Lab-test-I

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① Write a recursive Program to
(a) Solve tower of Hanoi Problem (b) To find GCd

Modification: To count the number of recursive calls in solving towers of Hanoi Problem.

(a) Solve Tower of Hanoi Problem :-

```
#include <stdio.h>
void towers (int, char, char, char);
int main()
{
  int num;
  Printf ("Enter the No: of disks :");
  Scanf ("%d", &num);
  Printf ("the sequence of moves involved in the
          tower of Hanoi are :\n");
  towers (num, 'S', 'T', 'D');
  return 0;
}
void towers (int num, char src, char temP, char dest)
{
  if (num==1)
  {
    Printf ("\n Move disk1 from disk %c to disk %c", src,
    return;                                          dest);
  }
  towers (num-1, src, dest, temP);
  Printf ("\n Move disk %d from disk %c to disk %c",
  towers (num-1, temP, src, dest);                  num, src, dest);
}
```

(b) To find GCD :-

```
#include <stdio.h>
int recursive(int a, int b)
{
  if(b==0)
  return a;
  int P=a/b;
  int q=a-P*b;
  return recursive(b,q);
}
int main()
{
 int a,b;
 Printf("Enter the two Positive numbers:\n");
 scanf("%d %d",&a,&b);
 Printf("Gcd of 2 numbers is:%d\n", recursive(a,b));
 return 0;
}
```

Modification : To count the number of recursive calls in solving the tower of hanoi Problem.

```
void towers(int num, char src, char temp, char dest)
{
 if(num==1){
 Printf("\n Move disk 1 from disk %c to disk %c",src,dest);
 Printf("\n The number of recursive calls are : 1");
 return;}
 towers(num-1, src, dest, temp);
 Printf("\n Move disk %d from disk %c to disk %c", num, src, dest);
 towers(num-1, temp, src, dest);
 if(num>1)
 {Printf("\n the number of recursive calls are: num+1");
 }
}
```