CS1110 Introduction to Systematic Programming

Second Practical Class for Week 8

This lab class involves a programming exercise to build a simple text-processing application. It involves a number of the concepts introduced in Units 14, 15 and 16 of the ISP Units namely the type `Character`, the functions `End_Of_Line` and `End_Of_File`, `CASE` selections and discrete types and subtypes. It also involves some simple array processing.

It is required to write an Ada program which (like the program appearing in question 3 on Problem Sheet 6) is required to count the number of lines and number of characters in a text-file. However in addition the program is required calculate

> the number of occurrences of each letter character in the file ignoring the case of letters. (Thus you will need 26 separate counts for the letters with, for example, the counts of the letters 'a' and 'A' being combined.)

> the number of blank characters in the file

> a single count of the remaining characters in the file.

These results are to be displayed on the VDU in tabular form giving for each of the above 28 categories:

> the number of occurrences in the file

> the percentage frequency (to one decimal place) of that category.

Skeleton Solution
To save time a skeleton solution is provided in the file

        /usr/local/staffstore/cs1110/lab-programs/charcount.adb

Copy this file to your own UNIX area. Open the file with Emacs and complete the program by inserting suitable Ada code where indicated by the comments.

Compile, test and debug your solution.

Notes
1.   If you need to refer to the Units for the syntax of a `CASE` selection (etc.) and don't have a hard copy with you, a copy of the Units can be found on-line on the module web site. Download the relevant PostScript document and open it with the ImageViewer or GhostScript applications.

2.   A copy of the program which featured in this week's case study can be found in

            /usr/local/staffstore/cs1110/case-studies/whatday.adb

   You may wish to copy this program to your own area and compile, run and test it.

3.   To save disk space it is recommended that you delete any downloaded PostScript document plus any compiled Ada programs at the end of the lab period.