Source File: ~/2336/12/lab12.(C|CPP|cpp|c++|cc|cxx|cp)
Input: under control of `main` function
Output: under control of `main` function
Value: 2

Write a recursive function that prints a nonnegative long integer with commas in the correct locations. For example, it should print 20131 as 20,131. A sample `main` function for testing your function is shown in Figure 1. Commands to compile, link, and run this assignment are shown in Figure 2. To use the `Makefile` as distributed in class, add a target of `lab12` to `targets2srcfiles`.

```
1    #include <iostream>
2    #include <cstdlib>
3    #include <iomanip>
4
5    using namespace std;
6
7    void insertComma(unsigned long num, ostream& os);
8
9    int main()
10   {
11     unsigned long ul;
12
13     while (cin >> ul)
14     {
15       cout << setw(10) << ul << " = ";
16       insertComma(ul, cout);
17       cout << endl;
18     }
19
20     return EXIT_SUCCESS;
21   }
```

Figure 1. `/usr/local/2336/src/lab12main.C`

```
 1  newuser@csunix ~> cd 2336
 2  newuser@csunix ~/2336> ./getlab.ksh 12
 3    * Checking to see if a folder exists for Lab 12. . .No
 4    * Creating a folder for Lab 12
 5    * Checking to see if Lab 12 has sample input and output files. . .Yes
 6    * Copying input and output files for Lab 12
 7      from folder /usr/local/2336/data/12 to folder ./12
 8    * Checking to see if /usr/local/2336/src/lab12main.C exists. . .Yes
 9    * Copying file /usr/local/2336/src/lab12main.C to folder ./12
10    * Checking to see if /usr/local/2336/include/lab12.h exists. . .No
11    * Copying file /usr/local/2336/src/Makefile to folder ./12
12    * Adding a target of lab12 to targets2srcfiles
13    * Touching file ./12/lab12.cpp
14    * Edit file ./12/lab12.cpp in Notepad++
15  newuser@csunix ~/2336> cd 12
16  newuser@csunix ~/2336/12> ls
17  01.dat        01.out        Makefile      lab12.cpp     lab12main.C
18  newuser@csunix ~/2336/12> make lab12
19  g++ -g -Wall -std=c++11 -c lab12main.C -I/usr/local/2336/include -I.
20  g++ -g -Wall -std=c++11 -c lab12.cpp -I/usr/local/2336/include -I.
21  g++ -o lab12 lab12main.o lab12.o -L/usr/local/2336/lib -lm -lbits
22  newuser@csunix ~/2336/12> cat 01.dat
23  0 1 12 234 3302 12345 123456 1234567 12345678 123456789 1234567890
24  2147483647 1000000000
25  newuser@csunix ~/2336/12> cat 01.dat | ./lab12
26           0 = 0
27           1 = 1
28          12 = 12
29         234 = 234
30        3302 = 3,302
31       12345 = 12,345
32      123456 = 123,456
33     1234567 = 1,234,567
34    12345678 = 12,345,678
35   123456789 = 123,456,789
36  1234567890 = 1,234,567,890
37  2147483647 = 2,147,483,647
38  1000000000 = 1,000,000,000
39  newuser@csunix ~/2336/12> cat 01.dat | ./lab12 > my.out
40  newuser@csunix ~/2336/12> diff 01.out my.out
41  newuser@csunix ~/2336/12>
```

Figure 2. Commands to Compile, Link, & Run Lab 12