Mathematics u11601 (C Programming) Michaelmas 2021

October 6, 2021

Second assignment, due 12 noon, Wednesday 13/10/21

Please excuse the severity of the next two paragraphs.

Plagiarism. These assignments are meant to be quite easy, at least to begin with. You will not copy another student's assignment. If copying is detected, all students involved will lose marks, irrespective of who copied from whom.

Read this carefully. You should form the habit of reading specifications carefully, and following them.

The assignment is to write a C program, check that it works, and submit the C program.

Your program should read double precision numbers using `scanf()`, and compute and print (i) the count of numbers input, (ii) the count of those which are negative, (iii) the count of those in the range 0 to 2 inclusive, and (iv) the count of those which are > 2.

Sample run:

```
%cat hundred
 -3.802 -4.267 -1.108 2.305 -0.917 0.898 3.594 -4.907 3.860 -0.602
 -3 -2 -1 -4 -1.394 4.391 0 -3.647 -1.173 -3
 -4.860 -2.785 -1 3 4.209 -1.734 -0.086 2.943 3.417 -1
 2.024 -4.928 1.370 3.908 -1.775 3.764 4.023 3.737 -0.333 -3.822
 2.935 2.297 2.655 3 2.091 -4 0 -3 -2.168 4.660
 1 3.511 -2.125 1.283 4.591 -4.280 -0.376 3.406 1.972 -2.479
 -4.984 -1.346 0 -0.913 -0.997 -1 3 -0.549 1.423 -4.775
 4.241 0 -2.481 -3 -3.082 -0.271 0 -0.264 1.863 -4.129
 1 0.381 -1.918 -4.821 3.933 0.901 -0.489 4 -1.234 3
 0 1 -3.689 3.429 -1 0.890 -0.780 0 -3.244 0.836
%a.out < hundred
100 numbers read, 52 < 0, 20 from 0 to 2 inclusive, 28 > 2
```

Important.

- Some data files are to be found on the module web page.
- Don't 'echo' the numbers, just print the results as above.
- The programs will be run in a batch. Don't write messages like

```
Please enter the number of numbers input not this one:
Please enter the next number:
------------------------------These are a nuisance and
have no place in this assignment.

Don't use sleep()!
```

Edit, compile, and run your program to make sure it works. When it works correctly, submit it. Submit it using `submit-work`, which runs on `hamilton` and `synge` and probably on other maths machines.

Points to note.

- Make sure your program works, ***on the maths machines,*** or at least that it 'compiles.' It is bad if a program is not working properly, but the ***worst*** thing you can do is to submit a program which does not compile on the maths machines.
- **BUT** this may be impossible to check. While some have problems accessing the maths machines, email the assignment to `odunlain@maths.tcd.ie`, **in text form**. If necessary, create and attach a file using notepad.
- In programming, it is very important to follow a specification *exactly,* and for this reason you will always be expected to follow the specification *exactly.*
- You *should* use indentation to make the program as easy to read as possible. Statements between curly braces should be indented, and so on. (This practice has been followed in examples, without mentioning it.)
- See below for comments and indentation, suggestions only...

```
Appropriate indentation:
#include <stdio.h>   // at start of line

int main ()          // at start of line
{                    // brace at start of line
  printf{"hello\n");
                     // indent two places, for readability

  printf("goodbye\n");  /* indent two places, for readability
}                    // brace at start of line
        /* This is a traditional style comment, also allowed,
           multi-line.
         */
```