Experiment 2

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Branch: BE CSE
Section/Group: 20BCSWM_906 B
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Subject Name: Design And Analysis of Algorithms Lab
Subject Code: 20CSP_312

1. **Aim/Overview of the practical:**

   Code implement power function in O(logn) time complexity.

2. **Task to be done/ Which logistics used:**

   To find Power of a number.

3. **Algorithm/Flowchart (For programming based labs):**

   Step1: Take x and n input.
   Step2: Calculate pow(x, n) method check base condition if n==0 return 1 check base condition if n==1 return x recursively callpow(x,n-1) and go to step 2;
   Step 3: Print result.

4. Steps for experiment/practical/Code:

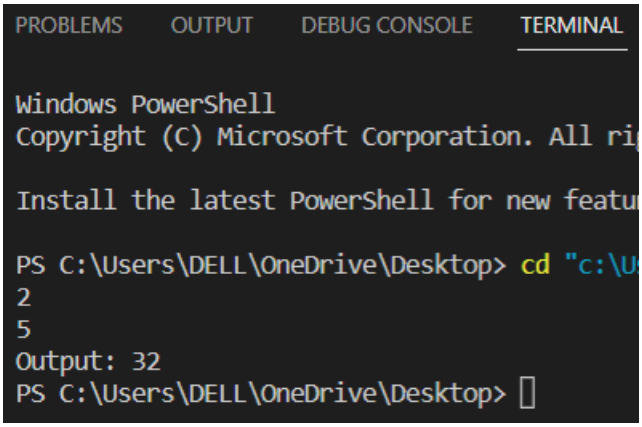
```
#include<bits/stdc++.h>
using namespace std;
double power(double n,int x)
{
if(x==0)
    return 1;

double temp=power(n,x/2);
if(x%2==0)
{
    return temp*temp;
}
else if(x>0)
{
    return n*temp*temp;
}
else
    return (temp*temp)/n;
}
int main()
{
    double n;
    int x;
    cin>>n>>x;
    double ans=power(n,x);
    cout<<"Output: "<<ans<<endl;
}
```

5. **Observations/Discussions/ Complexity Analysis:**

Time complexity of finding power of a number using recursion is O(log n).

6. **Result/Output/Writing Summary:**



Learning outcomes (What I have learnt):

a. To know to calculate power of a function.
b. To learn how to use recursion for solving problems.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			