

Practice Test Answers-Class X

Chapter 1: Introduction to the Internet

Q1. Define the Internet. Discuss the brief history of the Internet.

Ans. The Internet is defined as a worldwide network of computers connected to each other for sharing information. In 1962, J.C.R. Licklider first proposed the development of a global network of computers. The same year, he moved to Defense Advanced Research Projects Agency (DARPA) to develop the network. Another scientist, Leonard Kleinrock, developed the theory of packet switching, which was used as a basis for the Internet connections. In 1969, the scientists at DARPA succeeded in networking two computers, known as ARPANET. Further, the National Science Foundation (NSF), a US federal agency created a contemporary better high capacity network which was called the NSFnet. Private organizations and people started to build their own networks, which were later interconnected with ARPANET and NSFnet to form the Internet.

Q2. Discuss the steps of sending and receiving data on the Internet.

Ans. The steps of sending and receiving data on the Internet are as follows:

1. The source computer (the computer that is sending the data) prepares the data to be sent to the destination computer (the computer that receives the sent data) by dividing the data into small portions known as packets. Each packet is given a serial number, such as I, II, III and so on.
2. The packets are sent to the destination computer in a random order.
3. The packets are reassembled in the order of their serial numbers, and the original data is obtained.

Q3. Enlist the organizations that manage the Internet.

Ans. The Internet is not governed by any single entity. There are several well-known volunteer groups or organizations that help to manage and guide the technical aspects of the Internet. These organizations jointly contribute in the research, development and management of the Internet.

The following is a list of the main organizations and the role they play in the management of the Internet:

- **Internet Architecture Board (IAB):** Refers to the technical advisory group that is responsible for the technical aspects of the Internet
- **Internet Engineering Task Force (IETF):** Refers to the organization that is responsible for developing and promoting Internet standards
- **InterNIC:** Provides various registration services to the Internet community

Q4. What do you understand by surfing and searching?

Ans. Surfing means moving from one website to the other using a Web browser. Searching the Internet means exploring various websites and Web pages on the Internet for the desired information. In other words, searching is a process of finding information on a particular topic from different websites. Surfing is also a part of searching because to find the desired information, you have to move from one website to the other on the Internet. Without surfing, there cannot be any Internet searching. Therefore, we can say that surfing is an essential activity for searching information on the Internet.

Q5. Discuss the importance of e-mail.

Ans. E-mail is one of the most popular and important services provided by the Internet. Today, e-mail has become the most widely used tool of communication. Through e-mail, you can communicate with anyone around the world by sending and receiving electronic messages within seconds. The main advantages of e-mail are:

- Saves paper and allows you to edit messages easily
- Transmits messages faster than other conventional forms of communication, such as postal service
- Sends messages according to the sender's convenience
- Enables a user to transmit a single message to multiple users
- Provides space to store incoming and outgoing messages for future reference

Q6. What do you understand by chatting on the Internet?

Ans. Chat, as the name suggests, allows you to 'talk' real time through messages. The chat service available on the Internet enables two or more users living in different parts of the world to communicate with each other simultaneously by sending and receiving messages. The chat functionality of the Internet uses the Internet Relay Chat (IRC) protocol to exchange text messages among users on the Internet. A chat room is the hub of Internet chatting. Chat rooms are actually computers (chat servers) that allow reading and broadcasting of the messages and responses of users in a chat room.

Q7. What are the various advantages of the Internet?

Ans. There are various advantages of using the Internet. Some of them are discussed as follows:

- **Easily accessible:** You can access the Internet at any time, i.e. the Internet is operational 24 hours, 7 days a week.
- **Faster communication:** The Internet is the most convenient and fastest way to communicate with a person anywhere in the world.
- **Relatively inexpensive:** The Internet is quite inexpensive as compared to other methods of accessing and distributing information.
- **E-commerce and online services:** E-commerce refers to buying or selling products and services or transferring money electronically by using the Internet.
- **Infotainment:** The Internet is a vast source of information as well as entertainment. We can get the latest information and updates about anything, anywhere in the world in a matter of seconds.

Q8. Discuss some disadvantages of the Internet.

Ans. There are various disadvantages of the Internet. Some of them are discussed as follows:

- **Theft of personal details:** If you use the Internet for transferring money or social networking, your sensitive information, such as the account number or address, is at a great risk of being stolen. It can be misused easily without you being aware of it.
- **Age-inappropriate content:** It is a major concern of using the Internet, especially when it comes to kids. They can easily access different undesirable websites that are not appropriate for their age group and can misguide them.
- **Virus threat:** There is a great risk of a virus attack at the time of downloading anything from the Internet. A virus attack can make your computer slow or even crash it.

Q9. Discuss the factors that should be considered while choosing an Internet connection.

Ans. There are a number of factors that should be considered while choosing an Internet connection. Few of them are described as follows:

- **Bandwidth and speed:** Your Internet connection varies depending on the purpose for which you want to use the Internet. For instance, if you use the Internet to check your e-mails and surf the Web, probably a DSL would work. On the other hand, if you wish to play online games or download/ upload content, a speedy Internet connection would be required.
- **Internet Service Provider (ISP):** The ISP you choose should be reliable and provide immediate help to any Internet connection problems. There are a number of ISPs, such as MTNL, Airtel, Reliance, etc. You should choose the ISP that provides a wide variety of Web services in your area.
- **Cost-effectiveness:** You should choose an Internet connection in such a way that it is cost-efficient for the desired purpose. For instance, a broadband connection is quite economical as compared to leased lines. But, if you need an Internet connection for a large enterprise, you should choose leased lines for dedicated Internet services. However, for a small organization, leased lines would be really expensive.

Q10. What do you understand by WWW? What are its attributes?

Ans. WWW stands for World Wide Web. WWW, also known as Web in short, was developed by Tim Berners-Lee of the European Laboratory for Particle Physics (CERN) in Switzerland. WWW represents an information space where documents and other Web resources reside. These documents are connected by hyperlinks and can be accessed by URIs using Internet.

The following are the various attributes of WWW that play an important role in its success:

- User-friendly
- Multimedia documents
- Interactive
- Frames

Chapter 2: Internet and Web Services

Q1. Discuss the steps of connecting a PC with the Internet.

Ans. Perform the following steps to connect your PC to the Internet using the DSL modem in BOSS OS:

1. *Right-click* the **Network** icon located on the right side of the **top bar** that lies at the top of the **Desktop**. A context menu appears.
2. *Select* the **Edit Connections** option in the context menu.
The **Network Connections** dialog box appears with multiple tabs. The tab named **Wired** is selected by default.
3. *Select* the **DSL** tab, in the **Network Connections** dialog box.
4. *Click* the **Add** button in the **DSL** tab of the **Network Connections** dialog box.
The **Editing DSL connection 1** dialog box appears.
5. *Type* a connection name in the **Connection name** text box.
6. *Type* your username provided by the ISP in the **Username** text box.
7. *Click* the **Save** button. Your Internet connection is now configured.
8. *Click* the **Network** icon on the **top bar** to get connected to the Internet. A drop-down menu appears.
9. *Select* the name of the connection that you have just created to connect to the Internet.

Q2. What do you understand by the terms surfing and downloading?

Ans. The process of exploring and retrieving the information from the Internet is known as surfing. The process of taking the content from a Web page and saving it in your personal computer is known as downloading.

Q3. Discuss the format of an e-mail address.

Ans. E-mail represents a mode of communication in which a user can send electronic messages to other users through the Internet. In order to send an e-mail, you need to specify the e-mail address of the receiver. The format of the e-mail address is:

username@hostname

In the e-mail address format, the character @ is pronounced as **at**. The text that appears before @ is known as username, which is the name of the e-mail account holder, and text that appears after @ is known as domain name, which is the name of the e-mail service provider or e-mail server. For example, in the e-mail address **sample@gmail.com**, **sample** is the username and **gmail** is the domain name.

Q4. How can you check messages in an email-account?

Ans. Suppose you have created an e-mail account on Gmail, then you can check the account by going to <http://www.gmail.com>. Perform the following steps to check your e-mail account:

1. *Type* the URL **http://www.gmail.com** in the **Address bar** of your Web browser. The **Sign in** page of Gmail appears
2. *Type* the password in the **Password** text box.
3. *Click* the **Sign in** button.
Your Gmail account page appears, with the inbox showing a list of e-mail messages.
4. *Click* the subject of the message that you want to read. The content of the clicked message appears.

Q5. Explain the usage of search engines.

Ans. A search engine hunts for the specific information from its own database. Different search engines have different databases. For this reason, it is advisable to use more than one search engine when searching for information on the Internet. Some popular search engines are Google, Yahoo, Bing, Ask, AOL, Look Smart and Netscape Search.

To use a search engine, you just need to go to its home page, type a keyword or a search criterion in the search box and click the Search button. The relevant information is displayed on your screen instantly. Therefore, the task that would have taken you hours to complete were you to do it manually is done in a matter of seconds by the search engine.

Q6. What are the three elements of a search engine?

Ans. The three important elements of a search engine are as follows:

- **Spiders or Web crawlers:** It is the software that browses the Internet in a systematic manner. They are also known by various other terms such as ants, bots, automatic indexers, Web spiders and Web robots. In general, Web crawlers are used to maintain a duplicate copy of all the visited pages. They also maintain an index of the downloaded pages to provide quicker and better searches.
- **Indexing software:** It is the software that receives the list of Web documents and Web addresses collected by the Web crawler. The indexing software extracts the information from the Web documents and Web addresses and then prepares the index of the available information. Finally, it stores the data in the database.
- **Search algorithm:** It refers to the mechanism of searching the keywords in the database of a search engine. If the searched keyword is found in the database, the Web documents and Web addresses related to the keyword are displayed to the user.

Q7. Explain the concept of chatting on the Internet. What are its different modes?

Ans. Chatting is a virtual means of communication that involves sending and receiving messages between users located in any part of the world. Using the Internet Relay Chat (IRC) protocol, you can chat with one or multiple users simultaneously.

A chat room is the hub of Internet chatting. Chat rooms are actually computers (chat servers) that allow several users to log in to them simultaneously. After joining a room, you can read the messages of other users and send your own messages to any one of them. Every user has a login name, which is used to identify him or her. Before you can start chatting on the Internet, you need to be registered with a chat site. There are two basic modes for chatting on the Internet:

- **Text-based chat:** Enables communication between two or more users by sending and receiving text messages.
- **Multimedia chat:** Enables conversation between two or more users through audio and video transmission over the Internet.

Q8. What is video conferencing? Enlist some Linux-based video conferencing software that are freely available on the Internet.

Ans. Video conferencing facilitates two or more users, located at different regions around the world, to see and communicate with each other simultaneously. The process of video conferencing involves the following steps:

1. A video camera continuously captures pictures of the participants doing video conferencing.
2. These pictures are then converted into compressed digital video signals.
3. The compressed digital video signals are sent through a transmission medium to other persons who are part of the video conferencing.
4. At the receiver's end, the process is reversed, and the video signals are decompressed.
5. The decompressed video signals are continuously displayed as pictures on an output device, such as a monitor or projector.

Several Linux-based video conferencing software are freely available on the Internet. Some of which are TPCCam, Ekiga or GnomeMeeting, Skype for Linux, Brosix and Goober.

Q9. Discuss the importance of FTP protocol.

Ans. FTP is an acronym for File Transfer Protocol. As the name implies, FTP is a protocol that is used to transfer files among users over the Internet. File transfer simply means sending a copy of a file from one computer to another. As most of the information on the Internet is available in the form of files, you can use the FTP protocol to access this information. According to FTP terminology, the computer on which you are working is known as local host and the other computer is known as remote host. When you copy a file from a remote computer to your computer, it is known as downloading the file. On the other hand, when a file is copied from your computer to a remote computer, it is known as uploading the file.

Q10. What are blogs? What are different types of blogs?

Ans. A blog can be defined as a website or part of a website containing the thoughts and ideas of a user. It is written in the form of a continuous commentary on any subject. Other users can read the blog as well as post their comments. Some common types of blogs are as follows:

- **Personal blog:** Refers to a blog developed by a user for his/her personal use.
- **Corporate and organizational blog:** Refers to the blogs that are created to generate business.
- **Genre blog:** Refers to the blogs that contain information, articles and discussions related to a particular subject. Examples of genre blogs are art blogs, fashion blogs, music blogs and political blogs.

Chapter 3: Introduction to Database

Q1. What are the limitations of a traditional file processing system?

Ans. The traditional file processing system has the following major limitations:

- **Data duplication:** As separate applications are used for separate data files, the same data is repeated again and again. It leads to the duplication of data.
- **Data inconsistency:** It occurs when the same data that appears in different files is not updated simultaneously.
- **Lack of data integration:** It is difficult to fetch the information from many files as each data file is independent of each other.
- **Data insecurity:** It is difficult to secure the data files in the traditional file processing system as each data file is associated with a unique application.
- **Poor data manipulation:** The data manipulation in traditional file processing system is poor as there is no relationship between different data files.

Q2. Define data, database and DBMS.

Ans. Data is a collection of unorganized facts, such as symbols, alphabets, or numbers, used for representing ideas and objects. The organized form of data is known as information. The collection of information in such a way that it can easily be accessed, managed, or updated by users is known as database. The application that controls the creation, maintenance and use of a database is known as Database Management System (DBMS). In DBMS, data is stored centrally, which allows users to easily access and share data as a common resource.

Q3. Discuss the need of a DBMS.

Ans. The need for a DBMS can be understood on the basis of the following parameters:

- **Storage:** DBMS stores large amounts of data. Therefore, you can add more data to it in comparison to the traditional file processing system.
- **Sorting:** DBMS sorts the data into an organized manner. Sorting refers to the procedure of arranging the data in a proper sequence, thereby, making it easy to handle.
- **Summarizing:** DBMS allows you to summarize the data. Summarizing refers to the procedure of retrieving the summary of the data based on some defined criteria.

- **Classifying:** DBMS classifies the data depending on the requirements. Classifying refers to the procedure of dividing data into categories based on some defined circumstances. For example, in a bank, DBMS categorizes the accounts in different categories, such as Savings, Current and Salary accounts.
- **Retrieving:** DBMS allows you to fetch data instantly from the database. Retrieving is the process of fetching information from the database.

Q4. What are the advantages of using a DBMS over a traditional file processing system?

Ans. The advantages of using a DBMS over a traditional file processing system are as follows:

- DBMS reduces data redundancy
- DBMS reduces data inconsistency
- DBMS allows data sharing
- DBMS enforces database standards
- DBMS ensures data security
- Backup and recovery

Q5. What are the disadvantages of using a DBMS?

Ans. Some disadvantages of using a DBMS are as follows:

- **Complexity:** DBMS is complex software and the end users must be aware of the complete functionality of the DBMS to use it properly.
- **Size:** DBMS is large software that occupies a large amount of disk space. To work effectively, it needs large amounts of memory.
- **Slow performance:** DBMS is slow in performance than a traditional file processing system as the traditional file processing system is written for a specific purpose while DBMS is written for general purpose.
- **Cost:** The cost of DBMS is more than a traditional file processing system. The cost of DBMS usually depends on the functionalities offered it.

Q6. Enlist and explain different types of databases.

Ans. The different types of databases are as follows:

- **Flat-file database:** Refers to a type of database in which a single table or file stores all the data, for example, an employee database in an organization. The most common example of this type of database is a spreadsheet.
- **Relational database:** Refers to a database in which data is stored in multiple tables. These tables are linked to one another through common fields.
- **Distributed database:** Refers to a central database that is distributed at multiple locations within a network. It allows the users to access the database without being interfered with each other. However, the central DBMS synchronizes the scattered databases regularly so that all the databases support data consistency.

Q7. Explain about OpenOffice BASE.

Ans. OpenOffice BASE, also known as BASE or OO BASE, is a database application in the OpenOffice suite. BASE is a popular RDBMS. In BASE, a database file is stored with the .odb extension. The .odb implies OpenDocument database. The BASE database file contains data in four objects, namely, table, query, form and report.

Q8. Define table in a database. What is the role of primary key in a table?

Ans. A table stores data about a single entity, such as employee and student. The data is organized in the format of vertical columns and horizontal rows. This structure helps to represent data in an easily understandable and readable format. In a table, the intersection of a row and a column is known as a cell. In a table, a row is also known as record, which represents a complete set of information. A record consists of fields where each field contains one type of information.

Primary key refers to a key that helps us to uniquely identify a record in a table. The primary key is used to avoid duplicate data. In other words, a column with a primary key will not contain duplicate information in any of its records.

Q9: What do you understand by queries in a database?

Ans. A query refers to a statement that returns records according to the conditions and specifications set by a user. In other words, it is a request sent by the user to retrieve specific data from a table in a database. Suppose a user wants to know the number of students whose marks are more than 25 from a table containing students records. In such a case, he/she can use a query to perform the task in a matter of seconds.

Q10: Discuss the points that need to be considered while designing a database.

Ans. You need to take decisions on the following important aspects while designing your database:

- **Determining the purpose of your database:** You have to decide why you need to create a database and how you intend to use it. You also need to know what type of information you want from your database.
- **Defining the tables you require:** Tables are one of the most important objects of a database. To create a well-organized database, you have to define the tables for it.
- **Determining the fields you require:** You need to decide the type and number of fields required for the tables in your database.
- **Identifying the primary key in a table:** You need to identify a primary key for each table in your database.
- **Determining the relationship between tables:** You need to determine the relationship between two or more tables in your database.

Chapter 4: Database Management Tool — OpenOffice Base

Q1. What is a database? Explain with a suitable example.

Ans. A database refers to a collection of organized data. This data can be accessed, managed and updated easily. An example of a database is a telephone directory, which contains the names, addresses and phone numbers of the people of a particular area. The data in the database is always related to a single entity, such as an organization or enterprise. For example, the database of an organization contains data related to its business and customers.

Q2. What are the components of OpenOffice BASE?

Ans. The components of OpenOffice BASE are as follows:

- **Title bar:** Displays the title of the BASE database.
- **Window control buttons:** Allow you to minimize, maximize and close the OpenOffice BASE window
- **Menu bar:** Contains various menus, such as File, Edit, View, Insert, Tools, Window and Help. It is located below the Title bar.
- **Toolbar:** Contains various tools for performing standard tasks, such as creating a new database, opening an existing database and saving a database. It is located below the Menu bar.
- **Tasks pane:** Contains different options to create a database object on the basis of the selection of database object button.
- **Database object buttons:** Allow you to create various objects of the database, such as tables, queries, forms and reports. These buttons are located in the left pane of the OpenOffice BASE window.
- **Status bar:** Shows the progress of any task being performed on the database. It is located at the bottom of the OpenOffice BASE window.

Q3. Explain the concept of database table with a suitable example.

Ans. A table presents data in a tabular format, i.e. in rows and columns. The data of a table is related to a single entity. For example, a table named Student would contain information or data about the students of a particular school. It would include information, such as the names of the students, their roll numbers, their addresses and their contact numbers, as shown in the following table:

STUD_NAME	STUD_ROLLNO	STUD_ADDRESS	STUD_CONTACTNUMBER
Rahul	CX01	Laxmi Nagar	8978458945
Manoj	CX02	Preet Vihar	9878458945
Rakesh	CX03	Karol Bagh	7898456512

As you can see, the preceding table contains records and fields. A record is defined as a row containing all data or information about a particular entity in a table. On the other hand, a field is a column that contains similar type of data. For example, the complete information about a particular student, such as Rahul, CX01, Laxmi Nagar, 8978458945, is a record, whereas Stud_RollNo is an example of a field.

Q4. Enlist and explain the components that need to be considered while designing the structure of a table.

Ans. You need to have the basic knowledge of the following table components while designing the structure of a table:

- **Field Name:** In a table, a field name serves as a label that specifies the type of information contained in a particular field.
- **Data Type or Field Type:** When you create a table in BASE, you need to assign data types for each field in a table. These data types specify the type of data that each field will hold, i.e. whether the field contains textual or numerical data.
- **Field Length:** In a database, field length is the number of characters allowed in a field. You can specify the field length to set the size of a field in a table.
- **Field Properties:** In a database, field properties play an important role in controlling the behaviour of a field.

Q5. How can you add field in a table?

Ans. After creating a table, you can add one or more fields in the table. In BASE, adding new fields in an existing table is easy. You only need to open the table in the Table Design view to make the required additions. Perform the following steps to add fields in a table in BASE:

1. *Right-click* the name of the table in which you want to add fields.
2. *Select* the **Edit** option from the context menu. The **Table Design** window appears.
3. *Type* suitable name in the **Field Name** column.
4. *Select* the **Text [VARCHAR]** field type for the field
5. *Click* the **Save** icon to save the changes in the table.

The specified field is now added.

Q6. Write the steps for moving field in a table.

Ans. Moving a field means changing its position in a table. The steps for moving field in a table are as follows:

1. *Right-click* the name of the table in the OpenOffice BASE window.
2. *Select* the **Edit** option from the context menu. The **Table Design** window appears.
3. *Select* the field that you want to move.
4. *Right-click* the grey colour button beside the field name. A context menu appears.
5. *Select* the **Cut** option from the context menu. The field name disappears from the **Table Design** window.
6. *Right-click* any grey colour button where you want to paste the cut field in the **Table Design** window. A context menu appears.
7. *Select* the **Paste** option from the context menu. The field appears at the bottom, after all the fields in the table.

Q7. Enlist the steps of deleting a field in a table.

Ans. In BASE, you can delete the fields that you no more require in a table by using the Delete command. To delete a field, first you need to open the table in the Table Design view.

Perform the following steps to delete a field from a table in Base:

1. Right-click the name of the table in the OpenOffice BASE window. A context menu appears.
2. Select the Edit option from the context menu. The Table Design window appears.
3. Select the field that you want to delete.
4. Right-click the grey button beside the field name. A context menu appears.
5. Select the Delete option from the context menu. The selected field is deleted from the table.

Q8. What is a primary key? How can you set primary key in a table?

Ans. A primary key is a key that is used to uniquely identify data in a column of a table. It states that the column to which the primary key is applied cannot have duplicate entries. It means that each value in the column must be unique. You must also remember that a primary key column cannot have a NULL value. Perform the following steps to set a primary key in a table:

1. *Right-click* the name of the table in the OpenOffice BASE window. A context menu appears.
2. *Select* the Edit option from the context menu. The Table Design window of the selected table appears.
3. *Select* the field that you want to make as the primary key and right-click it. A context menu appears.
4. *Select* the Primary Key option from the context menu.

The selected field is set as the primary key.

Q9. Explain the SELECT clause with a suitable example.

Ans. The SELECT clause is used to retrieve data from a database. The syntax is as follows:

```
SELECT "column_name", "column_name" FROM "table_name";
```

The syntax implies that the user needs to start with the SELECT keyword for specifying different column names separated by commas. The keyword FROM is used to specify the table to which the columns belong to. Consider the Car_Model table given below:

COMPANY	COUNTRY	MODEL	COLOUR
Toyota	Japan	Camry	Silver
Honda	Japan	Accord	Grey

The database would display the following result.

Japan
Japan

Q10. Discuss the purpose of the INSERT clause in a database.

Ans. The INSERT clause is used to add new data to an existing table. The syntax is as follows:

```
INSERT INTO "table_name" ("column_name", "column_name", "column_name",...)  
VALUES (value1, value2, value3,...);
```

Now, let us consider the example of the table Car_Model having columns Company, Country, Model and Colour. Now, we want to insert one more row with values as Audi (under the Company column), Germany (under the Country column), A4 (under the Model column), and White (under the Colour column). Then, the SQL statement to insert this data would be as follows:

```
INSERT INTO "Car_Model" ("Company", "Country", "Model", "Color") VALUES  
( 'Audi', 'Germany', 'A4', 'White' );
```

Chapter 5: Information Representation Method — HTML-I

Q1. Define HTML. What is its purpose?

Ans. Each Web page that you see on a Web browser is created using a language called HyperText Markup Language (HTML). HTML directs the browsers how to display text, graphics and hyperlinks on a Web page. HTML is not a programming language; it is a markup language. The purpose of HTML is to display text, images, tables and hyperlinks in a Web browser. The following are the advantages of using HTML:

- Does not require any special software knowledge
- Requires just a text editor for coding, such as gedit or Notepad
- Offers compatibility with all Web browsers
- Allows you to easily update information appearing on Web pages

Q2. What are different categories of elements in HTML?

Ans. An HTML element is a collection of an opening tag, closing tag and content between them. However, some HTML elements, such as `
` and `<HR>`, do not have any content; therefore, they do not need a closing tag. Thus, based on the closing tag requirement, elements are divided into the following two categories:

- **Container element:** Refers to an element that contains an opening as well as a closing tag. It can also be defined as the element that contains some text associated with it. Examples of tags that come under the category of the container elements are `<HTML>`, `<HEAD>`, `<TITLE>` and `<BODY>`.
- **Empty element:** Refers to an element that contains only an opening tag, such as `
` and `<HR>`. In other words, an empty element does not contain any text associated with it.

Q3. What is an attribute? How are they written in HTML element?

Ans. An HTML tag is accompanied by an attribute. An attribute is a keyword associated with any type of tag and provides extra information or functionality to a tag. Attributes are always used in the opening tag. The syntax of the HTML element structure is given as follows:

```
<tag-name attribute-name="attribute-value">content </tag-name>
```

In the preceding syntax, we note these features of the HTML element structure:

- An HTML tag consists of a tag name, which is followed by either a single attribute or a list of attributes
- If there is more than one attribute listed with a single tag, the attributes should be separated by a space
- The attribute value is provided after the equal sign and in quotes after the attribute name

An example of an HTML tag with attribute is:

```
<BODY bgcolor = "yellow">The background color of the HTML document is  
yellow.</BODY>
```

Q4. List the various editors used for creating and saving an HTML document.

Ans. An HTML document can be created by using a new, blank document in a text editor, such as Notepad or gedit, adding your HTML code to the document, and saving it with either `.htm` (in UNIX operating system) or `.html` (in Windows operating system) extension. The various text editors available to create an HTML document are:

- **Notepad:** It is the default text editor in the Windows operating system
- **gedit:** It is the default text editor in the Linux operating system
- **FrontPage or FrontPage Express:** It is the HTML editor from Microsoft for Windows OS

After the selection of a text editor, the next step is to select a Web browser to view an HTML document. The various Web browsers available with different operating systems are Internet Explorer (IE), Microsoft Edge, Mozilla Firefox, Netscape Navigator and Iceweasel.

Q5. How a background attribute is used in the `<body>` tag?

Ans. The background of an HTML Web page can be modified in many ways, for example, by adding a background colour to the Web page and by adding a background image to the Web page. The `BACKGROUND` attribute of the `<BODY>` tag is used to modify the default background of the Web page. An example of using the

BACKGROUND attribute for inserting an image as a background of a Web page is as follows:

```
<HTML>
<HEAD>
<TITLE>
WELCOME TO HTML
</TITLE>
</HEAD>
<BODY BACKGROUND="img.jpg">
<H1>Web page with background image.</H1>
</BODY>
</HTML>
```

Q6. Discuss different types of heading level tags in HTML.

Ans. Heading levels help in defining the layout and structure of an HTML document. They allow you to present the information in the document in an organized way. Headings are typically displayed in large and bold fonts, which differentiate them from the rest of the text in the body of the document. HTML provides six levels of heading, which are specified by the following tags: <H1>, <H2>, <H3>, <H4>, <H5> and <H6>.

Any text that is placed within the preceding tags appears in bold, and the size of the text depends on the heading level, with <H1> being the largest heading and <H6> being the smallest.

Q7. What do you understand by formatting of text in HTML?

Ans. Formatting text in HTML means changing the default settings of the text appearing in your Web page. You can format the text by changing its various properties, such as size, colour, style and alignment. Text formatting allows you to make your Web page appealing and attractive for other users. Different types of HTML tags are used to format text. These tags are used between the <BODY> and </BODY> tags. The different ways in which you can format text in HTML are:

- Displaying text in paragraph style
- Applying line breaks
- Placing the text in the center of the Web page
- Using a different font on the Web page
- Creating a horizontal rule

Q8. How the <P> tag is different from the <Pre> tag?

Ans. Usually, a new paragraph is created in a document by pressing the Enter key. But, in case of an HTML document, the paragraph created by the Enter key is not understood by the browser. The alignment of a paragraph can be set by using the ALIGN attribute of the <P> tag. There are three types of alignments, namely, left, right and centre. You need to use the appropriate alignment attribute with the <P> tag to align the paragraph text.

In the <PRE> tag of HTML, PRE stands for preformatted text, which implies that this tag helps you not only display text in the Web browser in a fixed-width font but also display the text in the same way as you have typed it in the code. The <PRE> tag displays the text in the Web browser with all the blank lines and tabs. The <PRE> tag is generally used to display code in a Web page. The default text font that the <PRE> tag uses is the Courier font. You should use the <PRE> tag to maintain a text format, which includes line breaks and tabs.

Q9. Write a short note on the <BASEFONT> tag.

Ans. In HTML, the <BASEFONT> tag is used to change the default font properties, such as font size, font face, and font colour, of the entire text in an HTML document. The default font size set by the <BASEFONT> tag is 3, and each next or previous size is 20% larger or smaller than the default font size. This implies that font size 4 is 20% larger than font size 3 and font size 2 is 20% smaller than font size 3. Similarly, font size 5 would be 40% larger than font size 3 and font size 1 would be 40% smaller than font size 3.

Q10. Discuss the <HR> tag with its attributes.

Ans. In HTML, you can create a horizontal rule using the <HR> tag. The purpose of a horizontal rule is to break your text in a Web page. The <HR> tag creates a horizontal line, which can be used to separate paragraphs or sections in a Web page. This tag is useful for separating blocks of text in long documents, which the Web browser presents as a single page. The Web browser starts a horizontal rule from a new line, and any text after this tag is displayed in a new line. The attributes of the <HR> tag are as follows:

- ALIGN
- SIZE
- WIDTH
- COLOR
- NOSHADE

Chapter 6: Information Representation Method — HTML-II

Q1. Define an image. Enlist various formats of images that can be inserted in a document.

Ans. An image can be defined as a graphical representation of information. A lot of information can be conveyed in just a single image and that too more emphatically than words. An image not only makes a Web page attractive, it also helps break the monotony of text and maintain the user's interest in the Web page. You can use HTML to insert images in your Web pages easily. Web browsers display images in the following formats:

- Graphics Interchange Format (GIF)
- X BitMap (XBM)
- Joint Photographic Experts Group (JPEG)
- Portable Network Graphics (PNG)
- X PixMap (XPM)

Q2. What is the importance of the alt attribute in the tag?

Ans. Sometimes, the Web browser does not display the image inserted in your Web page. In such cases, the alternate text can be specified for the image, which is displayed if the image is not visible on the Web page. Generally, a short description about the image is provided as an alternate text. The text appears when the image is not present at the specified location or the image is unable to upload. This way, even if the image is not displayed, the user is still able to have some idea of what it is that is missing in the Web page. In HTML, the ALT attribute of the tag is used to provide alternate text for an image.

Q3. Discuss the alignment of an image in a Web browser.

Ans. HTML allows you to set the position of an image on a Web page by aligning it according to your requirements. You can align an image by using the ALIGN attribute of the tag. The ALIGN attribute takes one of the following values:

- **Left:** The left alignment aligns the image to the left of the browser window.
- **Right:** The right alignment aligns the image to the right of the browser window.
- **Top:** The top alignment aligns the top of an image to the top edge of the tallest item (assuming it as another image) in the text line. If there is no other image in the text line, then the image (that you want to align) is aligned to the top of the text.
- **Bottom:** The bottom alignment aligns the bottom of the image to the same horizontal plane as the baseline of the text.
- **Middle:** The middle alignment aligns the image to the baseline of the text in which it is placed.

Q4. How can you set the height and width of an image?

Ans. The dimensions of the images are defined by the Web browser by retrieving each image file and extracting its embedded height and width certifications. The Web browser then adjusts the layout of the Web page to

insert the images. However, this is not an efficient way to render a Web page since this can take a lot of time and slow the speed of the Web page.

A more efficient way to specify the dimensions of an image is using the HEIGHT and WIDTH attributes of the tag. That way, the Web browser can reserve space before actually downloading an image, thereby speeding up the rendering time. Both attributes require integer values that indicate the image size in pixels.

Q5. Write a short note on linking of Web pages in HTML.

Ans. Links (or hyperlinks) are used to connect one Web page to another. When a user clicks a link, he or she is redirected (sent) to the Web page specified as the destination Web page for the link. In HTML, you can also link different sections of the same or different Web pages. A link is highlighted and underlined to differentiate it from ordinary text in the Web page. In HTML, you can create a hyperlink by using the anchor (<A>) tag. The <A> tag uses the HREF attribute to provide the reference of the Web page that you want to link. Using HTML, you can do the following two types of linking:

- **External linking:** Refers to the type of linking which, on clicking, opens a document or Web page (to which the hyperlink is linked) in a new window.
- **Internal linking:** Allows you to link different sections of the same as well as different Web pages.

Q6. What is the use of the HREF attribute?

Ans. The term HREF stands for Hypertext Reference. In HTML, the HREF attribute of the <A> tag is used to create a hyperlink. It specifies the destination of the hyperlink. In other words, the attribute takes the reference of the destination Web page containing the information you want. Therefore, in the HREF attribute, you have to specify the URL or address of the target Web page to which you will be redirected. An example of using the HREF attribute is as follows:

```
<A HREF="https://www.google.co.in"> Click Here to Visit Google </A>
```

In the preceding example, we have shown a simple way to use the <A> tag to create a link. However, you can use the <A> tag for more complex tasks, such as with images and with lists.

Q7. What do you understand by internal linking in HTML?

Ans. Hyperlinks within the same Web page (internal links) may be created if the Web page contains a large amount of content with many subsections. You can create an internal link by using the anchor (<A>) tag. The <A> tag used to create an internal link is called named anchor.

To create an internal link, you need to use two <A> tags. The first <A> tag is used to specify the name of the location you want to link, that is, the name of the destination, by using the NAME attribute of the <A> tag. This is known as creating the target fragment. The syntax of the first <A> tag (for internal linking) is defined as follows:

```
<A NAME="Link"> </A>
```

Q8. How can you send e-mail messages from a browser?

Ans. Internet provides a quick and economical means of communication through electronic mail (e-mail). To send and receive e-mail messages, you need to use a browser, such as Internet Explorer or Mozilla Firefox.

You can also use HTML to transmit e-mail messages over the Internet. For this, you need to use the MAILTO link. The MAILTO link refers to an HTML link that is used to activate the mail client installed on the computer system to send e-mails. This link is used with the HREF attribute of the <A> tag. You need to specify an e-mail address as a value for the link. You can also add other parameters including subject, cc, bcc and body text, to the e-mail message.

Q9. Define table in HTML. Enlist the various tags used to create a table in HTML.

Ans. An HTML table consists of rows and columns, which are further divided into cells in which you can enter data. Tables allow you to arrange the data in the Web page in a format that is easy to read and understand. The data of a table may be text or graphics.

A table can have a caption associated with it, which describes the table in brief. Moreover, you can specify the headings for the table, set the table's border and colour, and align the table and table content according to

your requirements. The following tags are used to create a table in HTML:

- **<TABLE>**: Helps in inserting a table in your Web page
- **<TR>**: Defines table rows
- **<TD>**: Defines the cells in a table
- **<TH>**: Defines the current cell as a table header
- **<CAPTION>**: Defines a caption (or title) for a table

Q10. Write a short note on the BORDER and BORDERCOLOR attributes.

Ans. A table created in HTML does not have a border by default. A table without a border looks incomplete; therefore, you may want to include borders for your table. You can add a border for your table by using the BORDER attribute of the <TABLE> tag. When adding a table border, you can also specify the thickness of the border according to your requirements. By default, the value of the table border is 0 (zero).

In addition to applying a border to a table in HTML, you can also specify a colour of your choice for the border to make it more attractive in your Web page. In HTML, you can change the colour of a table border by using the BORDERCOLOR attribute.

Chapter 7: Information Representation Method — XML

Q1. Discuss the history of XML.

Ans. A markup language means a type of language that defines the structure and layout of data. The first markup language, created in 1960s, was Generalized Markup Language (GML). This language used tags to format the text of a file. Further, this led to the development of Standard Generalized Markup Language (SGML) in 1986. SGML allowed the user to define and create platform-independent files. However, the software used to create SGML files was complex and expensive, leading to the development of Hypertext Markup Language (HTML).

HTML, which is a subset of SGML, is limited in its scope and only intended for displaying files in a browser. This led to the development of XML.

Q2. What are the main features of XML.

Ans. The main features of XML are as follows:

- **Designed to describe data:** Implies that the focus of XML is on the description of data, not its presentation. HTML is designed to focus on the presentation of data.
- **Structured language:** Defines the structure of a document using tags. XML is a user-defined language, implying that it allows you to create your own tags.
- **Platform-independent:** Enables you to execute XML-based applications on any operating system.
- **Language-independent:** Implies that you can use XML with any other technology or language, such as Java, .NET and Hypertext Preprocessor (PHP).
- **Data-descriptive:** Implies that you can create your own tags to describe the data according to your requirements. Therefore, you do not need any prior knowledge to create or understand these tags.
- **Extensible:** Creates user-defined tags. XML does not provide any predefined tags to structure your document. Rather, you have to create all the tags of the document.

Q3. Mention the points that need to be considered while creating an XML document.

Ans. You need to consider the following points while creating an XML document:

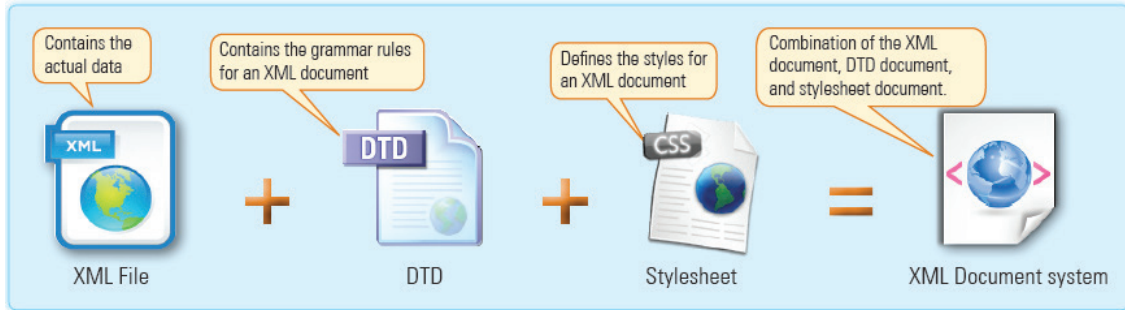
- XML documents must have starting and closing tags.
- XML tags are case-sensitive.
- XML elements must be properly nested.
- XML documents must have one root element.
- The values of XML attributes must be enclosed in double quotes.

Q4. Explain the XML document structure.

Ans. The XML document system is a combination of the following types of documents:

- **XML:** Refers to an XML document.
- **DTD:** Refers to the document that defines the structure and rules of an XML document. DTD is the short form of Document Type Definition.
- **Stylesheet:** Specifies the style (appearance) for the XML document. There are two types of stylesheets available in XML — Cascading Style Sheets (CSS) and Extensible Stylesheet Language (XSL).

The following figure shows the structure of the XML document system:



Q5. Discuss the physical structure of an XML document.

Ans. Physical structure includes the actual data of an XML file. The storage unit that contains the actual data is known as an entity, which can be of the following two types:

- **Internal entity:** Refers to the entity that is contained inside the XML document
- **External entity:** Refers to the entity that is contained outside the XML document

The following are some important points to remember regarding the physical structure of an XML document:

- An entity is a storage unit, which contains the actual data.
- A parsed entity is validated by an XML-parser.
- An unparsed entity contains some related information and is not validated by the XML-parser.

Q6. Explain the components of logical structure of an XML document.

Ans. Broadly, the logical structure of an XML document contains the following two components:

- **Prolog:** The prolog is an introduction to the XML document. Although it is an optional structural element, it is mostly included in a well-formed document. The prolog contains the following components:
 - XML declaration
 - Processing Instructions (PI)
 - Document Type Declaration
 - Comments
 - White space
- **Data instance:** Data instance is a part of the XML document that follows the prolog and contains the actual data of the document. The basic building blocks of data instance are elements, which contain the data items present in the XML document. Data instance contains the following components:
 - Elements
 - Tags
 - Attributes
 - Content
 - Special Characters

Q7. What is DTD? Explain.

Ans. The document type declaration is used to specify a DTD document that contains the grammar rules or guidelines for a particular class or section of the XML document. The document type declaration begins with the `<!DOCTYPE>` declaration. The following code snippet shows the use of document type declaration:

```
<!DOCTYPE Books SYSTEM = "Book.dtd">
```

The document type declaration is an optional component, but if you use it, then it must be placed after XML declaration and before the root element of the document. Some important points to note about XML declaration are as follows:

- XML declaration starts with the `<?xml` tag and ends with the `?>` tag.
- XML declaration must include the version attribute, but the encoding and standalone attributes are optional.
- XML declaration must appear at the beginning of the document.
- The version, encoding and standalone pseudo-attributes must be provided in that order.

Q8. Why comments are used in XML?

Ans. A comment is a note or information that appears in the code of an XML document to help you understand the code better. Comments are not displayed in the output. They are not part of the program and therefore, are not parsed by the XML-parser. They are simply inserted to make it easy for the user to understand the XML document. Comments are created using an opening angular bracket followed by an exclamation mark and two hyphens (`<!--`). The comment entry can be closed using two hyphens followed by a closing angular bracket (`-->`). The following example illustrates the use of a comment in an XML document:

```
<!--Books is the root element-->
```

The comment in the preceding example informs the user that the Books is the root element. Comments can be inserted anywhere in the XML document, even before the root element. However, you cannot write a comment inside a tag or another comment.

Q9. Discuss the concept of root and child elements in XML.

Ans. A root element contains all the other elements in an XML document. It means all the elements are nested within the root element. In other words, you can say that the root element is the parent element for all the other elements or all the other elements are nested within the root element. An XML document must contain at least one element that will be a parent for all the other elements.

Apart from content, an XML element can also contain other elements in the form of child elements. A child element is an element that is contained within other elements.

Q10. Discuss some special characters used in XML.

Ans. A special character can be defined as a short name given to a set of information. In other words, a special character is a name that is associated with a block of data. This data can be a chunk of text or a reference to an external document that contains textual or binary information. When a special character is used in an XML document, it expands to its full definition. In this way, the special character acts as a shortcut for the associated chunk of data. Some examples of special characters are as follows:

- **<** : Represents the less than (`<`) symbol
- **&** : Represents the ampersand (`&`) symbol
- **>** : Represents the greater than (`>`) symbol
- **"** : Represents the double quotation marks (`"`)
- **'** : Represents the apostrophe (`'`) symbol

Chapter 8: Societal Impacts of IT

Q1. What is the role of ethics in life?

Ans. Ethics refer to the way we conduct ourselves with people in different circumstances. They play a key role in our life, be it at work or at home. Applying ethics to the world of the Internet means we must ensure that our actions do not harm or cause inconvenience to other online users. In other words, we must observe proper etiquettes while using the Internet. It is the responsibility of the users themselves to ensure that the environment of the Internet remains safe and secure for information exchange. They can do this by following some rules and ethics designed for Internet users.

Q2. Enlist some common types of threats to a computer system.

Ans. The following is a list of some common types of threats that may affect a computer:

- **Worms:** Refer to malicious programs that can copy themselves and use the network to send copies of themselves to other computers. A worm causes harm by consuming the entire disk space or memory of your computer through self-replication.
- **Malware:** Refers to malicious software that is designed to interrupt ongoing computer operations, collect private information and gain unauthorized access to your system resources.
- **Spyware:** Refers to a type of malicious software that is installed on a user's computer to monitor and gather information about his or her activities on that computer. The information is sent to the creator of the spyware.
- **Spamming:** Refers to the act of posting bulk messages to several users simultaneously by a known or unknown source. These messages are unwarranted and can be irritating to the user. Generally, commercial organizations resort to spamming as a convenient way for advertising their products.
- **Virus:** Refers to the programs that may or may not self-replicate and damage the data and executable files (files with an .exe or .com extension) on your computer.

Q3. What do you understand by phishing?

Ans. Phishing refers to a technique of obtaining personal information, such as login name, password and credit card details. Phishing normally takes place through e-mail or instant messaging.

In phishing, an imposter sends you an e-mail or uses a website that looks genuine to trick people into giving important information about themselves. For example, the imposter may send an e-mail (which appears genuine to you), pretending to be a representative of your company. In the e-mail, he may ask you to update your information online by clicking a specified link. As you click the link, you may be redirected to a fraudulent website where you are asked to enter important information about yourself, which can later be used for cyber-crime and fraud.

Q4. Differentiate between hackers and crackers.

Ans. Hacker is a slang term used for a person who is passionate about computers and enjoys gathering any type of information regarding their use, programming languages and other equipment. The term is sometimes used derogatorily to refer to a person who uses this knowledge to break into a computer to steal sensitive information. However, hackers like to think of themselves as people who have the skill to access any computer system but with no malicious intent. In their opinion, those who gain unauthorized access to a computer with the intention of stealing information or causing harm to the computer by destroying software are a different set of people known as crackers. However, it should be noted that the popular mass media finds no distinction between the two terms and uses them interchangeably.

Q5. Enlist different types of computer viruses.

Ans. A virus is a harmful program, which, on entering a computer, starts creating copies of itself. The different types of computer viruses are:

- **File Infector:** Infects program files
- **Boot Sector Virus:** Infects the files of operating systems, such as Windows 7 and Linux

- **Macro Virus:** Infects data files
- **Browser Hijacker:** Infects the Web browser functions
- **Direct Action Virus:** Is activated when the file containing the virus is executed
- **Multipartite Virus:** Spreads in multiple ways, affecting the computer in different ways, i.e. harm operating system files or specific data files
- **Polymorphic Virus:** Consists of encryption algorithm that changes the code, and thus provides protection from antiviruses
- **Resident Virus:** Enters into the system's memory and infects specific files
- **Web Scripting Virus:** Affects the computer through the complex code of a website

Q6. What are the common symptoms of a virus attack?

Ans. The common symptoms of a virus attack are as follows:

- The computer begins to run slowly.
- Unusual messages and graphics appear on the computer screen for inexplicable reasons.
- Music not associated with any of the open programs begins to play.
- Some program or data files on the computer either become corrupt or difficult to locate.
- Unknown files or subdirectories are created.
- The size/dates of executable files change on their own.
- The volume label of your hard disk changes mysteriously.
- Hardware devices begin to exhibit unusual behaviour.

Q7. Enlist the ways by which a computer virus spreads from one computer to another computer.

Ans. Computer viruses spread from one computer to another by attaching themselves to executable files or boot records of disks and diskettes. Computer viruses can also be found in e-mail attachments and other programs that are downloaded from the Internet. A computer virus spreads from one computer to another in the following ways:

- Executing an infected file on a computer
- Using infected external storage devices, such as CD, floppy disk and pen drive
- Opening infected e-mail attachments
- Downloading infected files and gaming software from the Internet
- Using a local network to access infected files lying on other computers
- Surfing suspicious websites on the Internet

Q8. What are the damages caused by a virus?

Ans. The main objective of any virus is to damage your computer and destroy data. A virus infects your data in the following ways:

- Destroying your computer File Allocation Table (FAT), which may eventually corrupt the entire file system. As a result, you may have to reinstall the file system.
- Deleting or removing files and programs from your hard disk.
- Creating duplicate files, thereby, reducing the available space on your hard disk.
- Destroying executable files.
- Causing your computer to hang and stop working.

Q9. What is a worm? Discuss the basic characteristic of a worm.

Ans. A worm is a program that harms a computer and destroys the data stored in it. A computer worm is a self-replicating program that uses the network to send its copy from one computer to another. Worms are considered more harmful than viruses because they rely less (or not at all) on human behaviour to spread themselves. Computer worms spread much more rapidly than computer viruses. Worms use parts of an operating system that are automatic and usually work in the background.

The following are the basic characteristics of a worm:

- Able to replicate itself
- Does not require another program to host it
- Able to replicate itself across network links

Q10. How can you prevent a virus attack?

Ans. You can follow these guidelines to prevent a virus attack:

- Avoiding the temptation to open e-mail attachments and downloads from unreliable sources. Resist the urge to double-click everything in your mailbox. If you get an unexpected file attachment, send an enquiry e-mail to its sender. Ask him about the nature and function of the file attachment.
- Installing a reliable antivirus scanning software and downloading its updates regularly. Major antivirus software vendors, including Symantec, Network Associates, Computer Associates and Trend Micro, provide regular updates. Some vendors also offer a service that automatically retrieves updates on your computer from the company's website.
- Installing only licensed software.
- Scanning files downloaded from the Internet or other external sources.
- Keeping regular backups of your data.