

## COMP1602: Computer Programming II

### Lab #7

1. Write a function, *removeTrailingSpaces*, which accepts a C-string as a parameter and removes the spaces at the end of the string, if there are any. For example, suppose the C-string contains the following characters (excluding the quotation marks),

"A variable is a named memory location. "

After calling the function, the C-string will contain the following characters,

"A variable is a named memory location."

2. Write a function, *removeLeadingSpaces*, which accepts a C-string as a parameter and removes the spaces at the beginning of the string, if there are any. For example, suppose the C-string contains the following characters (excluding the quotation marks),

" A variable is a named memory location."

After calling the function, the C-string will contain the following characters,

"A variable is a named memory location."

3. (a) Write a function, *removeSpaces*, which accepts a C-string as a parameter and removes the spaces at the beginning and ending of the string, if there are any. Also, if there is more than one space between words in the string, the extra spaces are removed. For example, suppose the C-string contains the following characters (excluding the quotation marks),

" A variable is a named memory location. "

After calling the function, the C-string will contain the following characters,

"A variable is a named memory location."

- (b) Write a *main* function which reads a C-string typed by the user at the keyboard (containing words and punctuation symbols) and removes the spaces at the beginning and ending of the string as well as any extra spaces between words.
4. (a) Suppose that the C-string, *str*, contains a set of characters terminated by the NULL symbol. Write a function, *hashCode*, with the following heading which finds the sum of the ASCII code of each character in the C-string and returns the remainder when the sum is divided by 997.

```
int hashCode (char str[]);
```

- (b) Write a *main* function which accepts a C-string from the user (possibly containing several words separated by spaces) and finds the hash code of the C-string.
- (c) It is possible that the *hashCode* function returns the same value for two different words such as "silent" and "listen" (e.g., anagrams). Modify the *hashCode* function to calculate the sum based on the position of each character in the C-string. For example, the position of 'n' in "sil**en**t" is 5 (starting the count from 1). The character 'n' has the ASCII code 110. So, the contribution of 'n' to the sum is 5 x 110. Verify that the *hashCode* function generates different values for "silent" and "listen".

**COMP1602: Computer Programming II**  
**Lab #7**

5. (a) Write a function, *split*, which accepts three C-strings *str1*, *str2*, and *str3*, and an integer *n* as parameters and splits *str1* at location *n*. The characters in *str1* from location 0 to location *n*-1 are stored in *str2*. The remaining characters are stored in *str3*. If the split operation cannot take place (e.g., there are not enough characters in *str1*, the function should return *false*. Otherwise, it should return *true*.
- (b) Write a *main* function which reads a C-string typed by the user at the keyboard (containing one or more words separated by spaces and punctuation symbols) and splits the C-string at a random position between 0 and the length of the string.
6. (a) Write a function, *pigLatin*, which accepts two C-strings, *str1* and *str2*, as parameters and converts *str1* into pig latin which is stored in *str2*. The rules for pig latin are as follows:
- For words that begin with consonants, move the leading consonant to the end of the word and add "ay". Thus, "ball" becomes "allbay"; "button" becomes "uttonbay"; and so on.
  - For words that begin with vowels, add "way" to the end. Thus, "all" becomes "allway"; "one" becomes "oneway"; and so on.
- (b) Write a *main* function which reads a set of words typed by the user at the keyboard (terminated by "END") and converts each word into pig latin which is displayed on the monitor.