

Network and Digital Citizenship

Network and Digital Citizenship

A. Tick [✓] the correct option.

1. **Workstation** is a computer which is connected to the server. (Option **b**)
 2. **Switch** device provides a central point for cables in a network. (Option **b**)
 3. Which transmission media uses wires or cables to send communication signals? **Physical** (Option **c**)
 4. **FTP** protocol is used for uploading and downloading files from other computers on the Internet. (Option **b**)
 5. **Star** network topology connects all computers and devices to a single cable. (Option **b**)
 6. HTTP stand for Hypertext Transfer **Protocol**. (Option **a**)
-

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

1. Sharing resources saves time and money. (T)
 2. Sender is a medium through which data can travel. (F)
 3. Protocol is a set of rules through which devices can communicate. (T)
 4. Computer networks are of three types. (F) (*Note: The book lists four: LAN, MAN, WAN, PAN*)
 5. The Internet is the world's largest WAN. (T)
-

C. Fill in the blanks.

1. **Protocol** is a set of rules that outlines how two devices communicate over a network.

2. In a **Ring** network, computers and devices are connected in a circular chain.
 3. A device that joins two networks together is called a **Router** (or **Connector**).
 4. **Wireless** is a wireless transmission medium that is used for mobile communication.
 5. Many big companies use **Fiber optic** cables in high traffic networks.
 6. A **Server** stores and provides access to a database.
-

D. Define the following.

1. **Client:** A computer that requests services or resources from a server.
 2. **Server:** A powerful central computer that provides resources and data to other computers.
 3. **Switch:** A device that provides a central connection point for cables in a network.
 4. **TCP/IP:** A set of rules that defines how data is routed across a network.
-

E. Differentiate between the following.

1. **LAN vs. MAN**
 - **LAN:** Connects devices in a small area like a home or office.
 - **MAN:** Connects devices across a larger area like a whole city.
2. **Twisted Pair Cable vs. Coaxial Cable**
 - **Twisted Pair:** Consists of color-coded copper wires twisted together.
 - **Coaxial:** Contains a single copper wire surrounded by insulation and shielding.
3. **IMAP vs. SMTP**

- **IMAP:** A protocol used for receiving and viewing email messages.
- **SMTP:** A protocol used for sending email messages across the internet.

F. Answer the following questions.

1. **What is communication?** It is the process of sharing views, information, and knowledge between people.
2. **How many types of networks are there? Name them.**
There are four types: PAN, LAN, MAN, and WAN.
3. **What is digital citizenship?** It is the responsible and ethical use of technology and the internet.
4. **What is a router?** A device that connects multiple networks and directs data packets between them.
5. **What is the use of hub?** It provides a central location where all cables on a network meet.

G. Answer briefly.

1. **Write about FTP:** File Transfer Protocol is used to exchange files between computers on the internet.
2. **Name the different types of topologies. Explain any one of them:** Bus, Star, and Ring. **Star topology** connects all devices to a central hub.
3. **Describe WAN:** A Wide Area Network covers a large geographical area, such as a country or the world.
4. **Name the different types of wireless transmission media. Explain any one of them:** Infrared and Broadcast Radio. **Infrared** uses light waves for short-distance communication.

5. **What is ring topology? Explain briefly:** It connects computers in a closed loop where data travels in one direction.

H. Competency-based Question

Answer: Yes, A can access the file. They can use a **Local Area Network (LAN)** to share and access files between computers in the lab.

Google Sites

Google Sites

A. Tick [✓] the correct option.

1. Google Sites is primarily used for **a. website creation** [✓]
2. **b. Preview** feature of Google Sites allows users to see how their site will look to visitors before publishing it. [✓]
3. **a. Undo/Redo** allow users to reverse or repeat their recent actions. [✓]
4. **a. Pages** allows us to add and access pages. [✓]
5. On which tab do we get social media links? **b. Insert** [✓]

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

1. Google Sites is a free website building platform. (T)
2. Visitors cannot view a Google Site without invitation. (F)
3. Google Sites has pre-designed templates. (T)
4. The main content area in Google Sites is called the Panel. (F)
5. Navigation helps users to modify site settings, analytics and more. (F)

C. Fill in the blanks.

1. Before using Google Sites, users need to log in to **Google/Gmail** account.
2. The **Share** feature allows us to give other people access to view or edit our site.
3. The header of a Google Site contains a background image and **page title**.
4. The **Settings** feature in Google Sites helps users to modify site settings.

D. Define the following.

1. **Google Sites**: It is a free tool by Google used to create websites easily without coding.

2. **Panel:** It is a side area containing tools (Insert, Pages, Themes) to add content to a site.

E. Answer the following questions.

1. **Write the steps to log in or create an account before using Google Sites.**
 - Open a browser and go to sites.google.com.
 - Enter your Gmail ID and password to sign in.
2. **Write the name of the components of Google Sites.**
 - Site title, Header, Body, and the Side Panel.
3. **What is the use of link in Google Sites?**
 - It is used to add clickable text that directs users to other pages or resources.

F. Answer briefly.

1. **What do you mean by Google Sites? Write its uses.**
 - Google Sites is a website builder used for school projects and personal blogs.
2. **Explain three tabs of Panel.**
 - **Insert:** To add text and images. **Pages:** To add new pages. **Themes:** To change site style.
3. **How do you publish your Google Sites website?**
 - Click the **Publish** button, enter a web address, and click **Publish** again.

G. Competency-based Question

Akash wants to enhance his portfolio... How can he embed YouTube videos?

- Akash should go to the **Insert** tab, select the **YouTube** option, search for his video, and click **Select**.

App Development

App Development

A. Tick the correct option.

1. iOS is developed and supported by **Apple**. (Answer: **b**)
 2. **Productivity** apps are developed to perform daily tasks. (Answer: **b**)
 3. **Gaming** app helps the users improve their cognitive skills. (Answer: **b**)
 4. The **Textbox** component in Thunkable is used to enter text. (Answer: **c**)
-

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

1. Gaming apps primarily focus on improving cognitive skills. — **T**
 2. Hybrid apps combine elements of both native and web apps. — **T**
 3. Educational apps are used by teachers for organizing the teaching process. — **T**
 4. Communication apps enable users to exchange information through speaking, writing, or signs. — **T**
 5. Shopping apps do not allow users to pay through credit/debit cards. — **F**
-

C. Fill in the blanks.

1. **Entertainment** apps are designed to entertain users and keep them engaged.
 2. Thunkable is a web application used for developing apps for **iOS** and **Android** phones.
 3. The **Button** component in Thunkable is used for initiating an action.
 4. Social networking apps help users expand their circle of **friends** and **business** contacts.
 5. Shopping apps enable users to purchase products online and have them **delivered** to their homes.
-

D. Define the following.

1. **Educational Apps:** Apps designed to make teaching and learning more interactive and fun.
 2. **Communication Apps:** Apps that allow users to exchange thoughts or information via text or voice.
-

E. Answer the following questions.

1. **What do you mean by an app?**
An app is a software program designed to perform specific tasks on electronic devices.
 2. **Name the different types of apps.**
The three types are Native apps, Web apps, and Hybrid apps.
 3. **Write a short note on communication apps.**
These apps, like WhatsApp and Skype, help people share information through messages or calls.
 4. **Name the areas of Component Designer window.**
The four areas are: Palette, Layout Screen, Components List, and Properties.
-

F. Answer briefly.

1. **What do you mean by hybrid apps? Explain.**
Hybrid apps are a mix of native and web apps that work across multiple platforms.
 2. **What is the purpose of the join block in Thunkable's Blocks Editor?**
It is used to combine or "string" multiple pieces of text or data together into one.
 3. **What are the main parts of Blocks editor?**
The main parts are the Blocks Palette (built-in blocks) and the Workspace.
 4. **Explain five components to create an app.**
Textbox (entry), Button (action), Label (display), Image (visuals), and Speech (audio).
-

G. Competency-based Question

Option for running it: Shanu can use the **Thunkable Live app** on his smartphone to test and run his app.

Python - Looping and Lists

Python - Looping and Lists

A. Tick the correct option

1. **Sequence** is a collection of elements, string, list, etc. (Option a)
 2. To use else with for loop, the structure is known as **for else** loop. (Option b)
 3. **Break** statement can be used to unconditionally jump out of the loop. (Option a)
 4. **Traversing** refers to a process of accessing each item of a list one by one. (Option b)
 5. **Pop()** function is used to remove the desired element from the list using index value as a parameter. (Option c)
-

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

1. The range() is a pre-defined function of Python. (T)
 2. Continue statement terminates the execution of the loop. (F)
 3. By default, indexing always starts with one. (F)
 4. The Append() function is used to add a new item to the end of the list. (T)
-

C. Fill in the blanks

1. **Loop** causes a program to be repeated a certain number of times.
 2. The range function consists of **Start**, **Stop**, and **Step** parameters.
 3. **Slicing** operator is used to create a slice in Python.
 4. Two or more lists can be joined using **concatenation (+)** operator.
-

D. Define the following

1. **Count() function:** It returns the number of times a specified element appears in a list.
 2. **Pop() function:** It removes and returns an element from the list at the given index.
-

E. Differentiate between the following

- **Append() function:** It adds a single element to the very end of an existing list.
 - **Extend() function:** It adds multiple elements from another list to the end of the current list.
-

F. Answer the following questions

1. **What do you mean by loop?** A loop repeats a section of code as long as a condition is true.
 2. **What is the use of replicating a list?** It uses the `*` operator to repeat the elements of a list a specific number of times.
 3. **Explain for loop.** It is a counter loop used to iterate over a sequence of items.
-

G. Answer briefly

1. **What is while loop? Write its syntax.** It is a conditional loop that repeats while a condition is True.
Syntax: `while condition:` (followed by the loop body).
 2. **What are the different ways to create a type of list?** Using square brackets `[]` or the `list()` constructor.
 3. **Write all the lists of built-in functions.** `Append()`, `Extend()`, `Insert()`, `Pop()`, `Remove()`, `Count()`, `Reverse()`, `Sort()`, `Index()`.
 4. **Why do you use Del keyword?** It is used to delete an element at a specific index or delete the entire list.
-

H. Competency-based Questions

1. **By which statement can you do so?** You can use the **break** statement.
2. **Suggest a suitable function to her to do so.** Sangeeta should use the **remove()** or **pop()** function.

Data Science - An Introduction

A. Tick [✓] the correct option.

1. **b. Machine Learning**
(It automates the process of data analysis.)
2. **b. database**
(Structured data is mostly stored here.)
3. **a. Data architect**
(Responsible for designing and managing data systems.)
4. **b. Python and R**
(Prominent programming languages in data science.)

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

1. **F** (False - Information is processed data, data is unprocessed.)
2. **T** (True)
3. **F** (False - It is widely used in image recognition, e.g., Facebook tagging.)
4. **T** (True)
5. **T** (True)

Exercise Questions (Page 144)

C. Fill in the blanks.

1. **Data science** is the study of data.
2. Data science is a **multi-disciplinary** field.
3. E-commerce websites like Amazon use data science to improve user experience through **personalized recommendations**.
4. Data science is based on Statistics, **Mathematics** and Computer Science.

D. Differentiate between the following.

- **Structured Data:** It is organized data stored in a fixed format like a database or Excel sheet.
- **Unstructured Data:** It is unorganized data found in various forms like images, videos, and PDFs.

E. Answer the following questions.

1. **Name one application of data science in e-commerce.**

Ans: Product Recommendation Engine (showing products based on user history).

2. **What role does machine learning play in data science?**

Ans: It automates data analysis and helps make predictions without human help.

3. **Who is a data scientist?**

Ans: A person who collects and analyzes large datasets to make smart decisions.

F. Answer briefly.

1. **Describe the role of statistics in data science.**

Ans: Statistics helps in analyzing huge amounts of data to find meaningful insights.

2. **State any two advantages of data science.**

Ans:

1. It automates boring and repetitive tasks.
2. It provides a wide range of career opportunities.

G. Competency-based Question

Question: Subin, a software developer, has a good knowledge of a specific industry and industry trends. Now, he wants to move in the field of data science. Can you tell what career options he can choose in the field of data science?

Ans: He can choose to become a **Business Intelligence Analyst** or a **Data Scientist**, as these roles require industry knowledge to analyze trends and make strategies.

AI

Data Science - An Introduction

A. Tick [✓] the correct option.

1. The term Artificial Intelligence was first coined by John McCarthy in the year **1956**.
 - **Answer: b. 1956**
2. Google's AI named **AlphaGo** beat the world champion Ke Jie in the board game Go in 2017.
 - **Answer: c. AlphaGo**
3. In **2018**, a robot named Erica became a news anchor in Japan.
 - **Answer: b. 2018**
4. **Data Scientist** is a job role where professionals make value out of data.
 - **Answer: a. Data Scientist**
5. The first computer-controlled autonomous vehicle, known as Stanford Cart, was developed in the year **1979**.
 - **Answer: b. 1979**

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

1. Garry Kasparov coined the term Artificial Intelligence. — **F** (*It was John McCarthy*)
2. Google released its chatbot Google Bard in 2023. — **T**
3. Robot named Erica became a new anchor in China in 2018. — **F** (*It was Japan*)
4. Data Scientist is a career that involves developing AI systems. — **T**
5. Every image which is being fed to the computer is divided into pixels. — **T**

C. Fill in the blanks.

1. **John McCarthy** is widely considered as the Father of Artificial Intelligence.
2. A gender-neutral voice assistant named **Q** was created in 2019.

3. **Alexa** is an intelligent virtual assistant launched by Amazon in 2014.
 4. Microsoft launches **Copilot AI** app for Android in the year 2024.
-

D. Differentiate between the following.

Machine Learning Engineer vs. Business Intelligence Developer

- **Machine Learning Engineer:** They develop and manage machine learning AI systems using programming and data science.
 - **Business Intelligence Developer:** They analyze data to predict market trends and translate business needs into technical requirements.
-

E. Answer the following questions.

1. **Explain the role of AI in research.**
AI helps scientists perform experiments safely and efficiently by providing easy ways to analyze data.
 2. **Explain the role of AI in transportation.**
AI is used in self-driving vehicles and for traffic surveillance, like generating e-challans automatically.
 3. **Write the career option in the field of Data Science.**
The primary career option is a **Data Scientist**, who extracts valuable information from large datasets.
 4. **Write any two applications of Data Science.**
Two applications are predicting market trends and analyzing customer behavior for better decision-making.
-

F. Answer briefly.

1. **Discuss the role of AI in healthcare.**
AI helps doctors analyze X-rays or scans to choose the best treatment and improve patient care.
2. **How does AI contribute to modern military training?**
AI provides simulations that give soldiers real-time virtual experience of combat problems and operations.

3. **List two future career opportunities and their respective roles available in the fields of AI system.**

- **Machine Learning Engineer:** To develop and manage AI systems.
- **Data Scientist:** To analyze large datasets and find meaningful patterns.

G. Competency-based Question

Q: Rishabh has strong mathematical skills and a good knowledge of programming languages. Which career in the field of Artificial Intelligence should he choose to pursue?

Answer: Rishabh should choose to become a **Machine Learning Engineer**.

Would you like me to help you create a summary or a quiz based on these AI career paths?