COE 205, Term 071

Computer Organization & Assembly Programming

Programming Assignment# 4
Due date: Monday, Dec. 31, 2007

Q.1. Write a procedure, **CCount**, that receives as parameters the address of a string and the address of a count array of size equal to 26 bytes representing the count of alphabetical characters. The procedure counts the number of occurrences of each alphabetical character (both upper and lower case) and stores it in the count array. All parameters should be passed on the stack and the procedure should preserve all used registers. Use string instructions in your solution.

Q.2. Write a procedure, **Histogram**, that receives as parameters on the stack the address of count array representing the count of occurrences of all alphabetical characters. It then prints a histogram according to characters count. Characters with zero count should not be displayed.

Q.3. Write a program to ask the user to enter a string of characters and then display its histogram.

> *A sample execution of the program is shown below:*
> *Enter a string of characters:*
> *This is the last assignment*
>
> *String Histogram:*
> ```
>                 *
>                 * *
>         *       * *
>     * *   * *     * * *
>     * * * * * * * * * *
>     a e g h i  l  m n s t
> ```

The solution should be well organized and your program should be well documented. Submit a soft copy of your solution in a zip file. Your solution should be submitted in a word file that contains the following items:

i)   *Your name and ID*

ii)   *Assignment number*

iii)   *Problem statement*

iv)   *Your solution along with the code*

v)   *Discussion of what worked and what did not work in your program. Include snapshots that demonstrate the working parts of your program. If things did not work and you attempted to solve them, mention that and write about the difficulty that you have faced.*

The soft copy should also contain both source code file (i.e. .asm) and the executable file (i.e. .exe).