**A Practical Activity Report For**

**Data Structures and Algorithms (UCS406)**

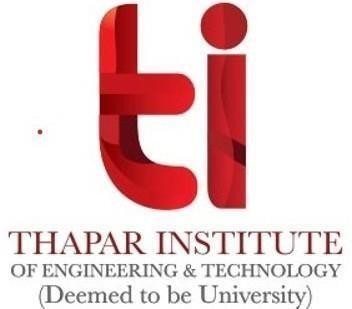
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**ASSIGNMENT 2**

**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;

}