

## GCD

```
#include <stdio.h>

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

    else
        return gcd(b, a%b);
}

int gcdgoto(int a, int b){
    start:
    if(b==0)
        return a;

    else
    {
        int temp = b;
        b = a%b;
        a = temp;
        goto start;
    }
}

int gcdwhile(int a, int b){
    while(b!=0){
        int temp = b;
        b = a%b;
        a = temp;
    }
    if(b==0)
        return a;
}

int main(){
    int a,b;
    scanf("%d%d", &a, &b);
    printf("The gcd of %d, %d using \n1. Recursion = %d \n2.Goto = %d \n3.While = %d\n", a,b, gcd(a,b), gcdgoto(a,b), gcdwhile(a,b));
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
pranav@LAPTOP-QMTLO2L1: /mnt/c/Users/bmspr/Documents/comp/sem3/dsa/week2$ ./gcd
82
12
The gcd of 82, 12 using
1. Recursion = 2
2.Goto = 2
3.While = 2
pranav@LAPTOP-QMTLO2L1: /mnt/c/Users/bmspr/Documents/comp/sem3/dsa/week2$
```

Fibonacci:-

```
#include<stdio.h>

int fibo(int n){
    if(n<=1)
        return n;

    else
        return fibo(n-1) + fibo(n-2);
}

int fibogoto(int n){
    if(n<=1)
        return n;

    int current=1, prev=0,i=1;
    start:
    if(i>=n)
        return current;
    else
    {
        int next = current + prev;
        prev = current;
        current = next;
        i++;
        goto start;
    }
}

int fibowhile(int n){
    if(n<=1)
        return n;
    int current = 1;
    int prev = 0, i=1;
    while(i<n){
        int next = current + prev;
        prev = current;
        current = next;
        i++;
    }
    return current;
}

int main(){
    int x;
    scanf("%d", &x);
    printf("The %dth fibo no. is: %d\nUsing goto: %d\n Using while: %d\n", x,
    fibo(x), fibogoto(x), fibowhile(x));
    return 0;}
```

```
pranav@LAPTOP-QMTL02L1:/mnt/c/Users/bmspr/Documents/comp/sem3/dsa/week2$ ./fibo
7
The 7th fibo no. is: 13
Using goto: 13
Using while: 13
pranav@LAPTOP-QMTL02L1:/mnt/c/Users/bmspr/Documents/comp/sem3/dsa/week2$
```