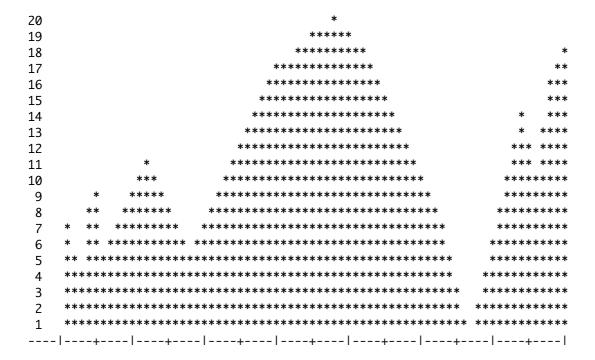**1E3 Practical 8**
15 March 2017

Objectives: To familiarise yourself with arrays in C++.

Task#1:
Marks: 2
Summary: a program to read a sequence of integers from a file and plot the corresponding graph.
Details: Write a C++ program to draw a bar graph like the one below from an input sequence of 70 integers in the range 0 to 20, representing a time sequence of some sort.

Sample output: This is an extract of what is produced for P8adata.txt

```
20                                       *
19                                     ******
18                                   **********                                    *
17                                 **************                                 **
16                               ****************                                ***
15                               *****************                               ***
14                             *******************                      *       ***
13                             ********************                     *      ****
12                           ***********************                  *** ****
11              *            *************************                *** ****
10            ***            ***************************              *********
 9      *    *****           ****************************             *********
 8     **   *******          ******************************          **********
 7  *  **  *********         ********************************        **********
 6  *  ** ********** ***********************************************  **********
 5  ** ************************************************************   **********
 4  ************************************************************     ***********
 3  **************************************************************    ***********
 2  ****************************************************************  ************
 1  ****************************************************************  ************
----|----+----|----+----|----+----|----+----|----+----|----+----|----+----|
```

Task#2:
Marks: 3
Summary: a program to read model answers of an MCQ exam, then read a set of students' answers in that exam, and then display a score for each student by comparing his/her answer to the model answer.
Details: Write a program to score multiple choice exams. The program first reads in the 20 model answers (i.e. correct answers) to the multiple choice exam questions (each answer being a, b, c, d or e). It then reads a series of answer sets for students – each of these consists of a student number (an integer) followed by 20 answers, each of which is a, b, c, d, e, or x (meaning no answer given). The input is terminated by a negative number in place of a student number. See MCQ.txt copied below.

The program should output each student number followed by their score on the exam. Correct answers get 2 points, wrong answers -1 and no answer (i.e. "x") gets 0.

Function Requirements: Your program should use functions wherever appropriate. As a basic minimum, your program **MUST** at least implement the following **TWO functions:**

1. A function to read in an answer set (the same function should be used for both the correct answer set and each actual answer set).
2. A function to score each individual's exam (i.e. the function compares an actual answer set with the correct answers to compute a score).

Think about the name, type and parameters of each function.

Sample MCQ.txt
a b c d e a b c d e a b c d e a b c d e
100 a b c d d a b c e x a b x d e b b b d x
101 a b c d e a b c d x a x c d e a b c d e
110 a b c d e a b b b b a b c d e x x x x e
-1

Sample output
100 22
101 36
110 23

Notes/Hints/Additional Details:

Reminder: Use file redirection to read input in from a file. For example run the programme `myprog` on input file `data.txt` by typing

$$./myprog < data.txt$$