8. Write a Following Programs of Array

1. Calculate sum of elements of 1D array using function

2. Find factorial of a number using function

3. Add two 2D arrays using function

4. Print and display records of employee details using array of structure

1. Calculate Sum of Elements of 1D Array Using Function

```
#include <stdio.h>

int calculateSum(int arr[], int n) {
    int sum = 0;
    for (int i = 0; i < n; i++) {
        sum += arr[i];
    }
    return sum;
}

int main() {
    int n;
    printf("Enter the number of elements: ");
    scanf("%d", &n);

    int arr[n];
    printf("Enter the elements of the array:\n");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    int sum = calculateSum(arr, n);
    printf("Sum of elements: %d\n", sum);

    return 0;
}
```

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2. Find Factorial of a Number Using Function

```
#include <stdio.h>

int factorial(int num) {
    if (num == 0 || num == 1) {
        return 1;
    }
    return num * factorial(num - 1);
}

int main() {
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);

    int fact = factorial(num);
```

```
    printf("Factorial of %d is %d\n", num, fact);

    return 0;
}
```

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3. Add Two 2D Arrays Using Function

```
#include <stdio.h>

void addMatrices(int rows, int cols, int mat1[rows][cols], int
mat2[rows][cols], int result[rows][cols]) {
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < cols; j++) {
            result[i][j] = mat1[i][j] + mat2[i][j];
        }
    }
}

int main() {
    int rows, cols;
    printf("Enter the number of rows and columns of the matrices: ");
    scanf("%d %d", &rows, &cols);

    int mat1[rows][cols], mat2[rows][cols], result[rows][cols];

    printf("Enter elements of the first matrix:\n");
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < cols; j++) {
            scanf("%d", &mat1[i][j]);
        }
    }

    printf("Enter elements of the second matrix:\n");
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < cols; j++) {
            scanf("%d", &mat2[i][j]);
        }
    }

    addMatrices(rows, cols, mat1, mat2, result);

    printf("Resultant Matrix after addition:\n");
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < cols; j++) {
            printf("%d ", result[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

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4. Print and Display Records of Employee Details Using Array of Structures

```c
#include <stdio.h>

struct Employee {
    int id;
    char name[50];
    float salary;
};

void displayEmployees(struct Employee emp[], int n) {
    printf("Employee Details:\n");
    for (int i = 0; i < n; i++) {
        printf("ID: %d\n", emp[i].id);
        printf("Name: %s\n", emp[i].name);
        printf("Salary: %.2f\n\n", emp[i].salary);
    }
}

int main() {
    int n;
    printf("Enter the number of employees: ");
    scanf("%d", &n);

    struct Employee emp[n];
    for (int i = 0; i < n; i++) {
        printf("Enter details for employee %d\n", i + 1);
        printf("ID: ");
        scanf("%d", &emp[i].id);
        printf("Name: ");
        scanf(" %[^\n]%*c", emp[i].name); // To read string with spaces
        printf("Salary: ");
        scanf("%f", &emp[i].salary);
    }

    displayEmployees(emp, n);

    return 0;
}
```