Lab sheet 7

1. **Write a program to enter 10 floating numbers in an array and display it**
   Code:

```c
#include <stdio.h>

int main()
{
    float num[10];

    printf("\nEnter 10 decimal numbers: ");

    for (int i = 0; i < 10; ++i)
        scanf("%f", &num[i]);

    printf("\nYou Entered");
    for (int i = 0; i < 10; ++i)
        printf("\n %f ", num[i]);

    return 0;
}
```

Output:

```
Enter 10 decimal numbers: 5.2 2.3 56.2 25.9 6.3 5.2 4.5 3.2 5.6 8.2

You Entered
 5.200000
 2.300000
 56.200001
 25.900000
 6.300000
 5.200000
 4.500000
 3.200000
 5.600000
 8.200000
PS D:\Career\btech\practical\c progaramming 1\lab sheet 6 7\Labsheet7>
```

2.Write a program to display largest and smallest element of an array defined in Q.No. 1

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

```c
float smallest_num(float A[10])
{
    float sm = A[0];
    for (int k = 0; k < 10; ++k)
    {
        if(A[k] < sm)
            sm = A[k];
    }
    return sm;
}

float largest_num(float A[10])
{
    float lg = A[0];
    for (int i = 0; i < 10; ++i) {
        if (A[i] > lg)
            lg = A[i];
    }
    return lg;
}

int main()
{
    float num[10], largest, smallest;

    printf("\nEnter 10 decimal numbers: ");

    for (int i = 0; i < 10; ++i)
        scanf("%f", &num[i]);


    largest = largest_num(num);
    smallest = smallest_num(num);

    printf("\nLargest number in array is: %f", largest);
    printf("\nSmallest number in array is: %f", smallest);

    return 0;
}
```

Output :

```
Enter 10 decimal numbers:  5.2 2.3 56.2 25.9 6.3 5.2 4.5 3.2 5.6 8.2

Largest number in array is: 56.200001
Smallest number in array is: 2.300000
PS D:\Career\btech\practical\c progaramming 1\lab sheet 6 7\Labsheet7>
```

3. **Write a program to initialize one dimensional array of size 8 and display the sum and average of array elements**

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

```c

int main()
{
    float num[8], sum=0, avg;

    printf("\nEnter 8 numbers: ");
    for (int i = 0; i < 8; ++i)
    {
        scanf("%f", &num[i]);
        sum += num[i];
    }

    avg = sum/8;

    printf("\nSum of elements is: %f", sum);
    printf("\nAverage of elements is: %f", avg);

    return 0;
}
```

Output :

```
Enter 8 numbers: 5.2 2.3 56.2 25.9 6.3 5.2 4.5 3.2 5.6 8.2

Sum of elements is: 108.799995
Average of elements is: 13.599999
PS D:\Career\btech\practical\c progaramming 1\lab sheet 6 7\Labsheet7>
```

4. Write a program to read two matrices of order 3 * 2, add them and display the resultant matrix in matrix form

```c
#include <stdio.h>

void readMatrix(int A[3][2])
{
    for(int i=0; i<3; i++)
        for(int j=0; j<2; j++)
            scanf("%d", &A[i][j]);
}

void addMatrix(int A[3][2], int B[3][2], int C[3][2])
{
    for (int i = 0; i < 3; ++i)
        for (int j = 0; j < 2; ++j)
            C[i][j] = A[i][j] + B[i][j];
}

void showMatrix(int ARR[3][2])
{
    for(int i=0; i<3; i++)
    {
```

```
        for(int j=0; j<2; j++)
            printf("%d  ", ARR[i][j]);
        printf("\n");
    }
}

int main()
{
    int MatA[3][2], MatB[3][2], MatC[3][2];

    printf("\nEnter Matrix A data: ");
    readMatrix(MatA);

    printf("\nEnter Matrix B data: ");
    readMatrix(MatB);

    addMatrix(MatA, MatB, MatC);

    printf("\n\nResultant Matrix is: \n");
    showMatrix(MatC);
    return 0;
}
```

Output :

```
Enter Matrix A data: 5
4
5
7
8
5

Enter Matrix B data: 6
4
4
5
5
5


Resultant Matrix is:
11  8
9  12
13  10
PS D:\Career\btech\practical\c progaramming 1\lab sheet 6 7\Labsheet7>
```

5. Write a program to multiply two 3*3 matrix.

```c
#include <stdio.h>

void readMatrix(int A[3][3])
{
    for(int i=0; i<3; i++)
        for(int j=0; j<3; j++)
            scanf("%d", &A[i][j]);
}

void showMatrix(int ARR[3][3])
{
    for(int i=0; i<3; i++)
    {
        for(int j=0; j<3; j++)
            printf("%d  ", ARR[i][j]);
        printf("\n");
    }
}


void multiply(int A[3][3], int B[3][3], int C[3][3])
{
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            C[i][j] = 0;
            for (int k = 0; k < 3; k++)
                C[i][j] += A[i][k] * B[k][j];
        }
    }
}

int main()
{
    int MatA[3][3], MatB[3][3], MatC[3][3];

    printf("\nEnter Matrix A data: ");
    readMatrix(MatA);

    printf("\nEnter Matrix B data: ");
    readMatrix(MatB);

    multiply(MatA, MatB, MatC);

    printf("\n\nResultant Matrix is: \n");
    showMatrix(MatC);
    return 0;
}
```

Output :

```
Enter Matrix A data: 2
2
4
5
7
8
9
5
2

Enter Matrix B data: 1
2
5
4
7
8
5
5
5


Resultant Matrix is:
30  38  46
73  99  121
39  63  95
PS D:\Career\btech\practical\c progaramming 1\lab sheet 6 7\Labsheet7>
```

6. Write a program to read a string and check for palindrome without using string related function (a string is palindrome if its half is mirror by itself eg: abcdcba).

```c
#include <stdio.h>

int main()
{
    int length=0, flag=1;
    char word[20], rev_str[20];

    printf("\nEnter Your String: ");
    scanf("%s", &word);

    for (int i = 0; word[i] != '\0'; i++)
        length++;

    for(int i=length-1; i>=0; i--)
        rev_str[length-i-1] = word[i];
```

```
    for(int j=0; j<length/2; j++)
        if(rev_str[j] != word[j])
            flag=0;

    if(flag==0)
        printf("\nNot a pallindrome string");
    else
        printf("\nPallindrome String");
    return 0;
}
```

Output:

```
Enter Your String: abcdcba

Pallindrome String
```