Source File: `~/1337/33/lab33.(C|CPP|cpp|c++|cc|cxx|cp)`
Input: Under control of `main` function
Output: Under control of `main` function
Value: 1

The purpose of this assignment is to write two different versions of the same function. The description and prototype of each of the functions can be found in the `main` function shown in Figure 1. A sample execution sequence is shown in Figure 2. To use the `Makefile` as distributed in class, add a target of `lab33` to `targets2srcfiles`.

```
1  #include <iostream>
2
3  using namespace std;
4
5  // Function integerDivide has two value parameters, dividend and
6  // divisor.  The function also has two reference parameters, quotient
7  // and remainder.  The function returns the quotient and remainder
8  // from dividing the dividend by the divisor.
9  void integerDivide(int dividend, int divisor, int& quotient, int& remainder);
10
11 // Function integerDivide has four parameters, each is a pointer to an
12 // int.  The first two parameters are pointers to const int
13 // quantities that represent the dividend and divisor, respectively.
14 // The last two parameters are pointers to int quantities where the
15 // quotient and remainder are stored from dividing the dividend by the
16 // divisor.
17 void integerDivide(const int *dividend, const int *divisor,
18                    int *quotient, int *remainder);
19
20 int main()
21 {
22   int dividend, divisor, quotient, remainder;
23
24   while (cin >> dividend >> divisor)
25   {
26     integerDivide(dividend, divisor, quotient, remainder);
27     cout << "Dividing " << dividend << " by " << divisor
28          << " has a quotient of " << quotient
29          << " and a remainder of " << remainder << endl;
30
31     integerDivide(&dividend, &divisor, &quotient, &remainder);
32     cout << "Dividing " << dividend << " by " << divisor
33          << " has a quotient of " << quotient
34          << " and a remainder of " << remainder << endl << endl;
35   }
36
37   return 0;
38 }
```

Figure 1. `/usr/local/1337/src/lab33main.C`

```
newuser@csunix ~> cd 1337
newuser@csunix ~/1337> mkdir 33
newuser@csunix ~/1337> cd 33
newuser@csunix ~/1337/33> cp /usr/local/1337/data/33/* .
newuser@csunix ~/1337/33> cp /usr/local/1337/src/lab33main.C .
newuser@csunix ~/1337/33> cp /usr/local/1337/src/Makefile .
newuser@csunix ~/1337/33> touch lab33.cpp
newuser@csunix ~/1337/33> # Edit Makefile and lab33.cpp
newuser@csunix ~/1337/33> make lab33
g++ -g -Wall -std=c++11 -c lab33main.C -I/usr/local/1337/include -I.
g++ -g -Wall -std=c++11 -c lab33.cpp -I/usr/local/1337/include -I.
g++ -o lab33 lab33main.o lab33.o -L/usr/local/1337/lib -lm -lbits
newuser@csunix ~/1337/33> cat 01.dat
13 62
62 13
-62 13
62 -13
-62 -13
newuser@csunix ~/1337/33> cat 01.dat | ./lab33
Dividing 13 by 62 has a quotient of 0 and a remainder of 13
Dividing 13 by 62 has a quotient of 0 and a remainder of 13

Dividing 62 by 13 has a quotient of 4 and a remainder of 10
Dividing 62 by 13 has a quotient of 4 and a remainder of 10

Dividing -62 by 13 has a quotient of -4 and a remainder of -10
Dividing -62 by 13 has a quotient of -4 and a remainder of -10

Dividing 62 by -13 has a quotient of -4 and a remainder of 10
Dividing 62 by -13 has a quotient of -4 and a remainder of 10

Dividing -62 by -13 has a quotient of 4 and a remainder of -10
Dividing -62 by -13 has a quotient of 4 and a remainder of -10

newuser@csunix ~/1337/33> cat 01.dat | ./lab33 > my.out
newuser@csunix ~/1337/33> diff 01.out my.out
newuser@csunix ~/1337/33>
```

Figure 2. Commands to Compile, Link, & Run Lab 33