CS23C04 PROGRAMMING IN C : 22.10.2026, 'P' Batch

Pass Array to Functions in C

Arrays can be passed to functions so their elements can be processed or updated directly. Since the function operates on the original array, changes made inside the function are reflected outside as well.

- Enables functions to access and modify the original array.
- Commonly used to process multiple elements efficiently.
- When an array is passed to a function, it automatically points to its first element.

The most common way is to declare the function parameter as an array without specifying its size.

Example Program1: Passing array without specifying size.

```
void printArray(int a[], int n);
#include <stdio.h>
int main() {
    int a[] = {10, 20, 30, 40, 50};
    printArray(a, 5);    // Pass array to function
    return 0;
}
void printArray(int a[], int n) {
    for (int i = 0; i < n; i++)
        printf("%d ", a[i]);
}
```

Example Program2: Passing array with specifying size.

```
void printArray(int a[5], int n);
#include <stdio.h>
int main() {
    int a[] = {10, 20, 30, 40, 50};
    printArray(a, 5);    // Pass array to function
    return 0;
}
void printArray(int a[5], int n) {
    for (int i = 0; i < n; i++)
        printf("%d ", a[i]);
}
```

Passing Multidimensional Arrays

Multidimensional arrays can also be passed to functions. Unlike one-dimensional arrays, the compiler must know the size of all dimensions except the first so it can correctly locate each element.

Example:

void printMatrix(int arr[][3], int rows){
// Access matrix elements
}

- The first dimension can be omitted in the function parameter.
- All remaining dimensions must be specified.
- The array still decays to a pointer when passed to the function.

A 2-D array is an array of arrays, where each element of the main array represents another array (a row). When passing a 2-D array to a function, its dimensions must be specified.

- The most common way is to declare the function parameter as a 2-D array, specifying the column size.
- Since array size information is not retained when passed to a function, the required dimensions must be provided separately.

Example Program3: Passing 2-D Array to a function

```
#include<stdio.h>
void print(int arr[][3], int n, int m);
int main()
{
    int arr[][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
    print(arr, 3, 3); // Passing the array along with the size of rows and columns
    return 0;
}
void print(int arr[][3], int n, int m)
{
    for (int i = 0; i < n; i++)
    {
        for (int j = 0; j < m; j++)
            printf("%d ", arr[i][j]);
        printf("\n");
    }
}
```

Today programs:

1. C Program to Search for an Element in an Array Using a Function.
   Note: Use linear search to find the position of a given element in an array.
2. Write a C program to find the length of a string without using `strlen()`.
3. Write a C program to reverse a string without using `strrev()`.

Spot Questions:

1. Write a C program to check whether a string is a palindrome.
2. Write a C program to read two arrays, merge them into a third array using a user-defined function, and display the merged array.
3. Write a C program to find the transpose of a matrix using a user-defined function.