Name: KAUSHAL VASHISTH Roll Number: 18ETCS002147

Laboratory 1

1. Questions

    1. Write a program to input two integer numbers and display the sum of even numbers between these two input numbers.
    2. Write a program to find GCD (greatest common divisor or HCF) and LCM (least common multiple) of two numbers.
    3. Write a program to display Fibonacci series up to given limit.

2. Introduction :-

    This lab experiment gives the basic practical knowledge to students about c programming and opens their mind towards logical thinking.

3. Algorithm

    Q1:-

    Step1:- start

    Step2:- take variables:- a,b,i and sum=0 of type integer.

    Step3:- print(“sum of even no. between a and b is :-”);

    Step4:- run a loop from (a+1 to b-1) using increment of i

    4.a) if(i%2==0) then

    4.b)sum=sum+i;

    Step5:-print(sum);

    Step6:- stop

    Q2:-

    Step1:- start

    Step2:- define function “gcd” with inputs a and b of type integer:-

2.1) if(a=0) then return b

2.2) return gcd(b%a,a);

Step3:- define function “lcm” with inputs a and b of type integer:-

3.1) return((a*b)/gcd(a,b));

Step4:- initialize variables:- a=15 and b=20 of type integer.

Step5:- print("hcf of %d and %d is %d \n", a, b, gcd(a, b));

Step6:- print("LCM of %d and %d is %d ", a, b, lcm(a, b));

Step7:- stop

Q3:-

Step1:- start

Step2:- take variables:- a=0,b=1,i and n of type integer.

Step3:- print(“enter the limit:-”);

Step4:- read variable n

Step5:- print a and b

Step6:- assign sum=0; of type integer

Step7:- run a loop from (2 to n-1) using increment of i

7.a) assign sum=a+b;

7.b) if(sum>n) then

7.b.1)break;

7.c) print sum

7.d) assign a=b;

7.e) assign b=sum;

Step8:- stop

4. Program:

Q1:-

```c
#include <stdio.h>

int main(){
   int i,a,b,sum=0;
   printf("enter two numbers:-");
   scanf("%d %d",&a,&b);
   printf("sum of even no. between %d and %d is: ",a,b);
   for(i=a+1;i<b;i++){
       if(i%2==0){
          sum=sum+i;
       }
   }
printf("%d ",sum);

      return 0;
}
```

Q2:-

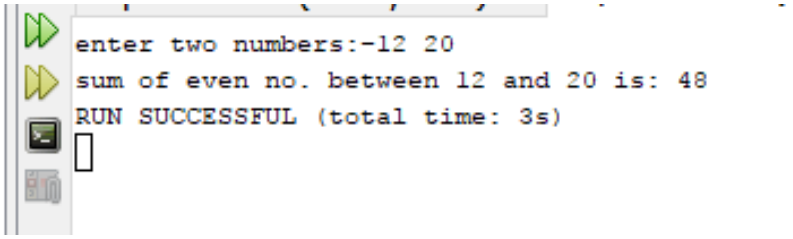
```c
#include <stdio.h>

int gcd(int a, int b)
{
    if (a == 0)
       return b;
    return gcd(b % a, a);

}

int lcm(int a, int b)
{
    return (a*b)/gcd(a, b);   //relation between hcf and lcm
}

int main()
{
    int a = 15, b = 20;
    printf("hcf of %d and %d is %d \n", a, b, gcd(a, b));
    printf("LCM of %d and %d is %d ", a, b, lcm(a, b));
    return 0;
}
```

Q3:-

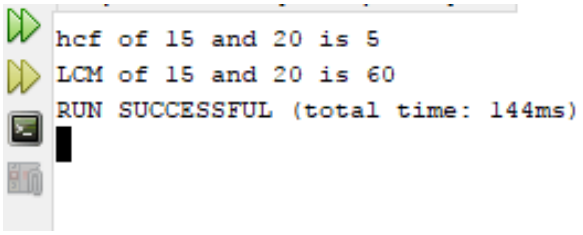
```c
#include <stdio.h>

int main(){
    int i,a=0,b=1,n;

    printf("enter the limit:-");
    scanf("%d",&n);
    printf("%d %d ",a,b);
    int sum=0;
    for(i=2;i<n;i++){
        sum=a+b;
        if (sum>n)
            break;
        printf("%d ",sum);
        a=b;
        b=sum;
    }
      return 0;
}
```

5. Presentation of Results

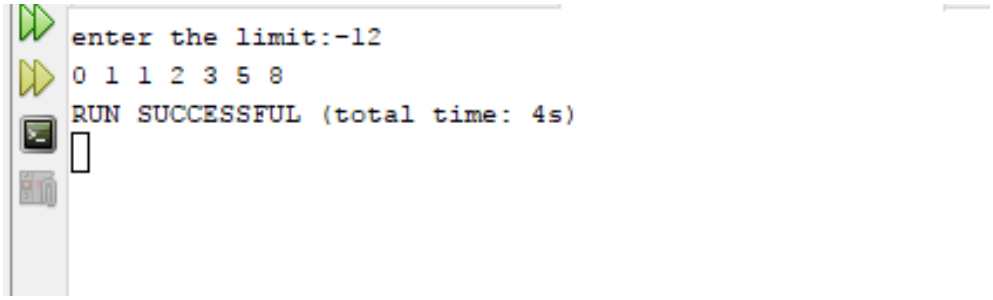
Ans1:-



Ans2:-



Ans3:-



6. Conclusions:-

Hence, we can conclude that all the programs have been executed successfully and are giving expected outputs.

Error will be shown if user gives float inputs as the programs are designed for decimal inputs.

Also, the program are designed such that the time complexity and the space complexity remains minimum.