LESSON PLAN

COMPUTER—A WONDER MACHINE

Class : VIII

Chapter 1: COMPUTER NETWORK

LEARNING OBJECTIVES

After studying this chapter, students will be able to:

- Understand the meaning and purpose of a Computer Network and also explain the advantages and applications of networking.
- Identify the components of a computer network.
- Differentiate between types of networks (PAN, LAN, MAN, WAN).
- Understand network architecture – Client/Server and Peer-to-Peer.
- Identify different network topologies.
- Recognize network devices and transmission media.
- Explain common wireless technologies like Bluetooth and Wi-Fi.

PERIOD 1: INTRODUCTION TO COMPUTER NETWORK, ADVANTAGES AND APPLICATIONS

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Do you use the internet at home or school?
- How do mobile phones send messages?
- Have you heard of the word Wi-Fi?

Content Explanation (25 min)

- **Introduction to Computer Network:** Meaning of Computer Network, Purpose-Communication and Resource Sharing.
- Advantages of Networking
- Applications of Networking

Activity (10 min)

Perform 'Do It Yourself'–List five devices at home/school connected to internet and what information do they share and create a Network Application Diary.

Visual Aid (3 min)

Show students the diagram of a computer network by drawing it on the board.

Recapitulation (2 min)

- What is a computer network?
- Name any two advantages of networking.

PERIOD 2: COMPONENTS OF COMPUTER NETWORK

Time: 45 minutes

Previous Knowledge Testing (5 min)

- What devices are connected in your school computer lab?

Content Explanation (25 min)

- Components of Network: Workstation/Node, Server, Network Interface Card (NIC), Connection Medium (Cables/Wireless), Network Operating System.
- Basic Hardware

Activity (10 min)

- Explain 'Do It Yourself'–Visit computer lab and identify network components. Later, students will perform during the lab period.

Visual Aid (3 min)

Present the images provided in the chapter.

Recapitulation (2 min)

- What is NIC?
- What is a Server?

PERIOD 3: TYPES OF NETWORKS (AREA COVERED)

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Is your school network bigger than your home network?

Content Explanation (25 min)

- PAN–Personal Area Network
- LAN–Local Area Network
- MAN–Metropolitan Area Network
- WAN–Wide Area Network (Internet)
    - Differences based on Area Coverage
    - Real-life examples (Home, School, City, Country)

Activity (10 min)

Explain 'Do It Yourself' – Draw a map and mark PAN, LAN, MAN, WAN using colors.

Visual Aid (3 min)

Present the images provided in the chapter.

Recapitulation (2 min)

- Which network covers the largest area?
- Example of LAN.

PERIOD 4: NETWORK ARCHITECTURE AND TOPOLOGY

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Have you seen computers arranged in rows in a lab?

Content Explanation (25 min)

- Network Architecture
  - Client/Server Network
  - Peer-to-Peer Network
- Network Topologies
  - Bus Topology
  - Star Topology
  - Tree Topology
  - Ring Topology
  - Mesh Topology

Activity (10 min)

- Explain Do It Yourself – Make a comparison chart of topologies.

Visual Aid (3 min)

Present the images provided in the chapter.

Recapitulation (2 min)

- What is topology?
- Name any two topologies.

PERIOD 5: TRANSMISSION MEDIA, NETWORK DEVICES

Time: 45 minutes

Previous Knowledge Testing (5 min)

- How does Wi-Fi work without wires?

Content Explanation (25 min)

- **Transmission Media**
  - Twisted Pair Cable
  - Coaxial Cable
  - Fibre Optic Cable
  - Satellites
- **Network Devices**
  - Hub
  - Switch
  - Router
  - Repeater
  - Bridge

Activity (10 min)

- Explain 'Do It Yourself'—Draw diagram of home internet connection with router and devices.

Visual Aid (3 min)

- Present the images provided in the chapter.

Recapitulation (2 min)

- Which device connects multiple computers to internet?

PERIOD 6: WIRELESS TECHNOLOGIES

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Do you use Bluetooth to share songs or photos?
- How does your mobile connect to the internet without wires?
- Have you ever used Google Maps for directions?

Content Explanation (25 min)

- Meaning of Wireless Technology
- Bluetooth
- Wi-Fi (Wireless Fidelity)
- GPS (Global Positioning System)
- Infrared (IR) Communication

Activity (10 min)

Explain 'Do It Yourself'–Walk around the classroom/home with a Bluetooth or Wi-Fi device and note the distance where connection becomes weak. Students will later perform this as homework or lab activity.

Visual Aid (3 min)

Present images provided in the chapter.

Recapitulation (2 min)

- What is Wi-Fi used for?
- Give one example of Infrared communication.

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Chapter 2: MORE ON HTML

LEARNING OBJECTIVES

After studying this chapter, students will be able to:

- Recall basic structure of HTML.
- Identify and use formatting tags in HTML.
- Create lists in web pages.
- Insert images and hyperlinks and also understand URL and its syntax.
- Design tables in HTML.
- Use Marquee tag for scrolling text.
- Create forms with different controls.

PERIOD 1: RECALL OF BASIC HTML STRUCTURE AND BODY ATTRIBUTES

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Have you seen a website?
- Do you know how web pages are created?
- Have you heard of HTML?

Content Explanation (25 min)

- Introduction to HTML
- Basic Structure Tags
- Attributes of BODY Tag

Visual Aid (10 min)

Show sample HTML code and corresponding output on the board.

Recapitulation (5 min)

- What is HTML?
- Which tag contains page content?

PERIOD 2: TEXT FORMATTING TAGS AND HR TAG

Time: 45 minutes

Previous Knowledge Testing (5 min)

- How do we make text bold or big in Word?

Content Explanation (25 min)

- Heading Tags <H1> – <H6>
- Paragraph <P>
- Line Break
- Comments Tag
- Bold, Italic, Underline
- Big & Small Tag
- Subscript & Superscript
- Horizontal Rule <HR> Tag
    - Meaning and Use

Activity (10 min)

- Explain "Do It Yourself" activity and later students will perform in the computer lab.

Visual Aid (3 min)

Show sample HTML code and corresponding output on the board.

Recapitulation (2 min)

- Which tag is used for line break?
- How many heading levels are there?

PERIOD 3: LISTS IN HTML

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Have you written points or numbered lists?

Content Explanation (25 min)

- Types of Lists
- Nested Lists

Activity (10 min)

- Explain 'Do It Yourself' activities which students will perform in the computer lab later.

Visual Aid (3 min)

- Show students images of code provided in the chapter.

Recapitulation (2 min)

- Difference between UL and OL?

PERIOD 4: IMAGE TAG AND ANCHOR TAG (HYPERLINKS)

Time: 45 minutes

Previous Knowledge Testing (5 min)

- How do we open another website by clicking a link?

Content Explanation (25 min)

- Image Tag <IMG>
- Anchor Tag <A>
  - URL

Activity (10 min)

- Discuss 'Do It Yourself'–photo gallery HTML page, My Favorite Websites. Later, students will perform it in the computer lab.

Visual Aid (3 min)

Show students images of code provided in the chapter.

Recapitulation (2 min)

- What is hyperlink?
- Which attribute links another page?

PERIOD 5: TABLE TAG & MARQUEE TAG

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Where have you seen tables?

Content Explanation (25 min)

- Table Tags
  - Attributes of Table tag
- Marquee Tag <MARQUEE>

Activity (10 min)

- Discuss 'Do It Yourself'—Class Timetable using table and Scrolling name using marquee. Later, students will perform them in the computer lab.

Visual Aid (3 min)

Present the images of code provided in the chapter.

Recapitulation (2 min)

- Which tag creates rows?
- What does marquee do?

PERIOD 6: FORMS IN HTML

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Have you filled online forms?

Content Explanation (25 min)

- Form Tag <FORM>
- Form Controls

Activity (10 min)

- Discuss 'Do It Yourself'—Create simple registration form. Later, students will perform it in the computer lab.

Visual Aid (3 min)

- Show students images of code provided in the chapter.

Recapitulation (2 min)

- Difference between get and post method.
- Which button sends data to server?

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Chapter 3: APP DEVELOPMENT

LEARNING OBJECTIVES

After studying this chapter, students will be able to:

- Understand the meaning of an Application (App)
- Identify features and uses of applications
- Differentiate between types of applications – Desktop, Web and Mobile
- Recognize different types of application software
- Understand basic concepts of Application Development
- Identify features of a good application
- Recall basics of Scratch
- Use MIT App Inventor interface
- Create simple mobile applications using drag-and-drop blocks

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PERIOD 1: INTRODUCTION, FEATURES AND USES OF APPLICATIONS

Time: 45 minutes

Previous Knowledge Testing (5 min)

- What apps do you use on your mobile?
- Have you used WhatsApp or YouTube?
- What do you use a computer for?

Content Explanation (25 min)

- Meaning of Application/App
- Examples–Word, Excel, Browser, Games, WhatsApp
- Features of an Application
    - Uses of Applications

Activity (10 min)

Students to list five apps they use daily and mention their purpose.

Visual Aid (3 min)

Show icons/screenshots of different apps.

Recapitulation (2 min)

- What is an App?
- Name any two features of an application.

PERIOD 2: TYPES OF APPLICATION SOFTWARE

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Which app do you use for studies?
- Which app do you use for games?

Content Explanation (35 min)

- Types of Application Software
- Word Processor
- Spreadsheet
- Database
- Administration
- Presentation Graphics
- Accounting Software
- Photo editing Software
- Email Software
- Web Browser
- WhatsApp Messenger
- Videoconferencing Application

Visual Aid (3 min)

Show students images provided in the chapter.

Recapitulation (2 min)

- Which app is used to create documents?
- Which app is used to browse the internet?

PERIOD 3: TYPES OF APPLICATIONS—DESKTOP, WEB AND MOBILE

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Do you install games on the computer?
- Do you open websites on browser?

Content Explanation (25 min)

- Desktop Applications
- Web Applications
- Mobile Applications
- Difference between Desktop and Web/Mobile Apps (Maintenance, Cost, Security, Connectivity)

Activity (10 min)

Students to create a comparison table in the notebook.

Visual Aid (3 min)

Show students images provided in the chapter and also draw a table on the board.

Recapitulation (2 min)

- Which app runs on the browser?
- Example of a mobile app.

PERIOD 4: INTRODUCTION TO APPLICATION DEVELOPMENT

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Have you ever thought of making your own game/app?

Content Explanation (25 min)

- Meaning of Application Development
- Points to Remember:
  - Uniqueness
  - User-friendly
  - Rich Features
  - Flawless Coding
  - Powerful Marketing

Activity (10 min)

Students should think of an app idea and write its features.

Visual Aid (3 min)

Teacher to explain with example like 'School App'.

Recapitulation (2 min)

- Name two points to be kept in mind while developing an app.

PERIOD 5: SCRATCH AND INTRODUCTION TO MIT APP INVENTOR

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Have you used Scratch before?

Content Explanation (25 min)

- Scratch–Drag and Drop Programming
- MIT App Inventor–Mobile App Development Tool
- Similarity between Scratch and App Inventor

Activity (10 min)

Students recall Scratch blocks and functions.

Visual Aid (3 min)

Show students images of interfaces provided in the chapter.

Recapitulation (2 min)

- What is Scratch used for?
- What is App Inventor?

PERIOD 6: APP INVENTOR – DESIGNER VIEW

Time: 45 minutes

Previous Knowledge Testing (5 min)

- What is a Web Browser?

Content Explanation (35 min)

- Login to App Inventor
- Designer View Panes: Palette, View, Components and Properties

Visual Aid (3 min)

Show students the screenshots provided in the chapter.

Recapitulation (2 min)

- Name any two panes of Designer View.

PERIOD 7: BLOCKS EDITOR

Time: 45 minutes

Previous Knowledge Testing (5 min)

- What happens when we click a button in an app?

Content Explanation (25 min)

- Blocks Editor
- Button Click Event
- TextToSpeech Component
- Testing with Emulator/Mobile

Activity (10 min)

- Discuss creating an App in the class and later students to perform it in the computer lab.

Visual Aid (3 min)

- Present the screenshots provided in the chapter.

Recapitulation (2 min)

- What is Blocks Editor used for?

PERIOD 8: BEAT APP DEMONSTRATION AND TESTING APPLICATION

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Quick oral revision.

Content Explanation (25 min)

- Beats App Demonstration
- Testing Application

Activity (10 min)

- Discuss about the adding sounds and later students try drawing lines or adding sounds in the computer lab during the practical session.

Visual Aid (3 min)

- Show students images provided in the chapter.

Recapitulation (2 min)

- Name any two types of applications.
- Which tool is used for mobile app development?

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Chapter 4: ARRAYS IN PROGRAMMING

LEARNING OBJECTIVES

After studying this chapter, students will be able to:

- Understand the concept of Arrays in programming and also explain the need for and advantages of arrays
- Identify array rules and perform array indexing and access elements
- Use array methods – append(), insert(), pop(), remove(), len(), index(), count()
- Sort arrays in ascending and descending order
- Search elements in an array
- Develop simple programs using arrays and loops
- Apply arrays in real-life problem-solving

PERIOD 1: INTRODUCTION TO ARRAYS

Time: 45 minutes

Previous Knowledge Testing (5 min)

- How do you store multiple numbers in Python?
- Have you created many variables like num1, num2, num3?

Content Explanation (25 min)

- Meaning of Arrays
- Need for Arrays
- Real-life examples–Pencil box, Playlist, Class Register
- Advantages of Arrays

Activity (10 min)

- Discuss 'Do It Yourself'—students list items in their school bag and relate it to an array container. Students later perform it in the computer lab.

Visual Aid (3 min)

- Present the code provided in the chapter.

Recapitulation (2 min)

- What is an array?
- Why do we use arrays?

PERIOD 2: RULES OF ARRAYS AND ARRAY CREATION

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Can we mix numbers and names in one list?

Content Explanation (25 min)

- Rules of Arrays:
- Creating Arrays in Python
- Example–Colors, Subjects, Grades

Activity (10 min)

- Discuss 'Do It Yourself'–Favourite songs using loops which students will perform later in the computer lab.

Visual Aid (3 min)

- Show sample Python list on board.

Recapitulation (2 min)

- Name two rules of arrays.

PERIOD 3: ARRAY INDEXING AND ACCESSING ELEMENTS

Time: 45 minutes

Previous Knowledge Testing (5 min)

- What is the first position number when counting?

Content Explanation (25 min)

- Index starts from 0
- Accessing first, middle and last element
- Negative Index concept (basic introduction)

Activity (10 min)

- Discuss 'Do It Yourself'–Practise Indexing and Digital Lunch Box, which students will perform later in the practical session.

Visual Aid (3 min)

- Present the code provided in the chapter.

Recapitulation (2 min)

- What is the index of first element?

PERIOD 4: ARRAY METHODS – ADDING, REMOVING ELEMENTS AND GETTING INFORMATION

Time: 45 minutes

Previous Knowledge Testing (5 min)

- How do we add a new contact in a phone?

Content Explanation (25 min)

- append()–Add at end
- insert()–Add at position
- pop()–Remove last
- remove()–Remove specific element
- len()–Number of elements
- index()–Position of element

Activity (10 min)

- Discuss 'Do It Yourself'—Weekend Activities Planner.

Visual Aid (3 min)

- Present the code provided in the chapter.

Recapitulation (2 min)

- Difference between append() and insert().

PERIOD 5: SORTING ARRAYS

Time: 45 minutes

Previous Knowledge Testing (5 min)

- How are students arranged in height order?

Content Explanation (25 min)

- Meaning of Sorting
- Ascending Order
- Descending Order
- sort() and sort(reverse=True)

Activity (10 min)

Discuss 'Do It Yourself'–Test Scores Organizer that students will perform later in the computer lab.

Visual Aid (3 min)

Present the code provided in the chapter.

Recapitulation (2 min)

- Discuss real-life sorting examples.

PERIOD 6: SEARCHING IN ARRAYS

Time: 45 minutes

Previous Knowledge Testing (5 min)

- How do you find your name in the attendance list?

Content Explanation (25 min)

- Searching meaning
- "in" keyword
- index() method
- count() method

Activity (10 min)

- Discuss 'Do It Yourself'—Sports Team Manager that students later perform in the computer lab.

Visual Aid (3 min)

- Present the code provided in the chapter.

Recapitulation (2 min)

- Which keyword checks existence?

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Chapter 5: DECISION-MAKING AND LOOPS IN PYTHON

LEARNING OBJECTIVES

After studying this chapter, students will be able to:

- Understand the concept of decision-making in programming.
- Differentiate between sequential, selection and iteration control structures.
- Use *if, if…else, elif, nested if* and *shorthand if* statements.
- Understand the need and importance of loops.
- Differentiate between *while* loop and *for* loop.
- Use nested loops in simple programs.
- Identify exit criteria and avoid infinite loops.
- Develop simple Python programs using decision-making and loops.
- Apply concepts in real-life problem-solving situations.

PERIOD 1: INTRODUCTION TO DECISION-MAKING AND CONTROL FLOW

Time: 45 minutes

Previous Knowledge Testing (2.5 min)

- Do you make decisions daily? Give examples.
- What do you do if it rains while going to school?

Content Explanation (25 min)

- Meaning of Decision-Making
- Real-life decision examples
- Program Control Flow
  - Sequential
  - Selection (Conditional)
  - Iteration (Looping)

Activity (10 min)

Perform 'Do It Yourself'–about programming decisions and understanding conditions in the class.

Visual Aid (5 min)

Draw flow diagrams of Sequential, Selection and Iteration on board as provided in the chapter.

Recapitulation (2.5 min)

- What is decision-making?
- Name three types of control flow.

PERIOD 2: *IF* STATEMENT

Time: 45 minutes

Previous Knowledge Testing (2.5 min)

- What happens if marks are above 90?

Content Explanation (25 min)

- Syntax of *if* statement
- True and False conditions
- Examples–marks check, password length, birthday check

Activity (10 min)

- Discuss 'Do It Yourself'—*if* statements in the class and students will perform it in the computer lab later.

Visual Aid (5 min)

- Teacher shows simple Python examples on board and the code provided in the chapter.

Recapitulation (2.5 min)

- When does the *if* block execute?

PERIOD 3: *IF…ELSE* AND *ELIF* STATEMENTS

Time: 45 minutes

Previous Knowledge Testing (5 min)

- What if marks are below 40 and 20?

Content Explanation (25 min)

- *if…else* statement
- *elif* statement (multiple conditions)
- Examples–Adult/Minor, Traffic Light, Weather Advice

Activity (10 min)

Discuss 'Do It Yourself'—*if-else* statements and *elif* programs. Later, students will perform them in the computer lab.

Visual Aid (3 min)

Present the code provided in the chapter. Teacher to draw the flowchart on the board as given in the chapter.

Recapitulation (2 min)

- Difference between *if…else* and *elif*.

PERIOD 4: *SHORTHAND IF, IF-ELSE* AND *NESTED IF*

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Can we write short answers instead of long ones?

Content Explanation (25 min)

- *Shorthand if*
- *Shorthand if…else*
- *Nested if* concept
- Examples–ATM System, Login Access

ACTIVITY (10 MIN)

Students perform 'Do It Yourself'—regular if-else statements to one-liners and nested if programs. Later, students will implement programs in the computer lab.

Visual Aid (3 min)

Present the syntax and code provided in the chapter.

Recapitulation (2 min)

- What is *nested if*?

PERIOD 5: INTRODUCTION TO LOOPS AND *WHILE* LOOP

Time: 45 minutes

Previous Knowledge Testing (5 min)

- What tasks do you repeat daily?

Content Explanation (25 min)

- Meaning and Importance of Loops
- Benefits–Saves time, reduces mistakes
- *while* loop syntax
- Example–Printing numbers 1 to 5
- Exit Criteria and Infinite Loop concept

Activity (10 min)

Discuss 'Do It Yourself'—Loops, Counting Game—in the class. Later, students will perform it in the computer lab.

Visual Aid (3 min)

Show students the loop flow diagram provided in the chapter.

Recapitulation (2 min)

- What is a *while* loop?
- Why is exit criteria important?

PERIOD 6: *FOR* LOOP

Time: 45 minutes

Previous Knowledge Testing (5 min)

- How do you read names from attendance list?

Content Explanation (25 min)

- *for* loop syntax
- Iterating through list and string
- Examples—Squares of numbers, Fruits list

Activity (10 min)

Discuss 'Do It Yourself'—Grade Calculator—in the class which students will implement in the computer lab later.

Visual Aid (3 min)

Show students the flowchart and code provided in the chapter.

Recapitulation (2 min)

- When do we use a *for* loop?

PERIOD 7: NESTED LOOPS

Time: 45 minutes

Previous Knowledge Testing (5 min)

- Have you seen tables or grids?

Content Explanation (25 min)

- Meaning of Nested Loop
- Real-life examples—Bags & Apples, Rows & Columns
- Simple pattern logic

Activity (10 min)

Students perform 'Do It Yourself' *for* loops in the class.

Visual Aid (3 min)

Show students the code provided in the chapter.

Recapitulation (2 min)

- What is a nested loop?