LAB #7 – Pointers and Arrays

Understanding Pointers:
As part of this lab, you are to pair with someone else in the lab, and run tests on
pointers to make sure you understand what is happening in memory. Create a pointer
to a double, i.e. double *d; and three doubles d1, d2, and, d3 that gets the values 7.8,
10.0, and .009.

Now, set the pointer to a double, d, to point to each double variable, and print the
address of each double, along with the contents of the double variable. What if you
made a pointer that points to a double pointer, i.e. double **dp? Now, go through and
set the double pointer, d, to point to each double, and then set the pointer to a double
pointer, db, to d, and use db to print the content of each double variable!!!

Practice Arrays:
First, you will write a short program that takes a string of characters as input, and
determines whether the string is a palindrome. A palindrome is a string of characters
that are arranged in the same order when read from left to right or right to left.
http://www.fun-with-words.com/palin_explain.html

Since a palindrome can be a single word or a sentence, you need to use the
cin.getline() to read the string from the user. If the user enters a string that is a
palindrome, then you need to print, “You have entered a palindrome!!!” Otherwise,
you will print, “This is not a palindrome.” Remember that a string is terminated by the
null character, ‘\0’, and you can get the length of a string by including <cstring>
and using strlen().

If you haven’t already done so, take the code for determining if the string is a
palindrome and put it into a function called determine_palindrome(). Next, change this
program to ask the user if he/she wants to check if the string is a palindrome or reverse
a string. Now, create a new function called reverse_string() that takes a string of
characters and reverses it. After reversing the string, print the new reversed string to
the user.

Now, change the program so that the user enters the string as a command line
argument, but you’ll still need to prompt the user to find out whether he/she wants to
determine if the string is palindrome or to reverse the string. Remember, if you want to
enter a sentence, then you must enter the surround the sentence in double quotes, i.e.
“hello world”.

Show your programs to a lab TA for full lab credit.

Extended Learning:
If you have the time, try re-writing your palindrome function as a recursive function. If
you wrote it recursively to begin with, then write it iteratively©