```
 1: //Kalli Bonin
 2: //Question 2 - Guess a Number - Recursion
 3:
 4: #include <iostream>
 5: #include <cmath>
 6: #include <cstdlib>
 7:
 8: using namespace std;
 9:
10: void MakeAGuess(int lowest, int highest, int counter)
11: {
12:     int guessed = (lowest+highest)/2;
13:     char response = ' ';
14:
15:     cout << "Is your number " << guessed << "?" << endl;
16:
17:     cout << "Enter (Y)es, (L)ower, (H)igher: ";
18:     cin >> response;
19:
20:     //enter two lines
21:     cout << endl << endl;
22:
23:     switch (response)
24:         {
25:             case 'Y':
26:                 cout << "Yay, I correctly guessed your secret number in "
27:                      << counter << " guesses!" << endl;
28:                 break;
29:             case 'L':
30:                 if(lowest >= highest)
31:                 {
32:                     cout << "You are cheating!" << endl;
33:                     break;
34:                 }
35:                 MakeAGuess(lowest, guessed-1, counter+1);
36:                 break;
37:             case 'H':
38:                 if(lowest >= highest)
39:                 {
40:                     cout << "You are cheating!" << endl;
41:                     break;
42:                 }
43:                 MakeAGuess(guessed+1, highest, counter+1);
44:                 break;
45:             default:
46:                 cout << "ERROR: Invalid Response" << endl;
47:                 break;
48:         }
49:
50:         //if the upper and lower bounds are equal and the response is not yes,
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51:         //the user is not being truthful
52:
53: }
54:
55: int main()
56: {
57:     cout << "Recursive Guess-A-Number" << endl
58:          << "Think of a number which this program will try to guess." <<endl
59:          << "Enter the lowest possible number: ";
60:
61:     int lowest = 0;
62:     cin >> lowest;
63:
64:     int highest = -1;
65:     while (highest < lowest)
66:     {
67:         cout << "Enter the highest possible number: ";
68:
69:         cin >> highest;
70:         cout << endl;
71:     }
72:
73:     int counter = 1;
74:
75:     MakeAGuess(lowest, highest, counter);
76:
77: }
78:
79: /*
80:     Recursive Guess-A-Number
81:     Think of a number which this program will try to guess.
82:     Enter the lowest possible number: 1
83:     Enter the highest possible number: 100
84:
85:     Is your number 50?
86:     Enter (Y)es, (L)ower, (H)igher: H
87:
88:
89:     Is your number 75?
90:     Enter (Y)es, (L)ower, (H)igher: H
91:
92:
93:     Is your number 88?
94:     Enter (Y)es, (L)ower, (H)igher: H
95:
96:
97:     Is your number 94?
98:     Enter (Y)es, (L)ower, (H)igher: H
99:
100:
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    Is your number 97?
    Enter (Y)es, (L)ower, (H)igher: H


    Is your number 99?
    Enter (Y)es, (L)ower, (H)igher: Y


    Yay, I correctly guessed your secret number in 6 guesses!

    --------------------------------
    Process exited after 10.7 seconds with return value 0
    Press any key to continue . . .
*/

/*
    Recursive Guess-A-Number
    Think of a number which this program will try to guess.
    Enter the lowest possible number: 1
    Enter the highest possible number: 10

    Is your number 5?
    Enter (Y)es, (L)ower, (H)igher: L


    Is your number 2?
    Enter (Y)es, (L)ower, (H)igher: L


    Is your number 1?
    Enter (Y)es, (L)ower, (H)igher: L


    You are cheating!

    --------------------------------
    Process exited after 6.931 seconds with return value 0
    Press any key to continue . . .
*/
```