A Practical Activity Report For
Data Structures and Algorithms (UCS406)

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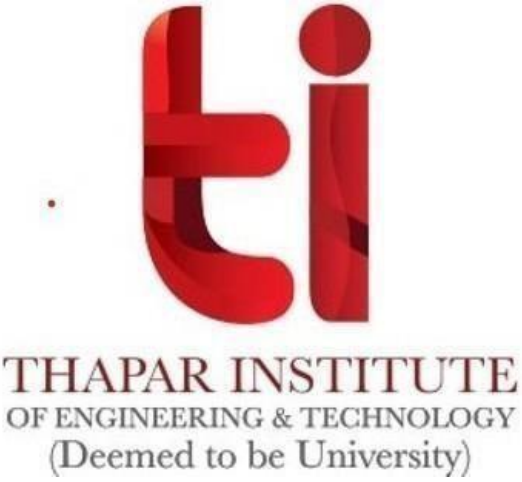

ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT

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ASSIGNMENT 2

QUESTION 1 (Sum of n natural numbers with Iteration)

```
#include<iostream>
using namespace std;
int main()
{
   int i,n;
   cin>>n;
   int sum=0;
   for(i=1;i<=n;i++)
   {
      sum=sum+i;

   }
   cout<<"sum="<<sum;
   return 0;
}
```

QUESTION1 (Sum of n natural numbers With Recursion)

```
#include<iostream>
using namespace std;
int sum(int x)
{   if(x!=0)
   return x+sum(x-1);
   else
   return 0;


}
int main()
{   int  n,ans=0;
   cin>>n;
   int answer;
   answer=sum(n);
   cout<<"sum="<<answer;
   return 0;
}
```

QUESTION 2: (Factorial Iteration)

```
#include<iostream>
using namespace std;
```

```
int sum(int x)
{   if(x!=0)
    return x+sum(x-1);
    else
    return 0;


}
int main()
{   int  n,ans=0;
    cin>>n;
    int answer;
    answer=sum(n);
    cout<<"sum="<<answer;
    return 0;
}
```

QUESTION 2(Factorial with Recursion)

```
#include<iostream>
using namespace std;
int fact(int n)
{
    if(n==0)
        return 1;
    else
      return n*fact(n-1);
}
int main()
{ int ans,n;
  cin>>n;
  ans=fact(n);
  cout<<"factotial="<<ans;
  return 0;
}
```

QUESTION 3 (pow(m,n) with iteration)

```
#include<iostream>
using namespace std;
int main()
{
```

```
    int ans=1,i,b,e;
    cin>>b>>e;
    for(i=1;i<=e;i++)
    {
       ans=ans*b;
    }
    cout<<"power="<<ans;
    return 0;
}
```

QUESTION 3 (pow(m,n) with recursion)

```
#include<iostream>
using namespace std;
int mypower(int b,int e)//2 3
{
    if(e!=0)
    {
    return b*mypower(b,e-1);
    }
    else
       return 1;

}
int main()
{  int b,e,ans;
   cin>>b>>e;
   ans=mypower(b,e);
   cout<<ans;
}
```

QUESTION 4 (Taylor Series with iteration)

```
#include<iostream>
#include<cmath>
using namespace std;
int fact(int a)
{   int i,factorial=1;
if(a==0)
    return 1;
else
{
    for(i=1;i<=a;i++)
```

```
    {
        factorial=factorial*i;
    }
    return factorial;
}

}
int main()
{
    int i,x;
    cin>>x;//2
    float sum=0;
    for(i=0;i<=x;i++)
    {
        sum=sum+(pow(x,i)/fact(i));

    }
    cout<<sum;
    return 0;

}
```

QUESTION 4 (Taylor Series with Recursion)

```
#include<iostream>
using namespace std;
double taylor(int x,int n)
{
        static double p=1,f=1;
        double r;
        if(n==0)
                return 0;

        r=taylor(x,n-1);

        if(n%2==0)
        {
                p=p*x;
                f=f*(-n);
                return r +0;
        }
        p=p*x;
```

```
        f=f*n;
        return r+ p/f;
}
int main()
{
        int a,b;
        float r;
        cout<<"enter number and count:\n";
        cin>>a>>b;
        ans=taylor(a,2*b);
        cout<<ans;
}
```