

Chapter 1 Structures and Pointers

Structure is a user-defined data type to represent a collection of different types of data under a common name.

```
Eg:   struct stud
      {       int roll;
          char name[20];
      }
```



Pointer is a variable that can hold the address of a memory location.

```
Syntax to declare pointer variable:   data_type * variable;
```

The **address of operator (&)**, is used to get the address of a variable.

The **value at operator (*)** is used to retrieve the value pointed to by the pointer.

Two types of memory allocation:

The memory allocation before the execution of the program is **static memory allocation**. Memory allocation during run-time is **dynamic memory allocation**. The **new** operator is used for dynamic memory allocation and **delete** to de-allocate (free) the memory.



Chapter 2 Concepts of Object Oriented Programming

Procedural paradigm V/s OOP

Procedural paradigm	Object Oriented Paradigm
<ul style="list-style-type: none"> Data is undervalued. Procedure is given importance. 	<ul style="list-style-type: none"> Data is given importance. Procedure is driven by data.

Basic Concepts of OOP

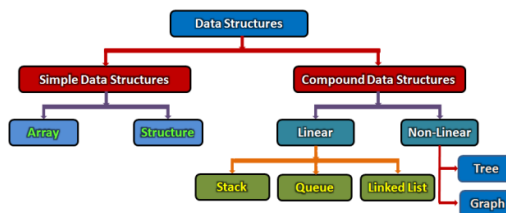
1. Data abstraction: Showing only the essential features and hiding the details.
2. Data encapsulation: Binds the data and functions together.
3. Polymorphism: The ability to process objects differently.
4. Inheritance: Creating new classes by deriving properties from existing class.
5. Modularity: Partitioning a program into small segments.



Chapter 3 Data Structures and Operations

Data structure is a way of organising logically related data items which can be processed as a single unit.

Classification of data structures:



Chapter 5

Web Designing using HTML

Different types of Lists in HTML

There are three kinds of lists in HTML - unordered lists, ordered lists and definition lists.

Tags	Use	Attributes	Values and Purpose
<code></code>	To create bulleted list	Type	To specify the type of bullet. “Disc”, “Circle” and “Square” are the values for ●, ○ and ◼.
<code></code>	To create numbered list	Type	To specify the type of numeral. The values are “1”, “I”, “i”, “a” and “A” .
		Start	To specify the starting number. The value should be an integer.
<code></code>	To specify an item in the unordered or ordered list. Used inside the pairs <code>...</code> and <code> ... </code>		
<code><DL></code>	To create a definition list		
<code><DT></code>	Used inside <code><DL>... </DL></code> to specify each data item (or term) in the list		
<code><DD></code>	Used after each <code><DT></code> to describe the term		

Links in HTML

A hyperlink (or simply link) is a text or an image in a web page, on clicking which another document or another section of the same document will be opened. The `<A>` tag, called anchor tag is used to give hyperlinks. **Href** is the main attribute of `<A>` tag. The URL (address of the web page/site) is given as its value. There are two types of linking – internal linking and external linking.

Creating Table in Web page

Tags	Use	Attributes	Values and Purpose
<code><TABLE></code>	To create table	Border	Thickness of the border line around the table.
<code><TR></code>	To specify a row in a table		
<code><TH></code>	To specify the heading cell.		
<code><TD></code>	To specify the data in a cell.		

Input controls in Forms

Textbox – To input a line of text

Password box – To input passwords

Option button (Radio button) – To select an item from a groups of options

Checkbox – To select one or more items in a group

List box – To select one or more items from list of items

Text area – To input multi line text

Submit button – To submit data to the Form handler

Reset button – To clear the entries in the Form

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## Client side Scripting using JavaScript

**<SCRIPT> tag:** To embed JavaScript code in an HTML file.

**Data Types in JavaScript:** Number, String, Boolean

**Variables:** Used for storing values. Declared using the keyword **var** as: **var x;**

**Operators**

|                      |                  |
|----------------------|------------------|
| Arithmetic operators | + - * / %        |
| Increment, decrement | ++ --            |
| Assignment operators | = += -= *= /= %= |
| Relational operators | < <= > >= == !=  |
| Logical operators    | && !             |
| String concatenation | +                |

**Control Statements**

|                  |                                                                                                                                               |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| if statements    | if (test_expression)<br>Statement;                                                                                                            |
|                  | if (test_expression)<br>statement_1;<br>else<br>statement_2;                                                                                  |
|                  | if (test_expression1)<br>statement_1;<br>else if (test_expression2)<br>statement_2;<br>:<br>:<br>else<br>statement_n;                         |
| switch statement | switch (variable/expression)<br>{<br>case value1: statement1; break;<br>case value2: statement2; break;<br>:<br>:<br>default: statement;<br>} |
| for loop         | for (initialization; test; update)<br>body;                                                                                                   |
| while loop       | initialization;<br>while (test_expression)<br>{<br>body;<br>update;<br>}                                                                      |









## Chapter 11

### Advances in Computing

#### **Serial Computing V/s Parallel Computing**

| Serial Computing                            | Parallel Computing                          |
|---------------------------------------------|---------------------------------------------|
| (a) Single processor is used.               | (a) Multiple processors with shared memory. |
| (b) Instructions are executed sequentially. | (b) Instructions are executed concurrently. |

#### **Cloud Computing**

It refers to the use of computing resources that reside on a remote machine and are delivered to the end user as a service over a network

Cloud services are grouped into three – Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS).

#### **Applications of Computational Intelligence**

**Biometrics:** It refers to the measurements (metrics) related to human characteristics.

**Robotics:** It is the scientific study associated with the design, fabrication, theory and application of robots.

**Computer vision:** It is the construction of meaningful description of the structure and properties of the 3-dimensional world from 2-dimensional images.

**Natural Language Processing (NLP):** It is a branch of computer science that focuses on developing systems which allow computers to communicate with people using human languages such as English, Malayalam etc.

**Automatic Speech Recognition (ASR):** It refers to the AI methods of communicating with a computer in a spoken language like Malayalam.

**Optical Character Recognition (OCR) and Handwritten Character Recognition (HCR):** The task of OCR and HCR are integral parts of pattern recognition.

**Bio-informatics:** It is the application of computer technology to the management of biological information.

**Geometric Information System (GIS):** It is a computer system for capturing, storing, checking, and displaying data related to various positions on earth’s surface.

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## Chapter 12

### ICT and Society

**Interactions in e-Governance:** Government to Government (G2G), Government to Citizens (G2C), Government to Business (G2B), Government to Employees (G2E)

**e-Governance infrastructure:** In India, the e-Governance infrastructure mainly consists of State Data Centers (SDC) for providing core infrastructure and storage, State Wide Area Network (SWAN) for connectivity and Common Service Centers (CSC) as service delivery points.

**e-Business** is the sharing of business information, maintaining business relationships and conducting business transactions by means of the ICT application.

**Electronic Payment System (EPS)** is a system of financial exchange between buyers and sellers in an online environment.

**e-Banking** or electronic banking is defined as the automated delivery of banking services directly to customers through electronic channel.

**e-Learning tools:** Electronic books reader (e-Books), e-Text, Online chat, e-Content, Educational TV channels.

