**Source File:**   ~/1337/34/lab34.(C|CPP|cpp|c++|cc|cxx|cp)
**Input:**         Under control of `main` function
**Output:**        Under control of `main` function
**Value:**         2

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 `lab34` to `targets2srcfiles`.

```cpp
1   #include <iostream>
2
3   using namespace std;
4
5   // Function orderThree has three reference parameters:  small, medium,
6   // and large.  The function returns the smallest of small, medium, and
7   // large in small; the middle value in medium; and the largest value
8   // in large.
9   void orderThree(int& small, int& medium, int& large);
10
11  // Function orderThree has three parameters, each a pointer to an int
12  // value.  The function reorders the data so that the smallest of the
13  // values is pointed to by small, the middle value by medium, and the
14  // largest value by large.
15  void orderThree(int *small, int *medium, int *large);
16
17  int main()
18  {
19    int a, b, c, copyA, copyB, copyC;
20
21    while (cin >> a >> b >> c)
22    {
23      copyA = a;
24      copyB = b;
25      copyC = c;
26
27      cout << "Reference -- Before:  "
28           << "a = " << a << ", b = " << b << ", c = " << c;
29      orderThree(a, b, c);
30      cout << " After:  "
31           << "a = " << a << ", b = " << b << ", c = " << c << endl;
32
33      a = copyA;
34      b = copyB;
35      c = copyC;
36
```

**Figure 1.** `/usr/local/1337/src/lab34main.C` (Part 1 of 2)

```
37      cout << "Pointer   -- Before:  "
38           << "a = " << a << ", b = " << b << ", c = " << c;
39      orderThree(&a, &b, &c);
40      cout << " After:  "
41           << "a = " << a << ", b = " << b << ", c = " << c << endl;
42    }
43
44    return 0;
45  }
```

**Figure 1.** /usr/local/1337/src/lab34main.C (Part 2 of 2)

```
1   newuser@csunix ~> cd 1337
2   newuser@csunix ~/1337> mkdir 34
3   newuser@csunix ~/1337> cd 34
4   newuser@csunix ~/1337/34> cp /usr/local/1337/data/34/* .
5   newuser@csunix ~/1337/34> cp /usr/local/1337/src/lab34main.C .
6   newuser@csunix ~/1337/34> cp /usr/local/1337/src/Makefile .
7   newuser@csunix ~/1337/34> touch lab34.cpp
8   newuser@csunix ~/1337/34> # Edit Makefile and lab34.cpp
9   newuser@csunix ~/1337/34> make lab34
10  g++ -g -Wall -std=c++11 -c lab34main.C -I/usr/local/1337/include -I.
11  g++ -g -Wall -std=c++11 -c lab34.cpp -I/usr/local/1337/include -I.
12  g++ -o lab34 lab34main.o lab34.o -L/usr/local/1337/lib -lm -lbits
13  newuser@csunix ~/1337/34> cat 01.dat
14  1 2 3
15  1 3 2
16  2 1 3
17  2 3 1
18  3 1 2
19  3 2 1
20  newuser@csunix ~/1337/34> cat 01.dat | ./lab34
21  Reference -- Before:  a = 1, b = 2, c = 3 After:  a = 1, b = 2, c = 3
22  Pointer   -- Before:  a = 1, b = 2, c = 3 After:  a = 1, b = 2, c = 3
23  Reference -- Before:  a = 1, b = 3, c = 2 After:  a = 1, b = 2, c = 3
24  Pointer   -- Before:  a = 1, b = 3, c = 2 After:  a = 1, b = 2, c = 3
25  Reference -- Before:  a = 2, b = 1, c = 3 After:  a = 1, b = 2, c = 3
26  Pointer   -- Before:  a = 2, b = 1, c = 3 After:  a = 1, b = 2, c = 3
27  Reference -- Before:  a = 2, b = 3, c = 1 After:  a = 1, b = 2, c = 3
28  Pointer   -- Before:  a = 2, b = 3, c = 1 After:  a = 1, b = 2, c = 3
29  Reference -- Before:  a = 3, b = 1, c = 2 After:  a = 1, b = 2, c = 3
30  Pointer   -- Before:  a = 3, b = 1, c = 2 After:  a = 1, b = 2, c = 3
31  Reference -- Before:  a = 3, b = 2, c = 1 After:  a = 1, b = 2, c = 3
32  Pointer   -- Before:  a = 3, b = 2, c = 1 After:  a = 1, b = 2, c = 3
33  newuser@csunix ~/1337/34> cat 01.dat | ./lab34 > my.out
34  newuser@csunix ~/1337/34> diff 01.out my.out
35  newuser@csunix ~/1337/34>
```

**Figure 2.** Commands to Compile, Link, & Run Lab 34