Arnav Agrawal Lab 7 and 8

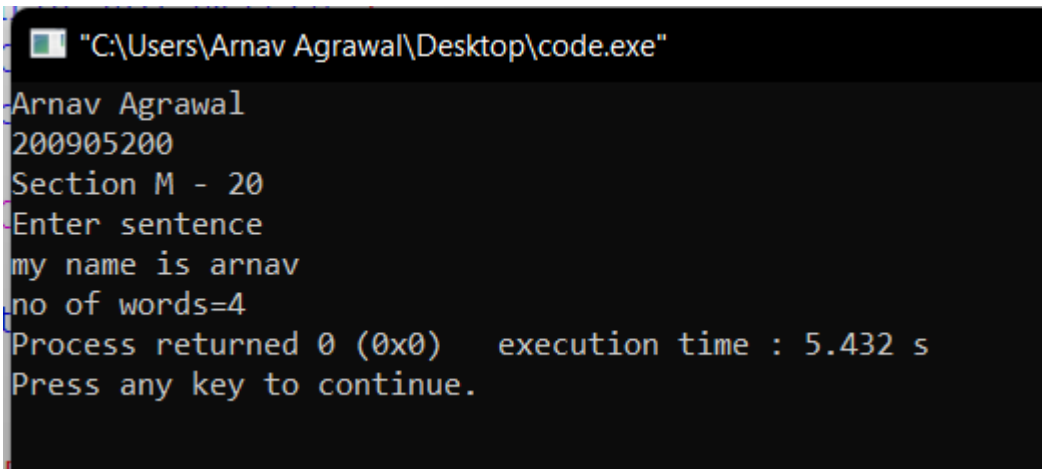
Lab 7

Question 1

Count the number of words in a sentence.

```
// Arnav Agrawal
// 200905200
// Lab 7
// Question 1
// Count the number of words in a sentence.

#include <stdio.h>
#include<string.h>
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");

    char str[50];
    int i = 0, count = 1;
    printf("Enter sentence\n");
    gets(str);

    while (str[i] != '\0')
    {
        if ((str[i] == ' ' && str[i + 1] != ' '))
            count++;
        i++;
    }
    printf("no of words=%d", count);
    return 0;
}
```

```c
// Arnav Agrawal
// 200905200
// Lab 7
// Question 1
// Count the number of words in a sentence.

#include <stdio.h>
#include<string.h>
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");

    char str[50];
    int i = 0, count = 1;
    printf("Enter sentence\n");
    gets(str);

    while (str[i] != '\0')
    {
        if ((str[i] == ' ' && str[i + 1] != ' '))
            count++;
        i++;
    }
    printf("no of words=%d", count);
    return 0;
}
```



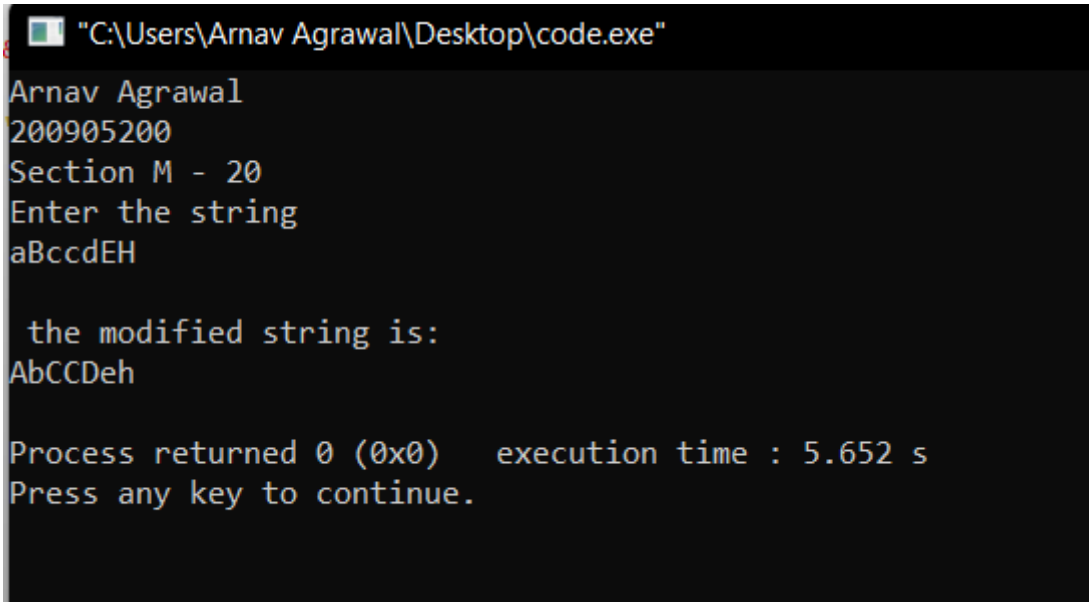
Lab 7

Question 2

Input a string and toggle the case of every character in the input string.

```
// Arnav Agrawal
// 200905200
// Lab 7
// Question 2
// Input a string and toggle the case of every character in the input string.
#include <stdio.h>
#include <string.h>
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char str[100];
    int i;
    printf("Enter the string\n");
    gets(str);
    for (i = 0; str[i] != '\0'; i++)
    {
        if (str[i] >= 'A' && str[i] <= 'Z')
            str[i] += 32;
        else if (str[i] >= 'a' && str[i] <= 'z')
            str[i] -= 32;
    }
    printf("\n the modified string is: \n");
    puts(str);
    return 0;
}
```

```c
// Arnav Agrawal
// 200905200
// Lab 7
// Question 2
// Input a string and toggle the case of every character in the input string.
#include <stdio.h>
#include <string.h>
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char str[100];
    int i;
    printf("Enter the string\n");
    gets(str);
    for (i = 0; str[i] != '\0'; i++)
    {
        if (str[i] >= 'A' && str[i] <= 'Z')
            str[i] += 32;
        else if (str[i] >= 'a' && str[i] <= 'z')
            str[i] -= 32;
    }
    printf("\n the modified string is: \n");
    puts(str);
    return 0;
}
```



Lab 7

Question 3

Check whether the given string is a palindrome or not.

```
// Arnav Agrawal
// 200905200
// Lab 7
// Question 3
// Check whether the given string is a palindrome or not.
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char str[100];
    int i, n = 0, flag = 0;
    printf("Enter the String: \n");
    gets(str);
    for (i = 0; str[i] != '\0'; i++)
        n++;
    for (i = 0; i < n / 2; i++)
    {
        if (str[i] != str[n - 1 - i])
        {
            flag = 1;
            break;
        }
    }
    if (flag == 0)
        printf("It is a Palindrome!!!!\n");
    else
        printf("It is not a Palindrome!!!\n");
    return 0;
}
```

```c
// Arnav Agrawal
// 200905200
// Lab 7
// Question 3
// Check whether the given string is a palindrome or not.
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char str[100];
    int i, n = 0, flag = 0;
    printf("Enter the String: \n");
    gets(str);
    for (i = 0; str[i] != '\0'; i++)
        n++;
    for (i = 0; i < n / 2; i++)
    {
        if (str[i] != str[n - 1 - i])
        {
            flag = 1;
            break;
        }
    }
    if (flag == 0)
        printf("It is a Palindrome!!!!\n");
    else
        printf("It is not a Palindrome!!!\n");
    return 0;
}
```

```
"C:\Users\Arnav Agrawal\Desktop\code.exe"
Arnav Agrawal
200905200
Section M - 20
Enter the String:
abba
It is a Palindrome!!!!

Process returned 0 (0x0)   execution time : 6.003 s
Press any key to continue.
```

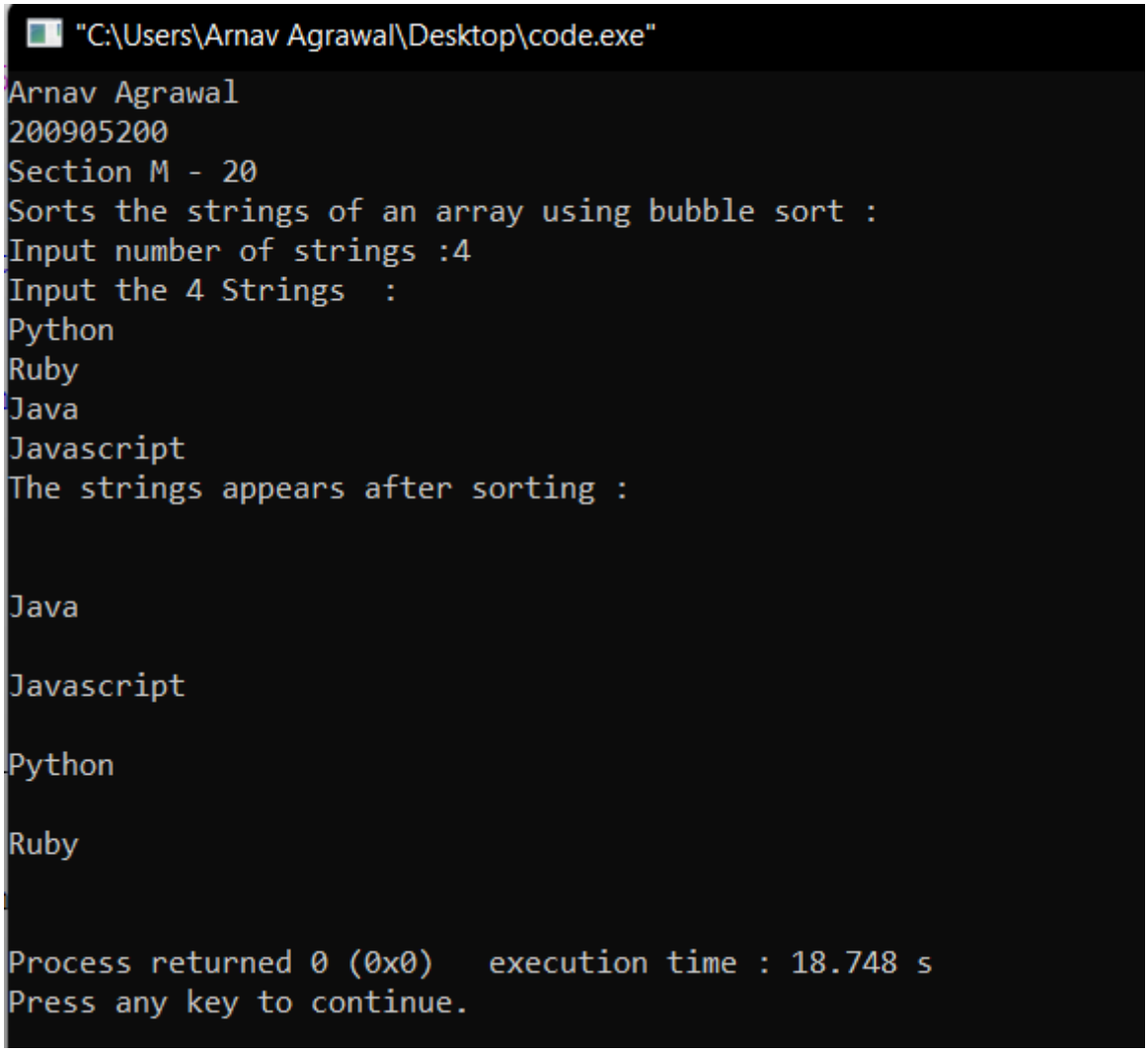
Lab 7

Question 4

Arrange ‘n’ names in alphabetical order (hint: use string handling function-strcpy)

```
// Arnav Agrawal
// 200905200
// Lab 7
// Question 4
// Arrange ‘n’ names in alphabetical order (hint: use string handling function-strcpy)
#include <stdio.h>
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char name[50][50], temp[25];
    int n, i, j;

    printf("Input number of strings :");
    scanf("%d", &n);

    printf("Input the %d Strings  :\n", n);
    for (i = 0; i <= n; i++)
    {

        fgets(name[i], sizeof name, stdin);
    }

    for (i = 1; i <= n; i++)
        for (j = 0; j <= n - i; j++)
            if (strcmp(name[j], name[j + 1]) > 0)
            {
                strcpy(temp, name[j]);
                strcpy(name[j], name[j + 1]);
                strcpy(name[j + 1], temp);
            }
    printf("The strings appears after sorting :\n");
    for (i = 0; i <= n; i++)
        printf("%s\n", name[i]);
    return 0;
}
```

```c
// Arnav Agrawal
// 200905200
// Lab 7
// Question 4
// Arrange 'n' names in alphabetical order (hint: use string handling function-strcpy)
#include <stdio.h>
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char name[50][50], temp[25];
    int n, i, j;

    printf("Sorts the strings of an array using bubble sort :\n");
    printf("Input number of strings :");
    scanf("%d", &n);

    printf("Input the %d Strings  :\n", n);
    for (i = 0; i <= n; i++)
    {

        fgets(name[i], sizeof name, stdin);
    }

    for (i = 1; i <= n; i++)
        for (j = 0; j <= n - i; j++)
            if (strcmp(name[j], name[j + 1]) > 0)
            {
                strcpy(temp, name[j]);
                strcpy(name[j], name[j + 1]);
                strcpy(name[j + 1], temp);
            }
    printf("The strings appears after sorting :\n");
    for (i = 0; i <= n; i++)
        printf("%s\n", name[i]);
    return 0;
}
```



Lab 7

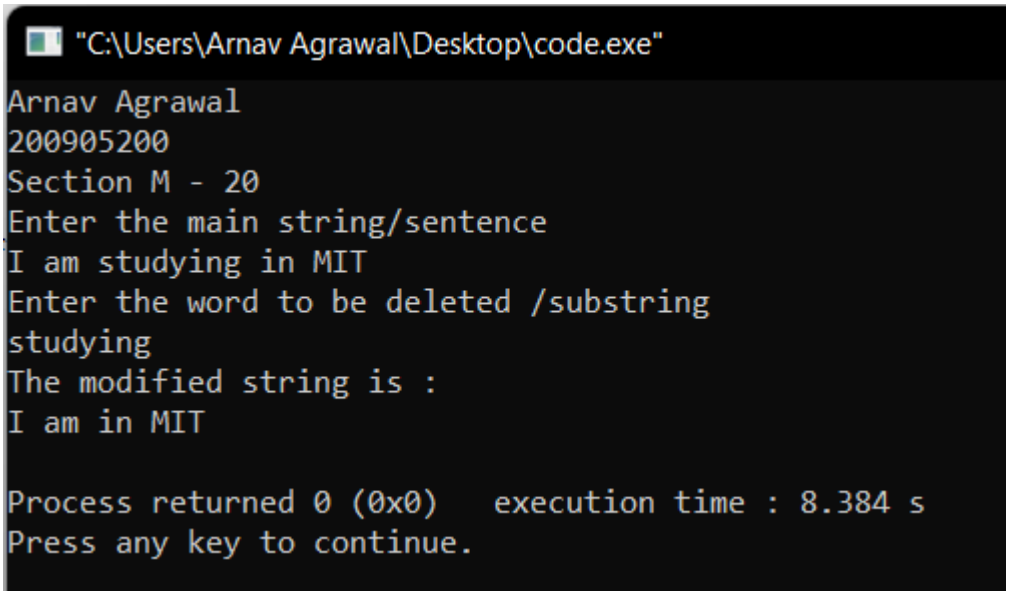
Question 5

Delete a word from the given sentence.

```
// Arnav Agrawal
// 200905200
// Lab 7
// Question 5
// Delete a word from the given sentence.
#include <stdio.h>
#include <string.h>
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
```

```
    char str[100], substr[50];
    int i, j, k, pos, flag = 0;
    printf("Enter the main string/sentence\n");
    gets(str);
    printf("Enter the word to be deleted /substring\n");
    fflush(stdin);
    gets(substr);
    j = 0;
    for (i = 0; str[i] != '\0'; i++)
    {
        if (str[i] == substr[j])
        {
            pos = i;
            j = j + 1;
            for (k = pos + 1; j < strlen(substr); k++, j++)
            {
                if (str[k] == substr[j])
                    continue;
                else
                {
                    j = 0;
                    break;
                }
            }
        }
        if (j == strlen(substr))
            flag = 1;
    }
    if (flag == 0)
        printf("Word to be deleted is not found\n");
    else
    {
        if (pos + strlen(substr) >= strlen(str))
            str[pos] = '\0';
        else
        {
            for (i = pos; i < strlen(str); i++)
                str[i] = str[strlen(substr) + i];
        }
    }
    printf("The modified string is :\n");
    puts(str);
    return 0;
}
```

```c
// Question 5
// Delete a word from the given sentence.
#include <stdio.h>
#include <string.h>
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char str[100], substr[50];
    int i, j, k, pos, flag = 0;
    printf("Enter the main string/sentence\n");
    gets(str);
    printf("Enter the word to be deleted /substring\n");
    fflush(stdin);
    gets(substr);
    j = 0;
    for (i = 0; str[i] != '\0'; i++)
    {
        if (str[i] == substr[j])
        {
            pos = i;
            j = j + 1;
            for (k = pos + 1; j < strlen(substr); k++, j++) // matching susbsequent characters of the substring
            {
                if (str[k] == substr[j])
                    continue;
                else
                {
                    j = 0;
                    break;
                }
            }
        }
        if (j == strlen(substr))
            flag = 1;
    }
    if (flag == 0)
        printf("Word to be deleted is not found\n");
    else
    {
        if (pos + strlen(substr) >= strlen(str))
            str[pos] = '\0';
        else
        {
            for (i = pos; i < strlen(str); i++)
                str[i] = str[strlen(substr) + i];
        }
    }
    printf("The modified string is :\n");
    puts(str);
    return 0;
}
```



Lab 8

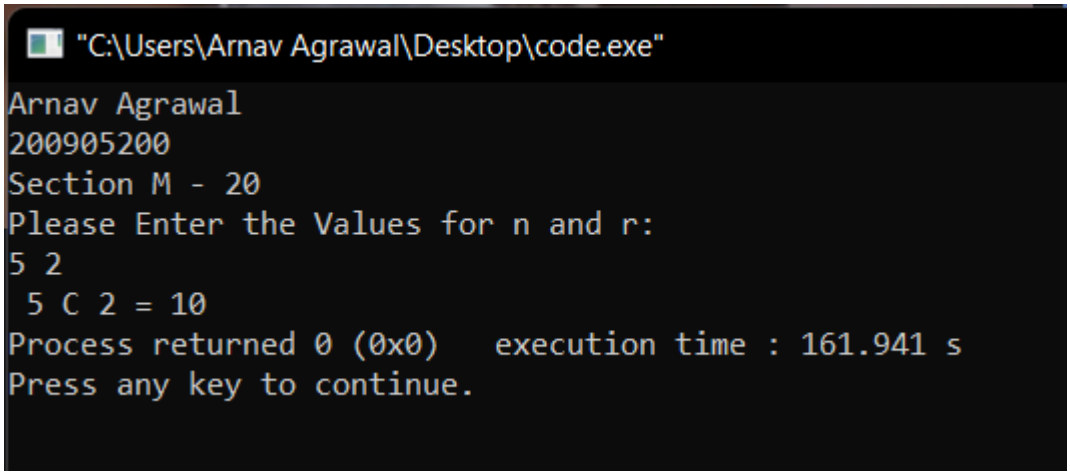
Question 1

Write a function Fact to find the factorial of a given number. Using this function,
compute NCR in the main function

```
// Arnav Agrawal
// 200905200
// Lab 8
// Question 1
// Write a function Fact to find the factorial of a given number. Using this function,
// compute NCR in the main function
#include <stdio.h>
int Fact(int);
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");

    int n, r, ncr;

    printf("Please Enter the Values for n and r: \n");
    scanf("%d %d", &n, &r);

    ncr = Fact(n) / (Fact(r) * Fact(n - r));
    printf(" %d C %d = %d", n, r, ncr);
    return 0;
}
```

```
int Fact(int Number)
{
    int i;
    int Factorial = 1;

    for (i = 1; i <= Number; i++)
    {
        Factorial = Factorial * i;
    }
    return Factorial;
}
```

```c
// Arnav Agrawal
// 200905200
// Lab 8
// Question 1
// Write a function Fact to find the factorial of a given
// compute NCR in the main function
#include <stdio.h>
int Fact(int);
int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");

    int n, r, ncr;

    printf("Please Enter the Values for n and r: \n");
    scanf("%d %d", &n, &r);

    ncr = Fact(n) / (Fact(r) * Fact(n - r));
    printf(" %d C %d = %d", n, r, ncr);
    return 0;
}

int Fact(int Number)
{
    int i;
    int Factorial = 1;

    for (i = 1; i <= Number; i++)
    {
        Factorial = Factorial * i;
    }
    return Factorial;
}
```



Lab 8

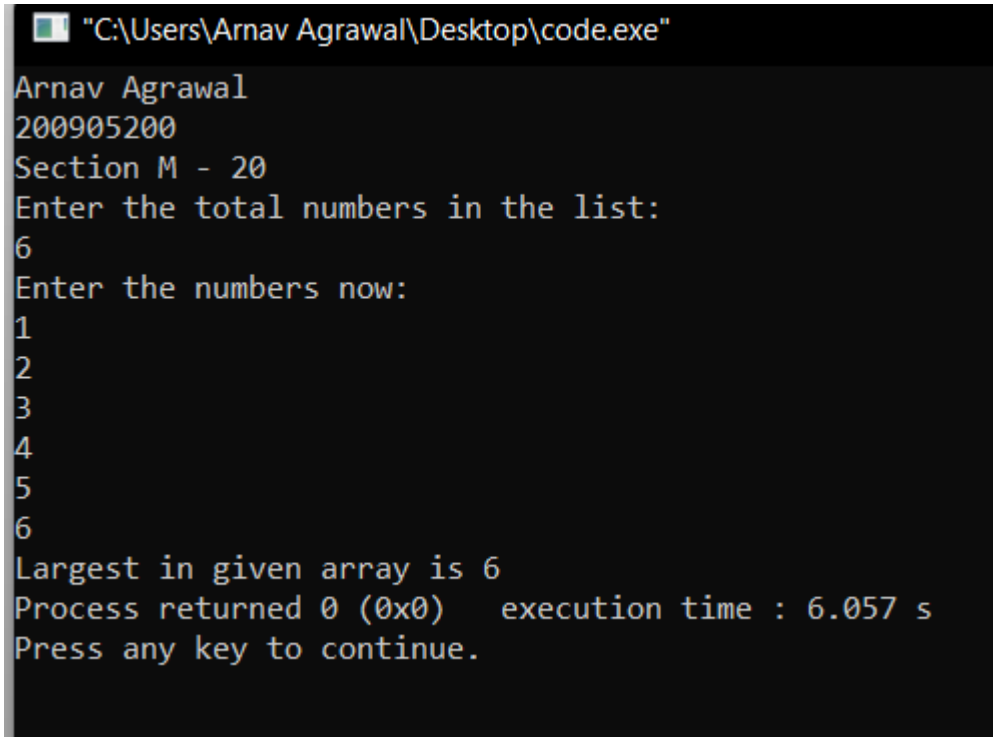
Question 2

Write a function Largest to find the maximum of a given list of numbers. Also write a main program to read N numbers and find the largest among them using this function.

```
// Arnav Agrawal
// 200905200
// Lab 8
// Question 2
// Write a function Largest to find the maximum of a given list of numbers. Also write
// a main program to read N numbers and find the largest among them using this
// function.
#include <stdio.h>

int largest(int arr[], int num)
{
    int i = 0;
    int max = arr[0];
    for (i = 0; i < num; i++)
    {
        if (arr[i] > max)
            max = arr[i];
    }
    return max;
}

int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");

    int arr[100];
```

```
    int i, num;
    printf("Enter the total numbers in the list: \n");
    scanf("%d", &num);
    printf("Enter the numbers now:\n");
    for (i = 0; i < num; i++)
        scanf("%d", &arr[i]);
    printf("Largest in given array is %d", largest(arr, num));
    return 0;
}
```

```c
// Arnav Agrawal
// 200905200
// Lab 8
// Question 2
// Write a function Largest to find the maximum of a given list o
// a main program to read N numbers and find the largest among th
// function.
#include <stdio.h>

int largest(int arr[], int num)
{
    int i = 0;
    int max = arr[0];
    for (i = 0; i < num; i++)
    {
        if (arr[i] > max)
            max = arr[i];
    }
    return max;
}

int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");

    int arr[100];
    int i, num;
    printf("Enter the total numbers in the list: \n");
    scanf("%d", &num);
    printf("Enter the numbers now:\n");
    for (i = 0; i < num; i++)
        scanf("%d", &arr[i]);
    printf("Largest in given array is %d", largest(arr, num));
    return 0;
}
```



Lab 8

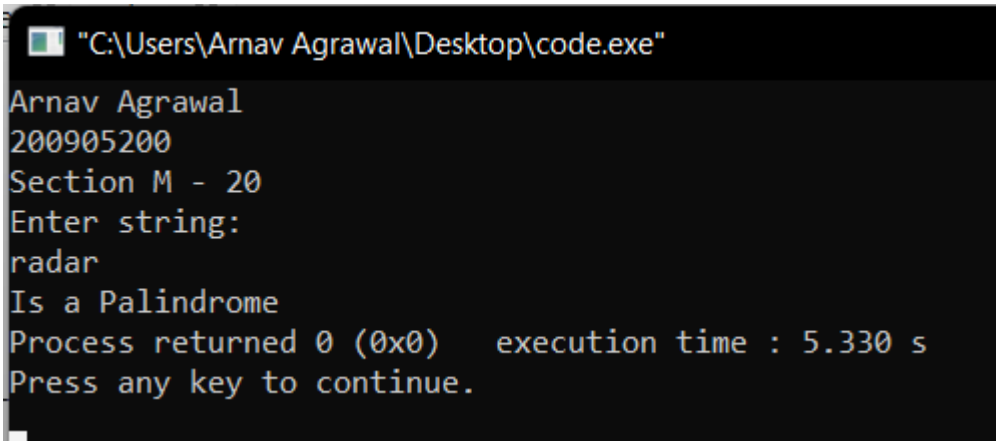
Question 3

Write a function IsPalin to check whether the given string is a palindrome or not.
Write a main function to test this function.

```
// Arnav Agrawal
// 200905200
// Lab 8
// Question 3
// Write a function IsPalin to check whether the given string is a palindrome or not.
// Write a main function to test this function.
#include <stdio.h>
int IsPalin(char[]);

int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char arr[100];
    printf("Enter string:\n");
    gets(arr);
    int palin = IsPalin(arr);
    if (palin == 0)
        printf("Is a Palindrome");
```

```
    else
        printf("Not a Palindrome");
    return 0;
}
int IsPalin(char arr[100])
{
    int i, n = 0, flag = 0;
    for (i = 0; arr[i] != '\0'; i++)
        n++;
    for (i = 0; i <= n / 2; i++)
    {
        if (arr[i] != arr[n - 1 - i])
        {
            flag = 1;
            break;
        }
    }
    return flag;
}
```

```c
// Lab 8
// Question 3
// Write a function IsPalin to check whethe
// Write a main function to test this funct
#include <stdio.h>
int IsPalin(char[]);

int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");
    char arr[100];
    printf("Enter string:\n");
    gets(arr);
    int palin = IsPalin(arr);
    if (palin == 0)
        printf("Is a Palindrome");
    else
        printf("Not a Palindrome");
    return 0;
}
int IsPalin(char arr[100])
{
    int i, n = 0, flag = 0;
    for (i = 0; arr[i] != '\0'; i++)
        n++;
    for (i = 0; i <= n / 2; i++)
    {
        if (arr[i] != arr[n - 1 - i])
        {
            flag = 1;
            break;
        }
    }
    return flag;
}
```



Lab 8

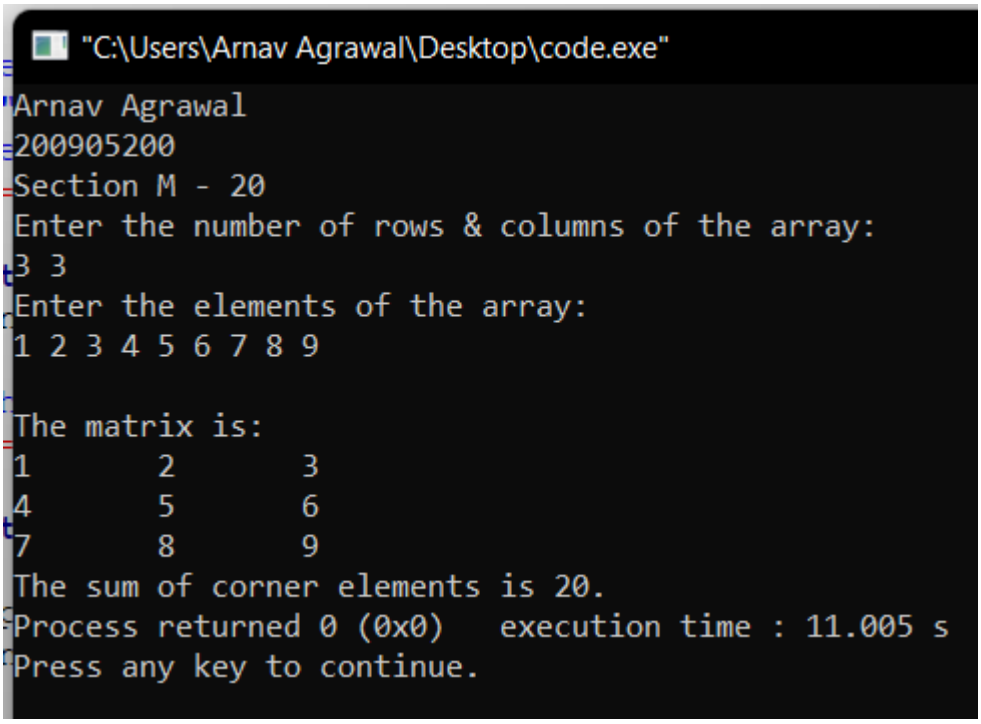
Question 4

Write a function CornerSum which takes as a parameter, no. of rows and no. of columns of a matrix and returns the sum of the elements in the four corners of the matrix. Write a main function to test the function.

```
// Arnav Agrawal
// 200905200
// Lab 8
// Question 4
// Write a function CornerSum which takes as a parameter, no. of rows and no. of
// columns of a matrix and returns the sum of the elements in the four corners of the
// matrix. Write a main function to test the function.
#include <stdio.h>
int CornerSum(int[][100], int, int);

int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");

    int a[100][100], temp[100][100];
    int n, m;
    printf("Enter the number of rows & columns of the array:\n");
    scanf("%d%d", &m, &n);
    printf("Enter the elements of the array:\n");
    for (int i = 0; i < m; i++)
    {
        for (int j = 0; j < n; j++)
            scanf("%d", &a[i][j]);
    }
```

```
    printf("\nThe matrix is:\n");
    for (int i = 0; i < m; i++)
    {
        for (int j = 0; j < n; j++)
        {
            temp[i][j] = a[i][j];
            printf("%d\t", temp[i][j]);
        }
        printf("\n");
    }
    int res = CornerSum(a, m, n);
    printf("The sum of corner elements is %d.", res);
    return 0;
}
int CornerSum(int a[][100], int m, int n)
{
    int sum = 0;
    sum = a[0][0] + a[0][n - 1] + a[m - 1][n - 1] + a[m - 1][0];
    return sum;
}
```

```c
// matrix. Write a main function to test the function.
#include <stdio.h>
int CornerSum(int[][100], int, int);

int main()
{
    printf("Arnav Agrawal\n");
    printf("200905200\n");
    printf("Section M - 20\n");

    int a[100][100], temp[100][100];
    int n, m;
    printf("Enter the number of rows & columns of the array:\n");
    scanf("%d%d", &m, &n);
    printf("Enter the elements of the array:\n");
    for (int i = 0; i < m; i++)
    {
        for (int j = 0; j < n; j++)
            scanf("%d", &a[i][j]);
    }
    printf("\nThe matrix is:\n");
    for (int i = 0; i < m; i++)
    {
        for (int j = 0; j < n; j++)
        {
            temp[i][j] = a[i][j];
            printf("%d\t", temp[i][j]);
        }
        printf("\n");
    }
    int res = CornerSum(a, m, n);
    printf("The sum of corner elements is %d.", res);
    return 0;
}
int CornerSum(int a[][100], int m, int n)
{
    int sum = 0;
    sum = a[0][0] + a[0][n - 1] + a[m - 1][n - 1] + a[m - 1][0];
    return sum;
}
```


"C:\Users\Arnav Agrawal\Desktop\code.exe"
Arnav Agrawal
200905200
Section M - 20
Enter the number of rows & columns of the array:
3 3
Enter the elements of the array:
1 2 3 4 5 6 7 8 9
The matrix is:
1 2 3
4 5 6
7 8 9
The sum of corner elements is 20.
Process returned 0 (0x0) execution time : 11.005 s
Press any key to continue.