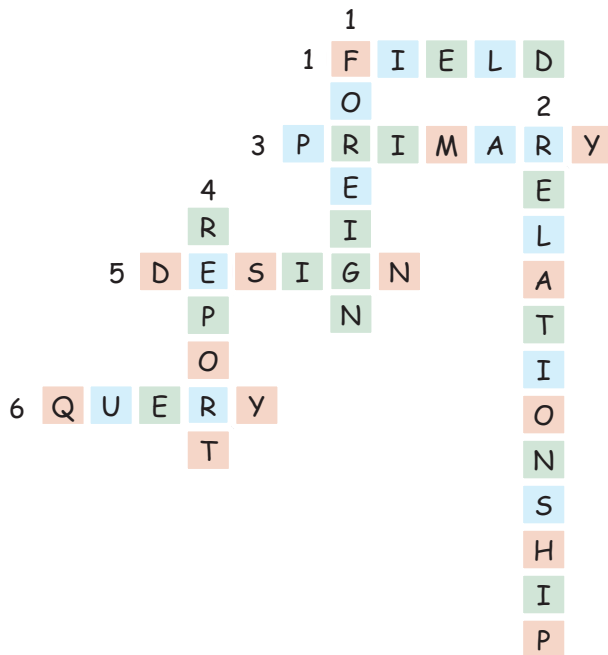2. a. F　　　b. F　　　c. T　　　d. T　　　e. T

Evaluation Time

1. a. Title, logo　　b. Action query　c. Primary key　d. Run

2. a. A form is a database object used to add, edit and display data from a table in a user-friendly manner.

   b. A report in Access is a feature which allows you to organize and present your data in a user-friendly format so that it can be printed.

   c. The three main views in which a form can be displayed are: Form View, Design View and Layout View.

3. a. A query is the most important object provided by Access that can give you information that you might not be able to find by looking at the table directly.

   A report in Access is a feature which allows you to organize and present your data in a user-friendly format so that it can be printed.

   b. To create a report, follow these steps:

   Step 1:　Open the desired table for which you want to create a report.

   Step 2:　Click on the Report command from Reports group under Create tab.

   The report will be created for the table that is currently open.

   c. The parameters of the design grid in the bottom part of the Query window are:

   - Field: It is the first row of the design grid that displays the selected field names from the table.
   - Table: It displays the name of the existing tables in the relationship window.
   - Show: This means that the field with the check mark will be displayed in the result and the fields with an uncheck mark will not be displayed when the query runs.
   - Sort: It displays the data in either descending or ascending order during the run time.

4. a. Sahil can use Forms in Access to display data stored in a table in a user-friendly manner.

   b. Yes, Anisha can compile data from three tables stored in a database in Access by using Queries, specifically a Join Query or Union Query.

c. Rounak can create a Crosstab Query in Access to view information in two categories at once.

Crossword puzzle:

1 across (1 down FOREIGN): F I E L D
3 across: P R I M A R Y (2 down RELATIONSHIP)
5 across (4 down REPORT): D E S I G N
6 across: Q U E R Y

Column 1 down: F O R E I G N
Column 3 (MEDIAN vertical): R I M I G N
Column 4 down: R E P O R T
Column 2 down: R E L A T I O N S H I P

In The Lab

Do it yourself.

5. More on HTML

Warm Up!

1. HREF
2. <IFRAME>
3. Radio buttons
4. text box

Rapid Fire

1. a. (ii)   b. (ii)   c. (ii)   d. (i)   e. (ii)
   f. (ii)

2. a. F   b. T   c. F   d. F   e. F

1. a. Password   b. Method   c. Type   d. Reset   e. Select, Option

2. a. It specifies the alternate text to be displayed in the web browser, if the provided image is not found. For example,

```
<IMG SRC="lily.jpg" ALT="Describing the flower">
```

    b.
```
<audio src="TalkNext.mp3" controls></audio>
```

    c. Similarity: Both Radio Buttons and Checkboxes are used to allow users to make selections in forms.

Difference: A Radio Button allows only one selection within a group, while a Checkbox allows multiple selections.

    d. TEXT, PASSWORD, RADIO, CHECKBOX, and SUBMIT.

3. a. The purpose of the controls attribute when used in the <video> element is to provide a set of built-in playback controls for the video, such as play, pause, volume adjustment, and full-screen options. When the controls attribute is present, the browser displays these controls, allowing users to interact with the video easily.

    b. Use target="_blank" in the <a> tag to open a link in a new window or tab.

```
<a href="https://www.example.com" target="_blank">Visit Example</a>
```

    c. HTML provides a feature to display more than one web page on a single screen of the web browser. These web pages are actually displayed using frames. Frames are the different sections or parts of a web page. The <IFRAME> tag in HTML allows you to embed another HTML document within your current web page.

    d. To add different values to a CHECKBOX in HTML, follow these simple steps:

Step 1: Use the <input> tag with the type attribute set to "checkbox".

Step 2: Include the value attribute in the <input> tag to define the value that will be submitted when the checkbox is checked.

Step 3: Repeat the <input> tag for each checkbox you want to create, assigning different values as needed. For example:

```
<form>
  <input type="checkbox" name="option1" value="Value1"> Option
  1<br>
  <input type="checkbox" name="option2" value="Value2"> Option
  2<br>
  <input type="checkbox" name="option3" value="Value3"> Option
  3<br>
</form>
```

4. a. You can use internal links (<a href="#section">) to navigate within a course, and external links (<a href="https://example.com" target="_blank">) to connect to outside resources.

b. Use the <iframe> tag to display two web pages side by side. One page can include a list and radio buttons, while the other can show checkboxes. This allows users to view and interact with both pages on a single screen.

Web Page 1 – Using a List with Radio Buttons:

```
<!DOCTYPE html>
<html>
<head>
  <title>Course Options - Radio Buttons</title>
</head>
<body>
  <h1>Select Your Preferred Course Type</h1>
  <ol>
    <li>
      <input type="radio" name="course" value="online" id="online">
      <label for="online">Online Course</label>
    </li>
    <li>
     <input type="radio" name="course" value="offline" id="offline">
      <label for="offline">Offline Course</label>
    </li>
    <li>
      <input type="radio" name="course" value="hybrid" id="hybrid">
      <label for="hybrid">Hybrid Course</label>
    </li>
  </ol>
</body>
</html>
```

Web Page 2 – Using a List with Checkboxes:

```
<!DOCTYPE html>
<html>
<head>
  <title>Resources - Checkboxes</title>
</head>
```

```
<body>
  <h1>Select the Resources You Need</h1>
  <ul>
    <li>
     <input type="checkbox" name="resources" value="ebooks" id="ebooks">
       <label for="ebooks">E-books</label>
    </li>
    <li>
      <input type="checkbox" name="resources" value="tutorials"
      id="tutorials">
      <label for="tutorials">Tutorials</label>
    </li>
    <li>
      <input type="checkbox" name="resources" value="webinars"
      id="webinars">
      <label for="webinars">Webinars</label>
    </li>
  </ul>
</body>
</html>
```

Activity Time

1. Do it yourself.
2. • Replaced type="radio" with type="checkbox" so that multiple options can be selected.
   • Kept the name="effect" the same for each checkbox, as it is not required to be unique for each checkbox when using them.

   Now, users can select multiple harmful effects at once.

```
<!DOCTYPE html>
<html>
<head>
<title>Harmful Effects of Plastics</title>
</head>
<body>
<h2>Select Harmful Effects of Plastics:</h2>
```

```
<form>

  <input type="checkbox" name="effect" value="Pollution">Pollution<br>

  <input type="checkbox" name="effect" value="Pleasant Weather">Pleasant
  Weather<br>

  <input  type="checkbox"  name="effect"  value="Endangering
  Wildlife">Endangering Wildlife<br>

  <input type="checkbox" name="effect" value="Toxicity">Toxicity<br>

  <input type="checkbox" name="effect" value="Greenery">Greenery<br>

</form>

</body>

</html>
```

3. The code will execute, but the image will not be displayed because the image.jpg file is missing. The alt text "Description of the image" will be shown instead.

In The Lab

Do it yourself.

Periodic Assessment 2
(Based on chapters 3 to 5)

A.

B. 1. Primary Key is a unique field by which the records are uniquely identified in a table. A table can have only one primary key.

2. A report is a formatted presentation of data retrieved from a database, typically generated from tables or queries

3. A query is one of the most powerful object of database. It allows you to retrieve information from a table based on specific criteria or condition.

4. A form is a database object used to create a user-friendly interface for entering, updating, and viewing records in a table that it is connected to.

C. 1. Specifies the number of visible rows in a <textarea> element.

2. This attribute specifies the action that will take place when the form is submitted.

3. This attribute specifies the type of method the form will use to submit the entered values.

4. This value is used to create a radio button control.

5. This value is used to create a checkbox control. A checkbox control allows us to select multiple options from a set of options.

6. This attribute is used to specify, where the linked web page will open.

Test Sheet 1

(Based on chapters 1 to 5)

1. a. (ii) b. (i) c. (iv) d. (ii)
e. (ii) f. (i) g. (iii)

2. a. Augmented Reality b. RPA c. SMTP d. Router
e. Sort f. Reset

3. a. F b. F c. T d. T
e. F f. T

4. a. AI is the branch of computer science that aims at creating expert and intelligent computer systems which simulate certain human qualities such as, learning, reasoning, communicating, seeing, hearing, and sensation.

b. Pattern Recognition software comprises of a camera and software which together identify repetitive patterns and establish connections between the patterns stored in the database and the perceived patterns. Facial recognition software, video surveillance cameras, fingerprint identification and automatic voice recognition software are some examples of pattern recognition software.

c. A client is a computer which depends on the server for all the resources.

A server controls the access to the hardware and software on the network

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f. A report in Access is a feature which allows you to organize and present your data in a user-friendly format so that it can be printed.

g. Similarity: Both Radio Buttons and Checkboxes are used to allow users to make selections in forms.

   Difference: A Radio Button allows only one selection within a group, while a Checkbox allows multiple selections.

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   (iii) It is a type of computer program that has built-in intelligence which keeps a check on the work patterns, asks questions and performs tasks on the behalf of the user.

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   MAN consists of two or more local area networks or campus area networks together that usually spans several buildings in the same city or town.

c. Some benefits or advantages are:

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   • It saves the storage space.

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e To add different values to a CHECKBOX in HTML, follow these simple steps:

Step 1: Use the <input> tag with the type attribute set to "checkbox".

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Step 3: Repeat the <input> tag for each checkbox you want to create, assigning different values as needed. For example:

```
<form>
  <input type="checkbox" name="option1" value="Value1"> Option
  1<br>
  <input type="checkbox" name="option2" value="Value2"> Option
  2<br>
  <input type="checkbox" name="option3" value="Value3"> Option
  3<br>
</form>
```

6. Introduction to Photoshop

Warm Up!

1. Lasso tool
2. Polygonal Lasso Tool
3. Quick Selection Tool
4. Magic Wand Tool

Rapid Fire

1. a. (ii)   b. (iii)   c. (iv)   d. (ii)   e. (i)
2. a. F   b. T   c. F   d. T

Evaluation Time

1. a. advanced   b. .psd   c. began   d. Application
2. a. The Paint Bucket Tool in Photoshop fills adjacent pixels that are similar in color in the image. It fills with either the selected foreground color or with a pattern.

b. Rasterizing means the text will be converted into pixels, allowing you to make image adjustments that normally do not work with text layer. Rasterize is the process of converting a vector image to a raster image.

c. Layers panel contains all the layers present in the Photoshop document.

d. Crop Tool is used to trim an image and remove unwanted areas from the image.

3. a. Selection tools are used to select certain areas of the image to work without affecting the unselected areas. Some of the Selection tools are Rectangular Marquee Tool, Elliptical Marquee Tool and Lasso Tool.

b. Follow the below steps to use the Mixer Brush Tool:

   Step 1: Open a new document and select the Mixer Brush Tool from the Tools panel.

   Step 2: Select the desired brush from the Brush Presets Picker in the Options bar.

   Step 3: To sample a color either you can click on the Current brush load from the Options bar and select the desired color. Or press Alt key and click from where you wish to sample color in the current image.

   Step 4: Set various options in the Options bar according to your preferences. Specifying the percentages of Wet, Load, Mix and Flow effects the outcome on the canvas.

   Step 5: Click and drag the mouse on image to paint.

c. Perform the following steps to use the Perspective Crop Tool:

   Step 1: Open an image in Photoshop.

   Step 2: Select the Perspective Crop Tool from the Tools panel.

   Step 3: First, draw the cropping border around the image. You will notice the crop handles and a grid appears all over the cropped area.

   Step 4: Now, start dragging the handle in the top left corner towards the right until the vertical grid line matches the left side of the image. Also drag the handle in the top right corner towards the left until the vertical grid line matches the right side of the image.

   Step 5: Press the Enter key from the keyboard. This removes the distortion from the image and crops the image to the selected portion only.

d. (i) Background/foreground Colors

   (ii) Horizontal Type tool

   (iii) Move tool

4. a. To create a sunrise sky effect, I would suggest Ahaan use the Gradient Tool.

b. To change the color of the red T-shirt to blue on the sports model, I would recommend Vandana use the Color Replacement Tool.

a. Vertical Type Tool
b. Gradient tool
c. Color Replacement tool
d. Lasso Tool
e. Crop tool

In The Lab

Do it yourself.

7. More on Photoshop

Warm Up!

Navigation tools:
1. Hand Tool
2. Rotate View Tool
3. Zoom Tool

Shape tools:
1. Rectangle Tool
2. Rounded Rectangle Tool
3. Ellipse Tool

Rapid Fire

1. a. (iii)   b. (i)   c. (ii)   d. (i)
2. a. F   b. F   c. F   d. F

Evaluation Time

1. a. Background   b. Info   c. Red Eye   d. Sharpen
2. a. Two actions that can be performed with a layer are:
   - Changing Layer Opacity
   - Layer Masking
   b. Blur Tool makes the image hazy or softens the pixels of an image.
3. a. One of the magical feature of Photoshop is to remove or repair the spots, scratches or even objects from an image with the help of Spot Healing Brush Tool. It is also known as Texture Replacement tool. It blends the wrong or bad texture of one area in an image with the good or fine texture area of the same image.
   b. Perform the below steps to use the Pen Tool to draw a straight path segment:

   Step 1: Create a new document in Photoshop or open an existing image.

   Step 2: Select the Pen Tool from the Tools panel and set the mode of the Pen Tool to Path from the Options bar.

Step 3: Click on a point to start the path.

Step 4: Press the Shift key and click on the next point to draw a straight path.

Step 5: To close the shape, return to the first point and click once when the small circle appears.

c. Follow the below steps to use draw custom shapes:

Step 1: Create a new Photoshop document and select the **Custom Shape Tool** from the **Tools** panel.

Step 2: Click on the **Shape** picker in the **Options** bar. You will see lots of icons of custom shapes.

Step 3: Choose any icon and drag a marquee on the canvas. You can also change the color from the **Options** bar.

4. a. To protect the original image, Divya should always make a copy of the image before editing it. This can be done by opening the image and using the "Save As" option to create a duplicate file. Additionally, she can work on a separate layer in Photoshop to preserve the original image.

b. Anmol can use the Text Wrap option in Photoshop to format text in a semi-circular or spiral manner around a path.

Activity Time

a. Layers Panel
b. Eraser Tool
c. Hand Tool
d. Blur Tool
e. Background Eraser Tool
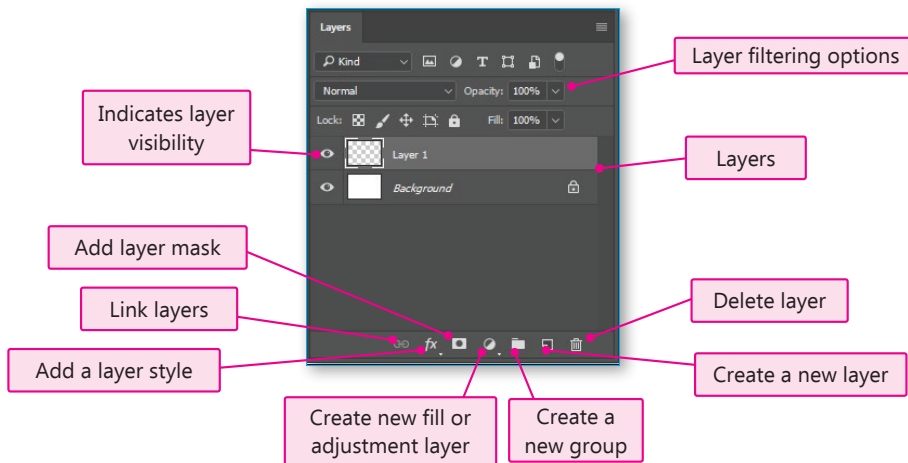
Find Out

Do it yourself.

In The Lab

Do it yourself.

Periodic Assessment 3
(Based on chapters 6 & 7)

A.
1. Vertical Type Tool
2. Gradient Tool
3. Color Replacement Tool
4. Lasso Tool
5. Crop Tool

B.

C. 1. (v)   2. (iv)   3. (i)   4. (iii)   5. (ii)

8. Algorithmic Intelligence

It's a holiday   Entry not allowed

1. b   2. a   3. b.   4. b

Rapid Fire

1. a. (ii)   b. (iii)   c. (iii)   d. (i)

Evaluation Time

1. a. condition   b. if

c. else   d. conditional

2. a. Loops help in automating repetitive tasks and makes the code more efficient by avoiding the need to write the same instructions multiple times.

b. OR operator results in true if any one of the conditions is true. If both are false, the result will be false.

3. a.
```
today = "Sunday"
match = "yes"
IF today = "Sunday" AND match = "yes"
THEN
    PRINT "We have a match on Sunday"
ELSE
    PRINT "No match on Sunday"
```

b.
```
day = "Saturday"
exam = "yes"
IF day != "Saturday" AND day != "Sunday" OR exam = "yes"
THEN
    PRINT "Exam today"
ELSE
    PRINT "No exam on weekend"
```

4. a. Lokesh can use a loop in his program.

b.
```
READ year
IF year % 400 = 0
THEN
    PRINT "Yes"
ELSE
    PRINT "No"
```

Activity Time

1. a.

Num1	4	7	87	45	22
Num2	7	5	34	32	90
Print	Num 2 is greater	Num 1 is greater	Num 1 is greater	Num 1 is greater	Num 2 is greater

b.

Marks	45	40	55	49	85
Result	Fail	Fail	Pass	Fail	Pass

c. Start

X	✓				
	X	✓			
		X	✓		
			X	✓	
				X	✓

d.   Start

	8	8	8	8	8
	X	✓			
		X	✓		
			X	✓	
				X	✓

2. a. Start

b. Start

X					
	X				
		X			
			X		
				X	
					X

In The Lab

Do it yourself.

9. Loops in Python

Warm Up!

The output will be an infinite loop printing "Hello Touchpad" continuously.

1. F 　　　　　 2. F 　　　　　 3. T

Rapid Fire

1. a. (iii) 　　　　 b. (i) 　　　　 c. (i)

Evaluation Time

1. a. While, For 　　 b. Range() 　　 c. Else 　　 d. Infinite

2. a. Looping refers to the process of repeating a set of statements repeatedly on the basis of a condition until the condition is falsified.

   b. Syntax:

```
for <counter variable> in range(start, stop, step_size):
    statements
```

   c. While loop is used when the number of iterations are not known to the user before running the loop. For loop is used when the number of iterations are known to the user before running the loop.

3. a. The range( ) function is an in-built function in Python. This function generates a sequence of numbers.

   Example:

```
for i in range(1, 6, 2):
    print(i)
```

   Output:

   1

   3

   5

   b. If the condition given in a loop never becomes false, then the loop will never terminate and run indefinitely. This type of loop is called an infinite loop.

   Example:

```
i = 0
while i < 5:
    print("This is an infinite loop!")
```

   This loop will run forever and continuously print "This is an infinite loop!" because i is never updated.

c. In Python, the else block can be used in conjunction with a while loop. The else block executes after the while loop finishes, but only if the loop is not terminated by a break statement.

Example:

```
i = 0
while i < 5:
    print(i)
    i += 1
else:
    print("The loop has finished successfully.")
```

4. a. Devesh should use a for loop for this task. A for loop is better suited for iterating through a known, fixed range of numbers (1 to 100 in this case). The for loop will automatically iterate from 1 to 100, making the code concise and easy to implement.

This approach is more efficient and straightforward compared to using a while loop, which would require manually updating the counter and checking the condition.

b. Gunjan should use a while loop for this task. A while loop is appropriate when the number of iterations is not predetermined and continues to execute as long as the given condition evaluates to True. Once the condition becomes False, the loop terminates.

Activity Time

a. 55.

b. 0
   1
   2
   0

c. Enter a limit for the square values: 20
   1
   4
   9
   16

d. The square of 1 is 1
   The square of 2 is 4
   The square of 3 is 9
   The square of 4 is 16
   The square of 5 is 25
   The square of 6 is 36
   The square of 7 is 49

The square of 8 is 64

The square of 9 is 81

The square of 10 is 100

e. 1 is odd

2 is even

3 is odd

4 is even

5 is odd

6 is even

7 is odd

8 is even

9 is odd

10 is even

In The Lab

Do it yourself.

10. AI Domains

Warm Up!

1. Natural Language Processing (NLP)
2. Computer Vision

Rapid Fire

1. a. (iii)　　　b. (iii)　　　c. (ii)　　　d. (iii)

2. a. F　　　b. T　　　c. T　　　d. T　　　e. T

Evaluation Time

1. a. Natural language processing　　　b. Voice assistants

c. Computer vision　　　d. Artificial intelligence

2. a. Two real-life usages of NLP:

- Voice assistants like Siri and Google Assistant.
- Chatbots for customer service in websites.

b. Domains of AI:
- Natural Language Processing (NLP)
- Data Science
- Computer Vision (CV)

3. a. Real-life applications of different domains of AI:
   1. NLP:
      - Voice Assistants: Siri, Google Assistant use NLP for voice commands.
      - Spam Filters: Email providers use NLP to filter spam.
   2. Data Science:
      - Personalized Recommendations: Netflix and Amazon recommend based on user data.
      - Fraud Detection: Banks use data science for detecting fraudulent transactions.
   3. Computer Vision:
      - Facial Recognition: Used in security and social media.
      - Autonomous Vehicles: Self-driving cars use computer vision for navigation.

   b. Computer Vision is a very popular field of AI that trains a computer to understand and interpret the visual world. Human vision starts at the "eyes" but machine uses digital images from a camera for vision.

4. a. The drone is using Computer Vision to examine the health of crops.
   b. The chat app is using Natural Language Processing (NLP) to understand Simran's words and suggest relevant replies.

Activity Time

Do it yourself.

In The Lab

Do it yourself.

Periodic Assessment 4
(Based on chapters 8 to 10)

A.
```
num = int(input("Enter a number: "))
if num > 1:
    # Check for factors
    for i in range(2, num):
```

```
            if (num % i) == 0:
                print(num, "is not a prime number")
                print(i, "times", num // i, "is", num)
                break
            else:
                print(num, "is a prime number")
    else:
        print(num, "is not a prime number")
```

B. Congratulations!!!

You have passed the exam

C. 1. Voice Assistants: Siri, Google Assistant use NLP for voice commands.

2. Facial Recognition: Used in security and social media.

D. Repeat 4 times

(Move 1 down and Fill Colour)

Repeat 3 times

(Move 1 right and Fill Colour)

Test Sheet 2

(Based on chapters 6 to 10)

1. a. (ii)   b. (iii)   c. (iii)   d. (i)   e. (iii)

f. (i)   g. (iii)   h. (i)   i. (iii)

2. a. .psd   b. Info   c. unary, binary

d. If   e. Human intelligence   f. Voice Assistants

3. a. F   b. F   c. F   d. F

e. F   f. T

4. a. The Paint Bucket Tool in Photoshop fills adjacent pixels that are similar in color in the image. It fills with either the selected foreground color or with a pattern.

b. Blur Tool makes the image hazy or softens the pixels of an image. It helps to highlight the main object in the image.

c. Loops help in automating repetitive tasks and makes the code more efficient by avoiding the need to write the same instructions multiple times.

d. Looping refers to the process of repeating a set of statements repeatedly on the basis of a condition until the condition is falsified.

e. Domains of AI:

- Natural Language Processing (NLP)
- Data Science
- Computer Vision (CV)

5. a. Selection tools are used to select certain areas of the image to work without affecting the unselected areas. Some of the Selection tools are Rectangular Marquee Tool, Elliptical Marquee Tool and Lasso Tool.

b. Perform the below steps to use the Pen Tool to draw a straight path segment:

Step 1: Create a new document in Photoshop or open an existing image.

Step 2: Select the Pen Tool from the Tools panel and set the mode of the Pen Tool to Path from the Options bar.

Step 3: Click on a point to start the path.

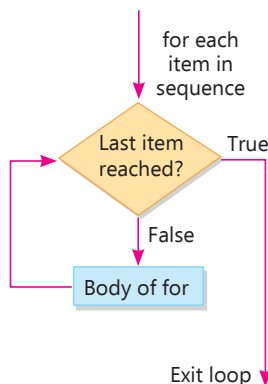Step 4: Press the Shift key and click on the next point to draw a straight path.

Step 5: To close the shape, return to the first point and click once when the small circle appears.

c. There are three types of conditional statements:

1. The if Statement: The if statement is the most basic conditional statement. It can evaluate only one condition.

2. The if...else Statement: An if...else statement provides a set of two paths, one if the condition is True and the other if the condition is False.

3. The if...elif...else Statement: A single if...else statement would not suffice in this case. Python allows to have multiple conditions in such cases.

d. 20

e.

f. Computer Vision is a very popular field of AI that trains a computer to understand and interpret the visual world. Human vision starts at the "eyes" but machine uses digital images from a camera for vision.