Experiment 2

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Subject Name: DAA **Subject Code:23CSH-301**

1. **Aim: Implement a power function that computes xyx^yxy in O(log n) time complexity.**

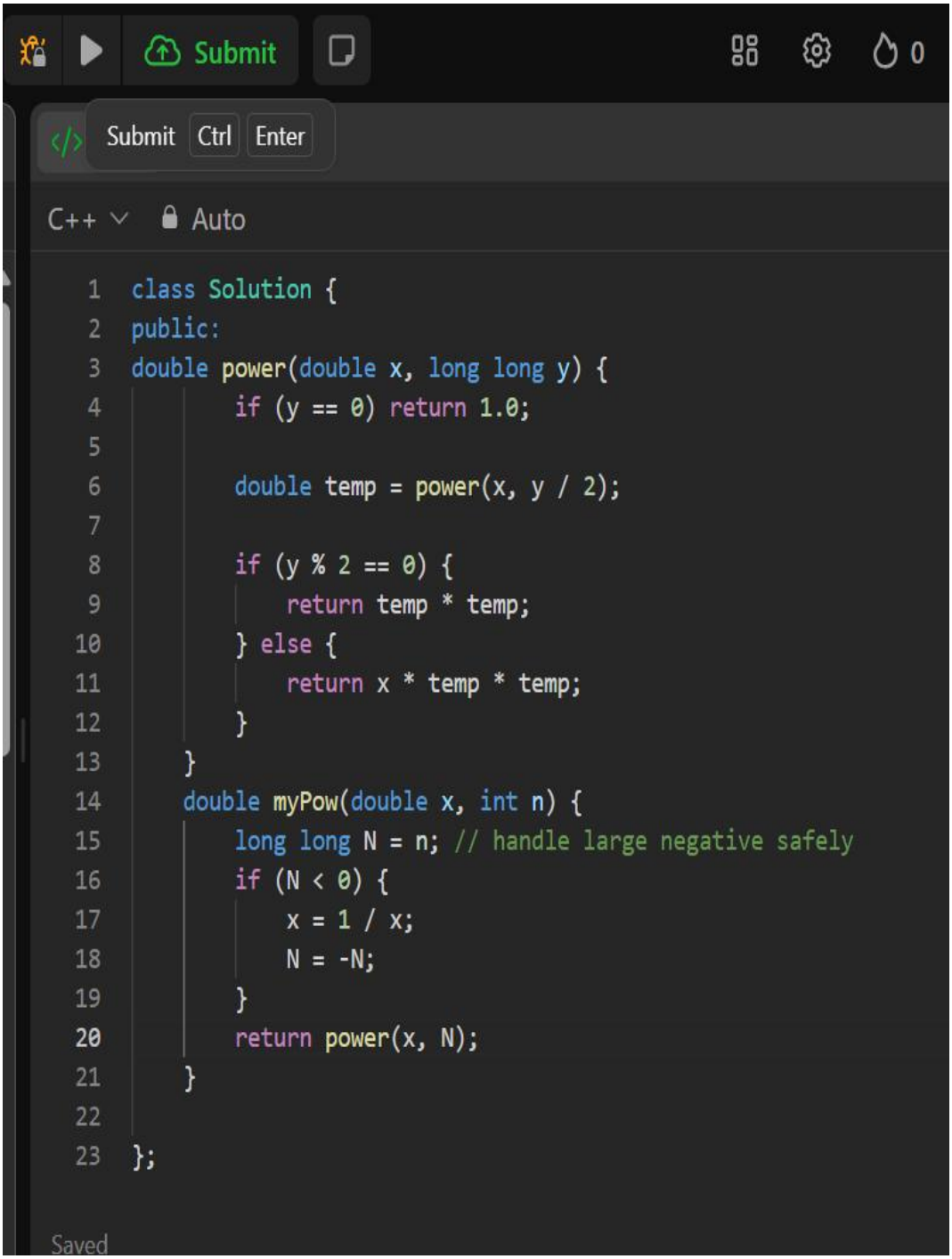
2. **Objective:** To implement and understand an optimized recursive approach for exponentiation using divide and conquer.

3. **Implementation/Code:**

```
#include <iostream>
using namespace std;
double power(double x,int y){
   if(y==0)
   return 1;
   double temp=power(x,y/2);
   if (y%2==0)
   return temp*temp;
   else{
      if(y>0)
      return x*temp*temp;
      else
      return (temp*temp)/x;
   }
}
int main(){
   double x=2;
   int y=-3;
   cout<<"Result: "<<power(x,y)<<endl;
```

```
    return 0;
}
```

4. Output



5. Learning Outcome

- Understand the concept of divide-and-conquer in recursive functions.
- Implement exponentiation in O(log n) time.
- Handle negative and zero power cases efficiently.