

UNIT - III: Arrays and Functions

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Arrays

An array is a collection of elements of the same data type stored in contiguous memory locations. Types include:

- One-dimensional arrays: `int arr[5];`
- Two-dimensional arrays: `int arr[3][3];`

String and String Operations

A string is a sequence of characters terminated by a null character ('\0').

Common string functions include:

- `strcpy()`: Copies one string to another.
- `strcat()`: Concatenates two strings.
- `strlen()`: Returns string length.
- `strcmp()`: Compares two strings.

Sorting and Searching

Sorting algorithms:

- Bubble Sort
- Selection Sort
- Insertion Sort

Searching algorithms:

- Linear Search
- Binary Search

Matrix Operations

Matrix operations include:

- Addition
- Subtraction
- Multiplication
- Transpose of a matrix

Functions

A function is a block of code designed to perform a specific task. Functions help in code reusability and modularity.

Declaration and Calling of Functions

- Function Declaration: Specifies return type, function name, and parameters.
- Function Definition: Contains the function body.
- Function Call: Executes the function.

Pass by Value vs. Pass by Reference

- Pass by Value: A copy of the argument is passed.
- Pass by Reference: The actual memory address is passed, allowing modification of the original variable.

Recursion

Recursion is a technique where a function calls itself. Example:

- Factorial calculation
- Fibonacci series generation

