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ECE 427: Microcomputer Architecture Lab

Experiment #5

Chapter 4 Lab Supplement

Performed: 10/15/2013

Submitted: 10/22/2013

Objective:

- Write a program to read characters (phrase) entered from the keyboard. Your input string must be of a variable size (100 max) and your input is terminated by a period (.). Your program need to determine how many characters were entered, how many words were entered, and display the entered string to the monitor.

Word Description:

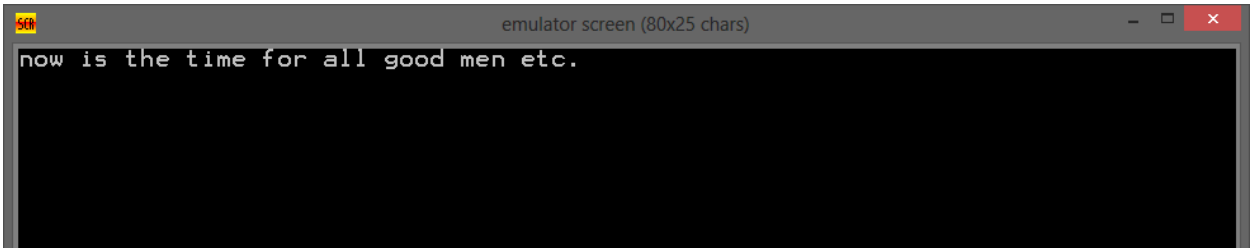
In this lab I was able to process through a string, counting the number of characters, and the number of words. I also was able to integrate additional use of the compare statement and was able to compare the equality (or inequality) of ascii characters.

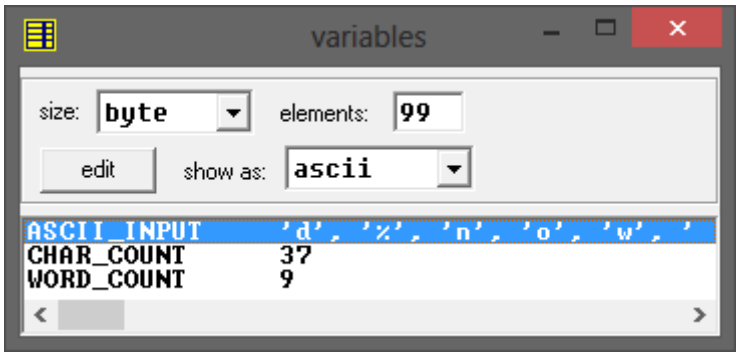
Code & Screenshots:

```
; You may customize this and other start-up templates;
; The location of this template is c:\emu8086\inc\0_com_template.txt

org 100h

.DATA
   ASCII_INPUT DB 100,?,100 DUP(0) ;INPUT SHOULD BE TERMINATED BY A '.'
   CHAR_COUNT  DB 0
   WORD_COUNT  DB 0
.CODE

    ;CLEAR THE SCREEN
    MOV AX,0600H
    MOV BH,07
    MOV CX,0
    MOV DX,184FH
    INT 10H

    ;GET THE DATA
    MOV AX,0A00H
    MOV DX,OFFSET ASCII_INPUT
    INT 21H

    ;STORE CURRENT CHARS IN DX
    ;STORE CHAR COUNT IN AH, AND WORD COUNT IN AL
    MOV BX,OFFSET ASCII_INPUT
    ADD BX,2
    MOV AH,00
    MOV AL,00
NEXT: MOV DX,[BX]
    INC AH
    CMP DL,2EH ;CHECK IF FIRST CHAR IS A PERIOD
    JE  DONE
    INC AH
    CMP DH,2EH ;CHECK IF SECOND CHAR IS A PERIOD
    JE  DONE

    CMP DL,20H ;CHECK IF FIRST CHAR IS A SPACE
    JE SPACE
    CMP DH,20H ;CHECK IF SECOND CHAR IS A SPACE
    JE SPACE
    INC BX
```

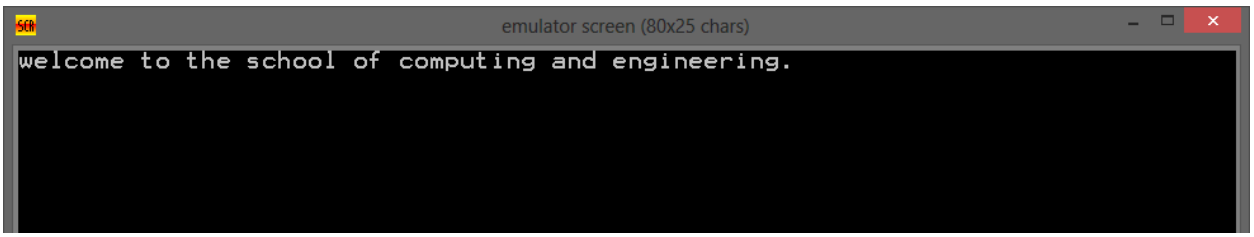
```
    INC BX
    CMP AL,AL
    JE  NEXT
SPACE:INC AL
    INC BX
    INC BX
    CMP AL,AL
    JE  NEXT

    ;THE PERIOD WAS FOUND, START STORING DATA
DONE: INC AL; ADD ONE WORD, SINCE WE END WITH A PERIOD, NOT A SPACE :D
    MOV BX,OFFSET CHAR_COUNT
    MOV [BX],AH
    MOV BX,OFFSET WORD_COUNT
    MOV [BX],AL
ret
```

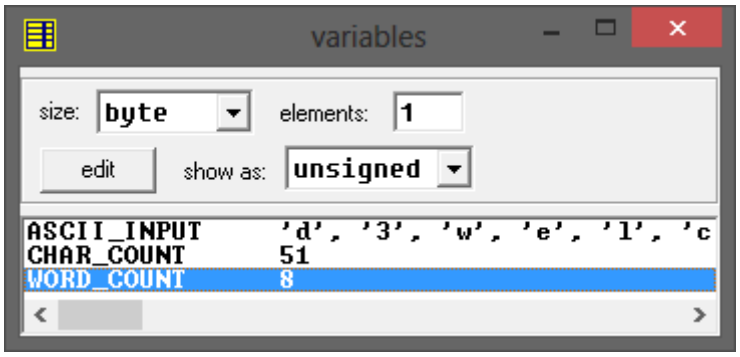
Data Set 1:





Data Set 2:





Conclusion & Comments:

In this lab, we were able to iterate through a string, processing each character, and also were able to compare characters. Specifically, we were able to check if a character was the same as a compared character, and perform some action based on that condition. We also were able to use increment statements to keep track of the number of characters, and also to keep track of the number of words.