**Experiment 1.2**

**Aim:** C*ode implement power function in O(logn) time complexity.*

**Objectives:** *To implement power function in O(logn) time complexity.*

**Input/Apparatus Used:** *VS CODE*

# Procedure/Algorithm:

# *Start with the base number base and the exponent exp.*

# *Initialize a variable result to 1 to store the final result.*

# *While exp is greater than 0, do the following:*

# *If exp is odd, multiply result by base.*

# *Sqaure base*

# *Halve exp by integer division*

# *Return the value of result as the power of the number.*

# Sample Code:

# *#include <iostream>*

# *using namespace std;*

# *int power(int x, unsigned int n)*

# *{*

# *if (n == 0)*

# *return 1;*

# 

# *int temp = power(x, n / 2);*

# 

# *if (n % 2 == 0)*

# *return temp \* temp;*

# *else*

# *return x \* temp \* temp;*

# *}*

# *int main()*

# *{*

# *int x;*

# *cout << "Enter value of x" << endl;*

# *cin >> x;*

# 

# *int n;*

# *cout << "Enter value of n" << endl;*

# *cin >> n;*

# 

# *cout << power(x, n);*

# *return 0;*

# *}*

# Observations/Outcome :

# 

# Time Complexity: O(log n)

# Learning Outcome:

# *Understanding Recursive Problem Solving*

# *Applying Mathematical Properties*

# *Practical Implementation of Algorithms*