Source File: ~/2336/17/lab17.(C|CPP|cpp|c++|cc|cxx|cp)
Input: under control of `main` function
Output: under control of `main` function
Value: 1

Write a recursive function that prints the hexadecimal representation of a signed, nonzero integer. Use a digit set of $\{0 - 9, A - F\}$. A sample `main` function for testing your function is shown in Figure 1 and commands for compiling, linking, and running this assignment are shown in Figure 2. To use the `Makefile` as distributed in class, add a target of `lab17` to `targets2srcfiles`.

```
1   #include <iostream>
2   #include <cstdlib>
3   #include <iomanip>
4
5   using namespace std;
6
7   // printHexadecimal is a recursive function that writes the hexadecimal
8   // representation of num to output stream os
9   void printHexadecimal(int num, ostream& os);
10
11  int main()
12  {
13    int num;
14
15    while (cin >> num)
16    {
17      cout << right << setw(11) << num << " base 10 = ";
18      if (num != 0)
19        printHexadecimal(num, cout);
20      else
21        cout << 0;
22      cout << " base 16" << endl;
23    }
24
25    return EXIT_SUCCESS;
26  }
```

Figure 1. `/usr/local/2336/src/lab17main.C`

```
 1   newuser@csunix ~> cd 2336
 2   newuser@csunix ~/2336> ./getlab.ksh 17
 3     * Checking to see if a folder exists for Lab 17. . .No
 4     * Creating a folder for Lab 17
 5     * Checking to see if Lab 17 has sample input and output files. . .Yes
 6     * Copying input and output files for Lab 17
 7       from folder /usr/local/2336/data/17 to folder ./17
 8     * Checking to see if /usr/local/2336/src/lab17main.C exists. . .Yes
 9     * Copying file /usr/local/2336/src/lab17main.C to folder ./17
10     * Checking to see if /usr/local/2336/include/lab17.h exists. . .No
11     * Copying file /usr/local/2336/src/Makefile to folder ./17
12     * Adding a target of lab17 to targets2srcfiles
13     * Touching file ./17/lab17.cpp
14     * Edit file ./17/lab17.cpp in Notepad++
15   newuser@csunix ~/2336> cd 17
16   newuser@csunix ~/2336/17> ls
17   01.dat        01.out        Makefile      lab17.cpp     lab17main.C
18   newuser@csunix ~/2336/17> make lab17
19   g++ -g -Wall -std=c++11 -c lab17main.C -I/usr/local/2336/include -I.
20   g++ -g -Wall -std=c++11 -c lab17.cpp -I/usr/local/2336/include -I.
21   g++ -o lab17 lab17main.o lab17.o -L/usr/local/2336/lib -lm -lbits
22   newuser@csunix ~/2336/17> cat 01.dat
23   0 1 2 3341 2147483647
24   -1 -2 -3341 -2147483647
25   -2147483648
26   newuser@csunix ~/2336/17> cat 01.dat | ./lab17
27            0 base 10 = 0 base 16
28            1 base 10 = 1 base 16
29            2 base 10 = 2 base 16
30         3341 base 10 = D0D base 16
31   2147483647 base 10 = 7FFFFFFF base 16
32           -1 base 10 = FFFFFFFF base 16
33           -2 base 10 = FFFFFFFE base 16
34        -3341 base 10 = FFFFF2F3 base 16
35   -2147483647 base 10 = 80000001 base 16
36   -2147483648 base 10 = 80000000 base 16
37   newuser@csunix ~/2336/17> cat 01.dat | ./lab17 > my.out
38   newuser@csunix ~/2336/17> diff 01.out my.out
39   newuser@csunix ~/2336/17>
```

Figure 2. Commands to Compile, Link, & Run Lab 17