# Week 7 Laboratory exercises

## Overview

These exercises are designed to support the work you will be undertaking as part of the ‘writing robot’ task. You should ensure you are familiar with the concepts behind each – also consider carefully the questions posed

## Exercise 1: Reading the font data into a suitable structure

One way you may wish to hold the font information is to place each line from the file into a suitable defined structure array (the size of the array being the number of the lines in the file).

This exercise introduces you to a possible approach to achieve this.

You will first need to define your structure (which needs to hold three integer values) - this should be done outside of main(), within main you then create the array of this structure type.

**NOTE:** The file contains 1027 lines– this is the size you need to use when defining your structure array.

The next step is to open the font file SingleStrokeFont.txt, reading (until the end of file) the data contained on each line into your structure array (remembering to check files are opened, closing at the end etc.).

After having read the data, display the 1st ten items in the structure on the screen, the output should be as per figure 1.

999 0 1

0 0 0

999 1 26

19 0 0

3 0 1

0 3 1

0 24 1

3 27 1

14 27 1

20 27 0

Figure 1: Entries 1-10 from the structure array populated from SingleStrokeFont.txt

## Exercise 2

Modify your code form exercise 1 such that the user can select the character for which they wish to display the drawing data.

Hint: Read through the array looking at the 1st item – if it is ‘999’ then look at second, if matches you know that the next ‘N’ items (found by looking at the 3rd item) are those you need to display on the screen.

If you selected to display the data for ‘H’ (ASCII character 72) the output should be as per figure 2.

Please enter the ASCII value for the character you wish to display 72

0 0 0

0 18 18

12 0 0

12 18 18

0 9 9

12 9 9

18 0 0

Figure 2: Output if H (character 72) is selected

## Exercise 3

You are required to read the file ‘SampleLines.txt’ character by character until end of file, displaying each character and also its ASCII value on a new line (separated by a colon), e.g if the text in the file is “This is a test” the output on the screen should be as per figure 3.

You may hard code the filename or prompt the user to enter it from the command line.

84 : T

104 : h

105 : i

115 : s

32 :

105 : i

115 : s

Figure 3: Expected output from exercise 3 (first few lines shown)

Remember: You MUST use error checking to ensure the file has been opened!

Questions:

What do you see displayed at the end of the text

What do you notice about what happens at the end of a line?