# Assignment 2,3 (Arrays)

## Ex1:

```c
#include <stdio.h>

int main()
{

    setvbuf(stdout, NULL, _IONBF, 0);
    setvbuf(stderr, NULL, _IONBF, 0);

    float Arr_1[2][2];
    float Arr_2[2][2];
    float sum[2][2];

    printf("Enter the element of 1st matrix\n");
    printf("Enter a11: ");
    scanf("%f",&Arr_1[0][0]);
    printf("Enter a12: ");
    scanf("%f",&Arr_1[0][1]);
    printf("Enter a21: ");
    scanf("%f",&Arr_1[1][0]);
    printf("Enter a22: ");
    scanf("%f",&Arr_1[1][1]);

    printf("Enter the element of 1st matrix\n");
    printf("Enter b11: ");
    scanf("%f",&Arr_2[0][0]);
    printf("Enter b12: ");
    scanf("%f",&Arr_2[0][1]);
    printf("Enter b21: ");
    scanf("%f",&Arr_2[1][0]);
    printf("Enter b22: ");
    scanf("%f",&Arr_2[1][1]);

    sum[0][0] = Arr_1[0][0] + Arr_2[0][0];
    sum[0][1] = Arr_1[0][1] + Arr_2[0][1];
    sum[1][0] = Arr_1[1][0] + Arr_2[1][0];
    sum[1][1] = Arr_1[1][1] + Arr_2[1][1];

    printf("Sum Of Matrix:\n");

    printf("%f\t%f\n",sum[0][0],sum[0][1]);
    printf("%f\t%f\n",sum[1][0],sum[1][1]);


    return 0;
```

```
Console
NPP_EXEC: "c++exec"
NPP_SAVE: E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_Arrays\Ex1.c
CD: E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_Arrays
Current directory: E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_Arrays
g++ -o "Ex1.exe" "E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_Arrays\Ex1.c"
Process started (PID=3176) >>>
<<< Process finished (PID=3176). (Exit code 0)
"Ex1.exe"
Process started (PID=14032) >>>
Enter the element of 1st matrix
Enter a11: 1
Enter a12: 2
Enter a21: 3
Enter a22: 4
Enter the element of 1st matrix
Enter b11: 5
Enter b12: 6
Enter b21: 7
Enter b22: 8
Sum Of Matrix:
6.000000  8.000000
10.000000           12.000000
<<< Process finished (PID=14032). (Exit code 0)
================ READY ================
```

## Ex2:

```c
#include <stdio.h>
#include <stdlib.h>

int main()
{

    setvbuf(stdout, NULL, _IONBF, 0);
    setvbuf(stderr, NULL, _IONBF, 0);

    int num, i;
    float avg = 0;
    float *arr;
    scanf("%d",&num);
    arr = (float *)malloc(num * sizeof(float));
    for(i = 0; i<num; i++){
        printf("%d. Enter number: ",i);
        scanf("%f", &arr[i]);
        avg += arr[i]/num;
    }

    printf("Average = %f",avg);

    free(arr);
    return 0;
}
```

```
Console
NPP_EXEC: "c++exec"
NPP_SAVE: E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_Arrays\Ex2.c
CD: E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_Arrays
Current directory: E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_Arrays
g++ -o "Ex2.exe" "E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_Arrays\Ex2.c"
Process started (PID=9420) >>>
<<< Process finished (PID=9420). (Exit code 0)
"Ex2.exe"
Process started (PID=10140) >>>
5
0. Enter number: 5
1. Enter number: 33
2. Enter number: 2
3. Enter number: 5
4. Enter number: 1
Average = 9.200000<<< Process finished (PID=10140). (Exit code 0)
================ READY ================
```

## Ex3:

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{

    setvbuf(stdout, NULL, _IONBF, 0);
    setvbuf(stderr, NULL, _IONBF, 0);

    int row, col;
    int **arr;

    printf("Enter row and colomn of matrix: ");
    scanf("%d %d",&row, &col);
    arr =(int **)malloc(sizeof(int)*col*row);
    printf("Enter elements of the matrix\n");
    for(int i = 0; i<row; i++){
        for(int j = 0; j<col; j++){
            printf("Enter element a%d%d: ",i+1,j+1);
            scanf("%d",&arr[i][j]);
        }
    }
    printf("Entered Matrix\n");
    for(int i = 0; i<row; i++){
        for(int j = 0; j<col; j++){
            printf("%d ",arr[i][j]);
        }
        printf("\n");
    }
    printf("Transposed Matrix\n");
    for(int j = 0; j<col; j++){
        for(int i = 0; i<row; i++){
            printf("%d ",arr[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```

```
Console
NPP_EXEC: "c++exec"
NPP_SAVE: E:\Embeded\kerolos diploma\codes\C_programming\Ass
CD: E:\Embeded\kerolos diploma\codes\C_programming\Assignment
Current directory: E:\Embeded\kerolos diploma\codes\C_programmi
g++ -o "Ex3.exe" "E:\Embeded\kerolos diploma\codes\C_programmi
Process started (PID=15632) >>>
<<< Process finished (PID=15632). (Exit code 0)
"Ex3.exe"
Process started (PID=17444) >>>
Enter row and colomn of matrix: 2 2
Enter elements of the matrix
Enter element a11: 1
Enter element a12: 2
Enter element a21: 3
Enter element a22: 4
Entered Matrix
1 2
3 4
Transposed Matrix
1 3
2 4
<<< Process finished (PID=17444). (Exit code -1073741819)
================ READY ================
```

## Ex4:

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{

    setvbuf(stdout, NULL, _IONBF, 0);
    setvbuf(stderr, NULL, _IONBF, 0);

    int n, element, pos;
    int *arr, tmp;

    printf("Enter number of elements : ");
    scanf("%d",&n);
    arr  = (int *)malloc((n+1) * sizeof(int));

    for(int i = 0; i < n; i++){
        scanf("%d", &arr[i]);
    }

    printf("Enter the element to be inserted : ");
    scanf("%d", &element);
    printf("Enter the location : ");
    scanf("%d", &pos);

    for(int i = pos; i < n+1; i++){
        tmp = arr[i];
        arr[i] = element;
        element = tmp;
    }

    for(int i = 0; i < n+1; i++){
        printf("%d ",arr[i]);
    }

    return 0;
}
```

```
Console
NPP_EXEC: "c++exec"
NPP_SAVE: E:\Embeded\kerolos diploma\codes\C_programming\Assignn
CD: E:\Embeded\kerolos diploma\codes\C_programming\Assignment_3_
Current directory: E:\Embeded\kerolos diploma\codes\C_programming\A
g++ -o "Ex4.exe" "E:\Embeded\kerolos diploma\codes\C_programming\A
Process started (PID=13592) >>>
<<< Process finished (PID=13592). (Exit code 0)
"Ex4.exe"
Process started (PID=13708) >>>
Enter number of elements : 5
1 2 3 4
5
Enter the element to be inserted : 6
Enter the location : 1
1 6 2 3 4 5 <<< Process finished (PID=13708). (Exit code 0)
================ READY ================
```

## Ex5:

```c
#include <stdio.h>
#include <stdlib.h>

int main()
{

    setvbuf(stdout, NULL, _IONBF, 0);
    setvbuf(stderr, NULL, _IONBF, 0);

    int n, element;
    int *arr;

    printf("Enter number of elements : ");
    scanf("%d",&n);
    arr  = (int *)malloc((n) * sizeof(int));

    for(int i = 0; i < n; i++){
        scanf("%d", &arr[i]);
    }

    printf("Enter the element to be searched : ");
    scanf("%d", &element);

    for(int i = 0; i < n; i++){
        if(arr[i] == element){
            printf("Number found at location = %d", i);
            return 0;
        }
    }
    printf("Number is not in the array");


    return 0;
}
```

Console

```
NPP_EXEC: "c++exec"
NPP_SAVE: E:\Embeded\kerolos diploma\codes\C_programming\Assi
CD: E:\Embeded\kerolos diploma\codes\C_programming\Assignment
Current directory: E:\Embeded\kerolos diploma\codes\C_programmir
g++ -o "Ex5.exe" "E:\Embeded\kerolos diploma\codes\C_programmir
Process started (PID=6528) >>>
<<< Process finished (PID=6528). (Exit code 0)
"Ex5.exe"
Process started (PID=16676) >>>
Enter number of elements : 4
1 2 3 4
Enter the element to be searched : 3
Number found at location = 2<<< Process finished (PID=16676). (Exi
================ READY ================
```