University of Stirling
Computing Science and Mathematics
CSCU9A2 Tutorial 5 Spring 2017
(for week starting 6 March)

1. (a) The following is the content of a CSS stylesheet called `mystyle.css`

```
body {
     font: 85% georgia, sans-serif;
     background: url(light-blue-fade.png) repeat-x;
     color: blue
     }

p    {
     margin-top: 0;
     text-align: justify;
     }


div.info { color: red; }

a:link {
     font-weight: bold;
     text-decoration: none;
     color: #B7A5DF;
     }

a:visited {
     font-weight: bold;
     text-decoration: none;
     color: #D4CDDC;
     }

a:hover, a:active {
     text-decoration: underline;
     color: #9685BA;
     }

.closing { text-align: center }
```

Below is an HTML file which uses `mystyle.css`. Describe how this file appears when viewed in a browser. If you do not understand some of the CSS commands, read up on them at W3Schools or similar resources.

```
<!DOCTYPE html>
<head>
     <title>CSCU9A2 Tutorial example</title>
     <link rel="stylesheet" media="screen" href="mystyle.css">
</head>

<body>
     <h1>A CSS example for CSC9A2</h1>
    <p>This is the opening paragraph</p>
    <div>
    <p class="info">This paragraph contains
                    <a href="afile.html">a link</a>.</p>
    <p>Here is a second paragraph.</p>
    </div>
    <p class="closing">This is the closing paragraph</p>
</body>
</html>
```

(b) Have a look at the CSCU9A2 home page in a browser. Then, use the "Print Preview" command on your browser to see what would be printed if you try to print this page. Do these two views of the page look the same? Find out how CSS can be used to give the same web page a different layout depending on what *media* (screen, print, mobile phone, tablet, etc) is used to display it.

2. Sometimes teaching staff are faced with the following problem: After an exam we collect the exam answer booklets. Each has a student number written on the front. Students may choose which seat they use, and may leave at any time (handing in their answer booklet as they go). As a result of this, the collected pile of answer booklets has randomly ordered student numbers. For subsequent administrative convenience, the booklets need to be in a neat pile, ordered numerically by student number. So, we manually sort the booklets into numerical order – *when there are many students this can be a very challenging process*! (For example, this Spring, the Sociology module SPCU912 Social Problems has 348 students!)

   So, your challenge is this: Try to think of a process that ***you*** could use to sort **500** student exam booklets into numerical order – the process could involve either just yourself, or a team of helpers. Describe this process in sufficient detail that a fellow student (or students) could carry out the process without your help. [A well defined process is an *algorithm*.]

   Do you feel that the process that you have designed is a quick or a slow way to complete the task? Do you feel that it is simple or complicated?

   How much *longer* do you think it would take to sort a pile of 1000 booklets in comparison with the original 500? (For example, twice as long, three times as long...?) Why?

3. Following on from the previous question: Let us suppose that a quick look at the class list for SPCU912 shows that most of the student numbers start with the digits 241, 242, 251 or 252 (in each case with the fourth digit being anything from 0-9), with a smaller number of students having 240 or less, and some having 253 or more. Can you think of a way to make use of six collecting boxes at the exit of the exam hall (and some cooperation from the students) to simplify the problem of producing a final ordered pile of answer booklets?

4. Finally, supposing that we now have our numerically ordered pile of 500 exam booklets. A student returns to the exam hall because they have accidentally left their student card inside their booklet – but they can remember their student number. How would you locate their exam booklet in the pile? Try to describe your process in sufficient detail that someone else could carry it out. Clearly your process will require checking a number of booklets before you locate the correct one. On average, how many booklets do you think that you would need to check when following your process?

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