

Source File: ~/1337/19/lab19. (C|CPP|cpp|c++|cc|cxx|cp)
Input: Under control of main function
Output: Under control of main function
Value: 1

Write a function whose prototype is

```
bool isOdd(int num);
```

The function should return `true` if the `int` argument is odd and `false` otherwise. The function must use bit operations.

A sample `main` function for testing your function is shown in Figure 1 and a sample execution sequence is shown in Figure 2. To use the `Makefile` as distributed in class, add a target of `lab19` to `targets2srcfiles`.

```
1  #include <iostream>
2  #include <cstdlib>
3
4  using namespace std;
5
6  // Function isOdd returns true if num is odd and false otherwise
7  bool isOdd(int num);
8
9  int main()
10 {
11     int num;
12
13     while (cin >> num)
14         cout << num << " is " << (isOdd(num) ? "odd" : "even") << endl;
15
16     return EXIT_SUCCESS;
17 }
```

Figure 1. /usr/local/1337/src/lab19main.C

```
1 newuser@csunix ~> cd 1337
2 newuser@csunix ~/1337> mkdir 19
3 newuser@csunix ~/1337> cd 19
4 newuser@csunix ~/1337/19> cp /usr/local/1337/data/19/* .
5 newuser@csunix ~/1337/19> cp /usr/local/1337/src/lab19main.C .
6 newuser@csunix ~/1337/19> cp /usr/local/1337/src/Makefile .
7 newuser@csunix ~/1337/19> touch lab19.cpp
8 newuser@csunix ~/1337/19> # Edit Makefile and lab19.cpp
9 newuser@csunix ~/1337/19> make lab19
10 g++ -g -Wall -std=c++11 -c lab19main.C -I/usr/local/1337/include -I.
11 g++ -g -Wall -std=c++11 -c lab19.cpp -I/usr/local/1337/include -I.
12 g++ -o lab19 lab19main.o lab19.o -L/usr/local/1337/lib -lm -lbits
13 newuser@csunix ~/1337/19> cat 01.dat
14 -2147483648 -2 -1 0 1 2 2147483647
15 newuser@csunix ~/1337/19> cat 01.dat | ./lab19
16 -2147483648 is even
17 -2 is even
18 -1 is odd
19 0 is even
20 1 is odd
21 2 is even
22 2147483647 is odd
23 newuser@csunix ~/1337/19> cat 01.dat | ./lab19 > my.out
24 newuser@csunix ~/1337/19> diff 01.out my.out
25 newuser@csunix ~/1337/19> cat 02.dat | ./lab19 > my.out
26 newuser@csunix ~/1337/19> diff 02.out my.out
27 newuser@csunix ~/1337/19>
```

Figure 2. Commands to Compile, Link, & Run Lab 19