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Lab Sheet:- 02

Q1. Given an array, write a user defined function to reverse every sub-array formed by consecutive k elements. The array should be passed by reference to the function.

Examples:

Input: arr = [1, 2, 3, 4, 5, 6, 7, 8, 9]

k = 3

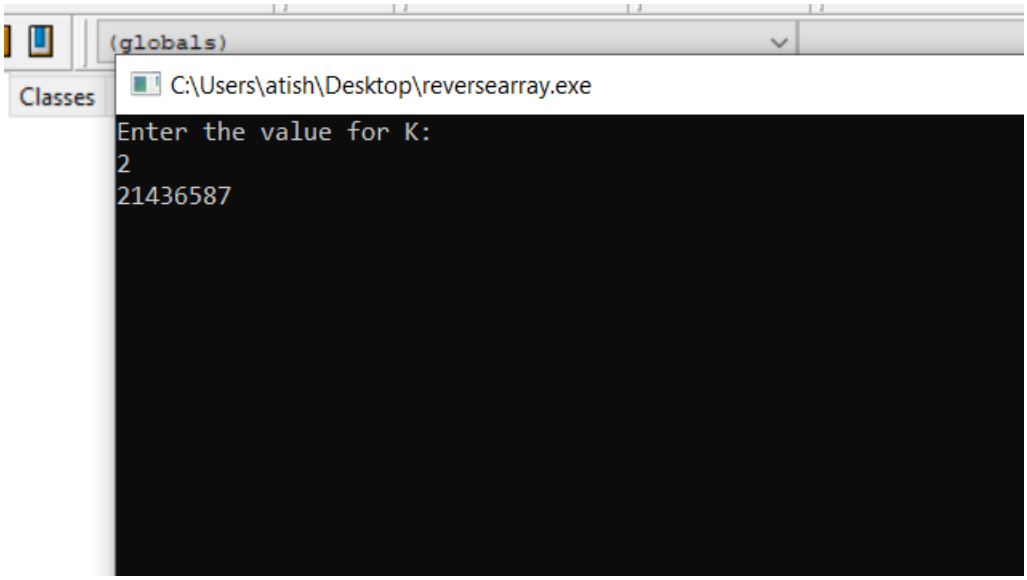
Output: [3, 2, 1, 6, 5, 4, 9, 8, 7]

Program:-

```
#include <iostream>
#include <conio.h>
using namespace std;
void reverse(int arr[], int n, int k)
{
   for (int i = 0; i < n; i += k)
   {
      int left = i;
       int right = min(i + k - 1, n - 1)
       while (left < right)
       {
          swap(arr[left++], arr[right--]);
       }
   }
}
void swap(int &a, int &b)
{
   int temp;
   temp = a;
```

```
    a = b;
    b = temp;
}
int main()
{
    //size of array
    int n = 8;
    //array
    int arr[] = {1, 2, 3, 4, 5, 6, 7, 8};
 int k;
cout << "Enter the value for K: " << endl;
    cin >> k;
reverse(arr, n, k);
    for (int i = 0; i < n; i++)
    {
        cout << arr[i];
    }
    getch();
    return 0;
}
```

Output



Q2. Write a recursive function to obtain the first 25 numbers of a Fibonacci series. In a Fibonacci sequence the sum of two successive terms gives the third term.

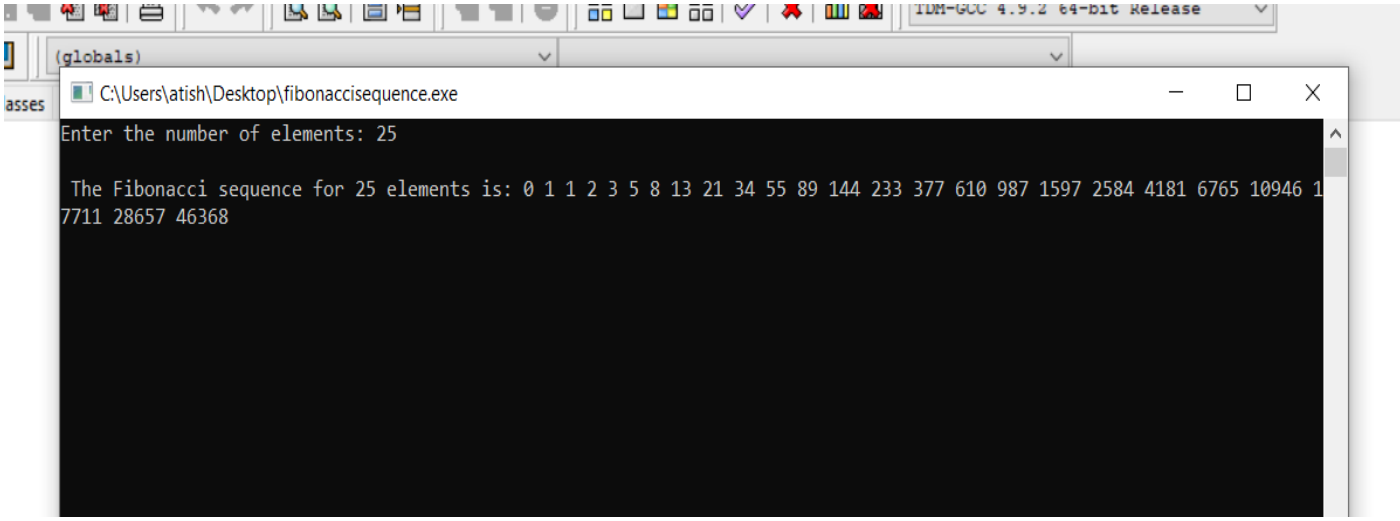
Following are the first few terms of the Fibonacci sequence: 1 2 3 5 8 13 21 ….

Program:-

```
#include <bits/stdc++.h>
#include <conio.h>
using namespace std;
void printfibonacci(int n)
{
  static int num1 = 0, num2 = 1, num3;
if (n > 0)
   {
      num3 = num1 + num2;
      num1 = num2;
      num2 = num3;
      cout << num3 << " ";
      printfibonacci(n - 1);
   }
}
int main()
{
   int n;
   cout << "Enter the number of elements: ";
   cin >> n;

   cout << "\n The Fibonacci sequence for " << n << " elements is: ";
   cout << "0 "
      << "1 ";
   printfibonacci(n - 2);
```

```
    getch();
    return 0;
}
```



Q3. Write a program of a menu-driven interface to offer the user four options as follows: Enter a choice:

0 Print the array of grades

1 Find the minimum grade

2 Find the maximum grade

3 Print the average on all tests for each student

4 End program Functions should be implemented using pass by reference method. The memory for the array should be allocated dynamically

Program:-

Q4. Write a program that compares two given dates. To store date use structure say date that contains three members namely date, month and year. If the dates are equal then display message as "Equal" otherwise "Unequal". Create a user defined function Compare_Date() to do so which takes pointer to structure as input.

Program:-

```
#include<stdio.h>
#include<conio.h>
void compare_date();
struct date
{
int day;
int month;
int year
} d1,d2;
void main()
{
   printf("Enter first date(dd/mm/yyyy):");
   scanf("%d%d%d",&d1.day,&d1.month,&d1.year);
   printf("nEnter second date(dd/mm/yyyy):");
   scanf("%d%d%d",&d2.day,&d2.month,&d2.year);
   compare_date();
}
void compare_date()
```

```
{
  struct date *ptr1,*ptr2;
    ptr1=&d1;
    ptr2=&d2;


if(((*ptr1).day==(*ptr2).day)&&((*ptr1).month==(*ptr2).month)&&((*ptr1).year==(*ptr2).year))
      printf("EQUAL");
    else
      printf("UNEQUAL");

}
```

Output:-