Midterm Examination

October 21 2009

Name: _____

LASTNAME, Firstname(s)

Student Number: _____

Duration: 45 minutes

Keep the exam booklet closed until the beginning of the examination. Make sure that your booklet has four (4) double-sided sheets of paper (including this one). There are six questions on the exam. Write your answers in the spaces provided. Write legibly.

Take your time. Read each question carefully and think about the problem being asked. Good luck!

1	2	3	4	5	6	total
/9	/10	/12	/8	/10	/11	/60

1. (Data I: HTML. 9 marks)

   Answer the questions on the next page, which refer to the HTML code below.

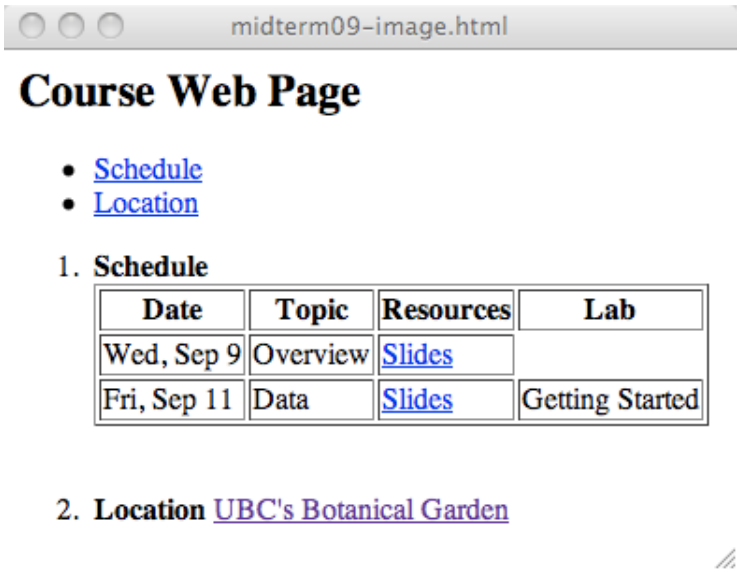
```
<html> <head> </head>
<body>
<h2> Course Web Page </h2>

<ul>
<li><a href="#Time">Schedule</a></li>
<li><a href="#Place">Location</a> </li>
</ul>

<ol>
<li> <a name="Time"> <b>Schedule</b> </a>

<table border="1">

<tr>
<th>Date</th>
<th>Topic</th>
<th>Resources</th>

</tr>

<tr>
<td>Wed, Sep 9 </td>
<td>Overview </td>
<td> <a href="lectures/lec1.pdf">Slides</a> </td>

</tr>

<tr>
<td>Fri, Sep 11 </td>
<td>Data</td>
<td> <a href="lectures/lec2.pdf">Slides</a></td>

</tr>

</table>
</li>

<br><br>

<li>
<a name="Place"> <b>Location</b> </a>
<a href="http://www.ubcbotanicalgarden.org">UBC's Botanical Garden</a>
</li>
</ol>
</body> </html>
```

(a) (2 marks) Give an example of a data structure that is used in the HTML code.

(b) (2 marks) Two anchor tags have associated names. How are these names used?

(c) (2 marks) What happens when a user clicks on the words “UBC’s Botanical Garden”?

(d) (3 marks) Add additional HTML code to that provided on the previous page so that the resulting web page looks as follows. The only changes needed are to the table. You can write your additional code on the previous page, indicating where it goes overall in the code.



2. (Data II. 10 marks)

   (a) The following URL links to a web page hosted by UBC's Computer Science Department:

   `http://www.cs.ubc.ca/prospective/ugrad/prospective_careers.shtml`

   - (2 marks) Write down a domain name that is part of this URL.

   - (2 marks) In what folder (directory) is the file "prospective_careers.shtml" stored?

   - (2 marks) A web page called "prospective_faqs.shtml" is stored in the "prospective" folder. What URL would you use to access this web page?

   (b) Files and folders.

   - (2 marks) List three properties typically associated both with files and folders.

   - (2 marks) List a property of files which is *not* a property of folders.

3. (Interfaces I. 12 marks)

(a) (3 marks) Describe a concrete way in which the Scratch user interface provides users with useful feedback.

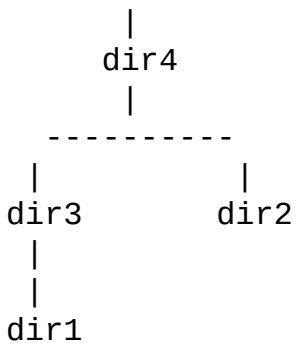
(b) (3 marks) Provision of useful feedback is one principle of good user interface design. List three other widely-held principles.

(c) (3 marks) Ron Rensink has identified “change blindness” as an attribute typical of human visual perception. What is change blindness and what are its implications for design of user interfaces?

(d) (3 marks) Define the “myth of human error” and give a concrete example that refutes this myth.

4. (Interfaces II. 8 marks)

   (a) (3 marks) Suppose that a user's current directory within the illustrated directory structure is `dir1`. Write down a Unix command that will show the contents of `dir2`.



   (b) (2 marks) Suppose that a file named `proposal.txt` is in your World directory, which is your current directory. To change the permission of `proposal.txt` so that it can be accessed by others, which of the following Unix commands would you type? (Pick one.)

   ◯ `chmod a+rx`

   ◯ `chmod a+rx proposal.txt`

   ◯ `chmod a+r proposal.txt`

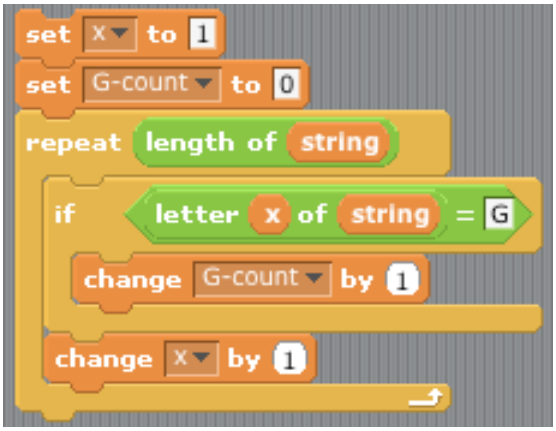
   (c) (3 marks) Suppose now that you copy `proposal.txt` to `proposal2.txt` using the command:

```
cp proposal.txt proposal2.txt
```

   How can you check what are the permissions of `proposal2.txt`?

5. (Scratch. 10 marks) Answer the following questions about the script.

   A common task in many contexts is to count occurrences of certain keywords or patterns in text. The following Scratch script performs a simple version of this task: it counts the number of G's in text that is stored in `string`.



   Notes:

   - Throughout, assume that `string` has the value "GIGANTIC".
   - The expression "length-of-string" (at the start of the `repeat` block) is the total number of letters of the value of `string`. Since `string` has value "GIGANTIC", length-of-string is 8.
   - The expression "letter-x-of-string" (at the start of the `if` block) is the letter in position `x` of the value of `string` (where the letters are ordered from left to right, starting at 1). For example, if `x` is 4 then letter-x-of-string is A (i.e., the 4th letter of "GIGANTIC").

   (a) (2 marks) Name all of the variables that are used in the script. (There are three of them).

   (b) (2 marks) What is the value of letter-x-of-string, when the `if` block is executed on the fifth iteration of the repeat loop?

   (c) (2 marks) What is the value of `x` at the end of the script?

   (d) (2 marks) How many times is instruction `change-G-count-by-1` executed?

   (e) (2 marks) Suppose the condition within the `if` block is changed to

   That is, G is replaced by A. What would the value of `G-count` be at the end of the script?

6. (Javascript. 11 marks) Consider the following Javascript function:

```
 1. function CalculatePrice(categ,number)
 2. {
 3. var price;

 4. if (categ == ‘‘Adults’’)
 5.    price = 11 * number;
 6. if (categ == ‘‘Students’’)
 7.    price = 9 * number;
 8. if (categ == ‘‘Seniors’’)
 9.    price = 9 * number;
10. if (categ == ‘‘UBC’’)
11.    price = 0;

12. return  price;
13. }
```

(a) (2 marks) How many parameters does the function have?

(b) (2 marks) For each of the following Javascript constructs, give a line number or range of line numbers from the code with an example of that construct:

- a variable declaration

- a function declaration

- a conditional statement

- a function body

(c) (1 mark) What is the value of the following Javascript expression?

```
CalculatePrice(‘‘Adults’’,2)
```

(d) (3 marks) Write down a Javascript expression whose value is the price of admission of one senior and one student. Your expression should explicitly use the `CalculatePrice` function (and may use the function more than once).

(e) (3 marks) The museum has changed its admissions rates so that people from UBC are now charged $5.00. Change the function above so that the cost of admission is properly calculated. You can modify the code given above.