

## CS 105 – Lab #5

Being able to work with strings is critical when studying communication. This lab will give you additional practice with strings, and begin our study of arrays.

Insert your USB drive, and log into the computer. Start a couple of Terminal processes. It is convenient to have one terminal for editing, and another for running programs. Use the `cd` command to navigate to the folder containing your USB drive. With the `ls` command, you should see folders from earlier labs, such as `lab2`, `lab3` and `lab4`.

Create a new folder called `lab5` with this command: `mkdir lab5`

Now, download from the class Web site a file called `stringtest.pas`, and save it to your `lab5` directory. Have the instructor or lab aide verify that your file system is set up correctly. ✓

1. The Pascal program `stringtest.pas` is intended to answer 9 questions on strings featured in your Pascal tutorial. You need to complete the missing pieces in this program. The comments will guide you through the questions.
2. Look over the program `stringtest.pas` you finished. In the following table, write down a list of input strings that could be used to check that every possible situation encountered by your program is realized. In other words, everywhere you see an `if`-statement, you need to come up with two possible inputs: one where the `if` condition is true, and one where it is false. In some cases, you will need to come up with 3 possible inputs. For example, we want to test our program to make sure we don't have an "off by one" error, and we want to make sure our comparisons are case sensitive, when appropriate.

Feature checked on strings by the program:	Strings you can test with to see that every possible case is handled:
Count the number of capital T's in s.	
Find the location of the first T.	
The string s has more than 5 characters, or not.	
Identifying the 5 <sup>th</sup> character in s.	
Identifying the last 3 characters in s.	
The first and last characters are the same, or not.	
The letters are all capitalized, or not.	
The string s contains at least 2 vowels, or not.	
The string s contains digit(s), or not.	

At this point, please have the instructor or lab aide check your work. ✓

Finally, let's look at arrays. Type in the following program. Compile and run it. Write down the output to the right.

Program	Output
<pre>program part3;  var   A : array[1..5] of integer = (5,4,7,3,2);   i : integer;  begin   writeln(length(A));    A[3] := 8;    for i := 1 to length(A) do     writeln(a[i]);    for i := 1 to length(A) do     writeln(i, a[i] : 5);  end.</pre>	

3. In your own words, describe ...
  - a. The meaning of the second statement ( $A[3] := 8$ ) in the program.
  
  - b. What the last for loop in the above program accomplishes.
  
4. Add another loop to the program – to find the sum of all of the elements in the array. And then output this sum. In the space below, show what your loop looks like. ✓