Computer Programming Lab

CEN-392

Program 1

Code :-

```c
#include <stdio.h>

void Addition(int arr[][10], int r1, int c1, int brr[][10], int r2, int c2)
{
    if (r1 != r2 && c1 != c2)
    {
        printf("Addition Of Two Given Matrix Not Possible!\n\n");
        return;
    }
    int ans[r1][c1];
    printf("\nAddition Answer : \n");
    for (int i = 0; i < r1; i++)
    {
        for (int j = 0; j < c1; j++)
        {
            ans[i][j] = arr[i][j] + brr[i][j];
            printf("%d ", ans[i][j]);
        }
        printf("\n");
    }
}
```

```c
void Subtraction(int arr[][10], int r1, int c1, int brr[][10], int r2, int c2)
{
    if (r1 != r2 && c1 != c2)
    {
        printf("Subtraction Of Two Given Matrix Not Possible!\ns\n");
        return;
    }
    int ans[r1][c1];
    printf("\nSubtraction Answer : \n");
    for (int i = 0; i < r1; i++)
    {
        for (int j = 0; j < c1; j++)
        {
            ans[i][j] = arr[i][j] - brr[i][j];
            printf("%d ", ans[i][j]);
        }
        printf("\n");
    }
}

void Multiplication(int arr[][10], int r1, int c1, int brr[][10], int r2, int c2)
{
    if (c1 != r2)
    {
        printf("Multiplication Of Two Given Matrix Not Possible!\n\n");
        return;
    }
    int ans[r1][c2];
    printf("\nMultiplication Answer : \n");
    for (int i = 0; i < r1; i++)
    {
        for (int j = 0; j < c2; j++)
        {
            int calc = 0;
            for (int k = 0; k < c1; k++)
            {
                calc += arr[i][k] * brr[k][j];
            }
            ans[i][j] = calc;
            printf("%d ", ans[i][j]);
        }
        printf("\n");
    }
}

int Option(int arr[][10], int r1, int c1, int brr[][10], int r2, int c2)
{
    int optn;
    printf("Enter Your Choice : ");
    scanf("%d", &optn);
    switch (optn)
    {
    case 1:
```

```
            Addition(arr, r1, c1, brr, r2, c2);
            break;
        case 2:
            Subtraction(arr, r1, c1, brr, r2, c2);
            break;
        case 3:
            Multiplication(arr, r1, c1, brr, r2, c2);
            break;
        case 4:
            return 0;
        default:
            printf("Invalid Input Try Again!\n");
        }
        return 1;
    }

    void Menu()
    {
        printf("\n___Matrix Operations___\n");
        printf("1.Addition\n");
        printf("2.Subtraction\n");
        printf("3.Multiplication\n");
        printf("4.Exit\n");
    }

    int main()
    {
        system("cls");
        while (1)
        {
            int r1, c1;
            printf("Enter The Rows And Column Of The Matrix : \n");
            scanf("%d%d", &r1, &c1);
            int arr[10][10];
            for (int i = 0; i < r1; i++)
            {
                for (int j = 0; j < c1; j++)
                {
                    scanf("%d", &arr[i][j]);
                }
            }

            int r2, c2;
            printf("Enter The Rows And Column Of The Matrix : \n");
            scanf("%d%d", &r2, &c2);
            int brr[10][10];
            for (int i = 0; i < r2; i++)
            {
                for (int j = 0; j < c2; j++)
                {
                    scanf("%d", &brr[i][j]);
                }
            }
        Previous:
```

```
        Menu();
        if (!Option(arr, r1, c1, brr, r2, c2))
            break;
        int c;
        printf("\nDo You Want To Work On Previos Input Matrix [y/n] : ");
        scanf(" %c", &c);
        printf("\n");
        if (c == 'Y' || c == 'y')
            goto Previous;
    }

    return 0;
}
```

Output :-

```
Enter The Rows And Column Of The Matrix :
4 4
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
Enter The Rows And Column Of The Matrix :
4 4
1 0 0 0
0 1 0 0
0 0 1 0
0 0 0 1

___Matrix Operations___
1.Addition
2.Subtraction
3.Multiplication
4.Exit
Enter Your Choice : 1

Addition Answer :
2 2 3 4
5 7 7 8
9 10 12 12
13 14 15 17

Do You Want To Work On Previos Input Matrix [y/n] : y
```

```
1.Addition
2.Subtraction
3.Multiplication
4.Exit
Enter Your Choice : 2

Subtraction Answer :
0 2 3 4
5 5 7 8
9 10 10 12
13 14 15 15

Do You Want To Work On Previos Input Matrix [y/n] : y


___Matrix Operations___
1.Addition
2.Subtraction
3.Multiplication
4.Exit
Enter Your Choice : 3

Multiplication Answer :
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16

Do You Want To Work On Previos Input Matrix [y/n] : n

Enter The Rows And Column Of The Matrix :
2 2
1 2
3 4
Enter The Rows And Column Of The Matrix :
1 1
3
```

```
___Matrix Operations___
1.Addition
2.Subtraction
3.Multiplication
4.Exit
Enter Your Choice : 1
Addition Of Two Given Matrix Not Possible!


Do You Want To Work On Previos Input Matrix [y/n] : y


___Matrix Operations___
1.Addition
2.Subtraction
3.Multiplication
4.Exit
Enter Your Choice : 4
PS E:\Programming Language\Computer Lab>
```