

Source File: ~/1337/55/lab55. (C|CPP|cpp|c++|cc|cxx|cp)
Input: Under control of main function
Output: Under control of main function
Value: 2

Write a boolean function that determines if a string is an imperfect palindrome. An imperfect palindrome is a word, verse, or sentence that is the same when read backward or forward after the removal of all whitespace and punctuation and all alphabetic characters have been folded to the same case.

A header file is shown in Figure 1, a sample main function for testing your implementation is shown in Figure 2, and a sample execution sequence is shown in Figure 3. To use the Makefile as distributed in class, add a target of lab55 to targets2srcfileswithlibrary.

```
1  #ifndef LAB55_H
2  #define LAB55_H
3
4  #include <string>
5
6  using namespace std;
7
8  // Function isPalindrome - returns true if string s is an imperfect
9  // palindrome and false otherwise
10 bool isPalindrome(string s);
11
12 // Function from Lab 47
13
14 // Function uppercase - returns string s with all lowercase letters
15 // converted to uppercase and all other characters unchanged
16 string uppercase(string s);
17
18 // Function from Lab 49
19
20 // Function stringReverse - returns the reverse of string s
21 string stringReverse(string s);
22
23 // Function from Lab 51
24
25 // Function removePunctuation - returns string s with all punctuation
26 // characters removed
27 string removePunctuation(string s);
28
29 // Function from Lab 52
30
31 // Function removeWhitespace - returns string s with all whitespace
32 // characters removed
33 string removeWhitespace(string s);
34
35 #endif
```

Figure 1. /usr/local/1337/include/lab55.h

<pre> 1 #include <iostream> 2 #include <cstdlib> 3 #include <lab55.h> 4 5 using namespace std; 6 7 int main() 8 { 9 string str; 10 </pre>	<pre> 11 while (getline(cin, str)) 12 { 13 cout << str << " is "; 14 if (!isPalindrome(str)) 15 cout << "not "; 16 cout << "a palindrome" << endl; 17 } 18 19 return EXIT_SUCCESS; 20 } </pre>
--	---

Figure 2. /usr/local/1337/src/lab55main.C

<pre> 1 newuser@csunix ~> cd 1337 2 newuser@csunix ~/1337> mkdir 55 3 newuser@csunix ~/1337> cd 55 4 newuser@csunix ~/1337/55> cp /usr/local/1337/data/55/* . 5 newuser@csunix ~/1337/55> cp /usr/local/1337/include/lab55.h . 6 newuser@csunix ~/1337/55> cp /usr/local/1337/src/lab55main.C . 7 newuser@csunix ~/1337/55> cp /usr/local/1337/src/Makefile . 8 newuser@csunix ~/1337/55> touch lab55.cpp 9 newuser@csunix ~/1337/55> # Edit Makefile and lab55.cpp 10 newuser@csunix ~/1337/55> make lab55 11 g++ -g -Wall -std=c++11 -c lab55main.C -I/usr/local/1337/include -I. 12 g++ -g -Wall -std=c++11 -c lab55.cpp -I/usr/local/1337/include -I. 13 g++ -o lab55 lab55main.o lab55.o -L/usr/local/1337/lib -lm -lbits \ 14 -Wl,-whole-archive -llab55 -Wl,-no-whole-archive </pre>	
<pre> 15 newuser@csunix ~/1337/55> cat 01.dat 16 1996 17 bottle 18 12345 19 radar 20 a Toyota 21 Madam, I'm Adam 22 Was it a rat I saw? 23 Norma is as selfless as I am, Ron. 24 A man, a plan, a canal--Panama! 25 Tarzan raised Desi Arnaz' rat. </pre>	<pre> 26 newuser@csunix ~/1337/55> cat 01.dat ./lab55 27 1996 is not a palindrome 28 bottle is not a palindrome 29 12345 is not a palindrome 30 radar is a palindrome 31 a Toyota is a palindrome 32 Madam, I'm Adam is a palindrome 33 Was it a rat I saw? is a palindrome 34 Norma is as selfless as I am, Ron. is a palindrome 35 A man, a plan, a canal--Panama! is a palindrome 36 Tarzan raised Desi Arnaz' rat. is a palindrome </pre>
<pre> 37 newuser@csunix ~/1337/55> cat 01.dat ./lab55 > my.out 38 newuser@csunix ~/1337/55> diff 01.out my.out 39 newuser@csunix ~/1337/55> cat 02.dat ./lab55 > my.out 40 newuser@csunix ~/1337/55> diff 02.out my.out 41 newuser@csunix ~/1337/55> </pre>	

Figure 3. Commands to Compile, Link, & Run Lab 55