PRACTICAL - 2

Implement functions to print nth Fibonacci number using iteration and recursive method. Compare the performance of two methods by counting number of steps executed on various inputs. Also draw a comparative chart. (Fibonacci series 1, 1, 2, 3, 5, 8….. Here 8 is the 6th Fibonacci number)

CODE:

```
#include <stdio.h>

int count_ite=0;
int count_rec=0;

void fib_ite(int );
int fib_rec(int n );

int main(){
int n;
   printf("enter the fib no = ");
scanf("%d",&n);
fib_ite(n);    int ans=fib_rec(n);
   printf("%dth number is = %d\n",n,ans);
printf("recursion step count = %d\n",count_rec);    return
0;
}

void fib_ite(int n ){
int n1=0;    int
n2=1;    int n3,i;
    if(n==0)
{
count_ite++;
n3=0;
    }
else {
for(i=2;i<=n;i++){      count_ite++;
n3=n1+n2;       count_ite++;
n1=n2;      count_ite++;
n2=n3;
```

```
    }
  }
  printf("iteration step count = %d\n",count_ite);
printf("%dth number is = %d\n",n,n3);
}
```

```
int fib_rec(int n){   if(n==0){
count_rec++;
  return 0;
  }
 else if(n==1){    count_rec++;
  return 1;
  }
 else{
count_rec++;
  return fib_rec(n-1)+fib_rec(n-2);
  }
}
```

OUTPUT:

```
enter the fib no = 7
iteration step count = 18
7th number is = 13
7th number is = 13
recursion step count = 41
```

GRAPH:

Patel Guru   21012011074

iter_step	rec_Step
12	15
15	25
18	41
21	67
24	109

CHART TITLE

iter_step — rec_Step