

Question04.cpp

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1 // DSA LAB 7
2 // <---Q4--->
3
4 // Write a recursive function which will raise a number (double) to a non-negative integer
5 // power n. The function receives the double value and integer as arguments.
6
7 #include <iostream>
8
9 using namespace std;
10
11 // Recursive function to calculate the power of a double value
12 double power(double base, int exponent) {
13     // Base case: Any number raised to the power of 0 is 1
14     if (exponent == 0) {
15         return 1.0;
16     }
17
18     // Recursive case: Multiply the base by the result of the recursive call
19     // with a reduced exponent
20     return base * power(base, exponent - 1);
21 }
22
23 int main() {
24     double base;
25     int exponent;
26
27     // Input the base and exponent
28     cout << "Enter the base (double): ";
29     cin >> base;
30
31     cout << "Enter the exponent (non-negative integer): ";
32     cin >> exponent;
33
34     // Check if the exponent is non-negative
35     if (exponent < 0) {
36         cout << "Invalid exponent. Please enter a non-negative integer." << endl;
37         return 1; // Return an error code
38     }
39
40     // Calculate and print the result
41     double result = power(base, exponent);
42     cout << base << " raised to the power " << exponent << " is: " << result << endl;
43
44     return 0;
45 }
46
```