



Technocation Freelancing Training Institute And Software House

Data Structure Certification Module

MODULE 1: Introduction to Data Structures

- Data structure means the way we store data.
- It helps us keep things neat and easy.
- Just like a school bag keeps books in order.
- We learn how computers store information.

MODULE 2: Arrays

- Array is a box with many parts.
- Each part has a number (index).
- We can put data in order in it.
- Example: Marks of 5 subjects.

MODULE 3: Strings

- String is data made of letters.
- Like words, names, or sentences.
- Computer stores each letter in order.
- Example: "HELLO" is a string.

MODULE 4: Linked List

- Linked list is like a chain.
- Each part has data and next address.
- It links one by one in a line.
- Helps to add and remove easily.

MODULE 5: Stack

- Stack is like a pile of plates.
- We add from the top only.
- We remove from the top only.

- This is called LIFO rule.

MODULE 6: Queue

- Queue is like a line in school.
- First student goes first (FIFO).
- We add at the back.
- We remove from the front.

MODULE 7: Tree

- Tree looks like upside-down tree.
- Top part is called root.
- Many branches are connected.
- Example: Family tree.

MODULE 8: Binary Tree

- Each node has two children only.
- One is left, one is right.
- Data is arranged in order.
- It is easy for searching.

MODULE 9: Graph

- Graph is made of points and lines.
- Points are called nodes.
- Lines are called edges.
- Example: City map with roads.

MODULE 10: Hashing

- Hashing is a fast way to find data.
- It uses a key to search quickly.
- Key works like an address.
- Example: Library book number.

MODULE 11: Sorting

- Sorting means arranging in order.
- Like A to Z or 1 to 100.
- Helps to search fast.
- Example: Sorting student marks.

MODULE 12: Searching

- Searching means finding something.
- Linear search checks one by one.
- Binary search checks middle first.
- Helps to save time.

MODULE 13: Certification Module

- Revise all modules again.
- Do small fun projects with data.
- Solve quiz and worksheet.
- Get “Junior Data Structure Expert” certificate

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