CPSC 101
Sample Final Exam Questions

1. For each term in the list on the left, select the **best** definition from the list on the right and place the corresponding letter in the box.

   For example, if you thought the best definition for ‘query processor’ was ‘recipe’ you would put the letter a in the box to the left of ‘query processor’. **[6 marks]**

☐ query processor	a. recipe
☐ hexadecimal	b. list of detailed instructions for accomplishing a specific task
☐ algorithm	c. the component of a search engine that searches for the keywords in the index
☐ point-to-point network	d. a base 16 number system
☐ world wide web	e. the component of a search engine that accepts input from the user
	f. a base 8 number system
	g. a network in which data is sent to the destination host in the ‘cheapest’ way possible
	h. the internet
	i. contains 4 bytes in a 32 bit system
	j. the interconnected hypertext documents available on the internet

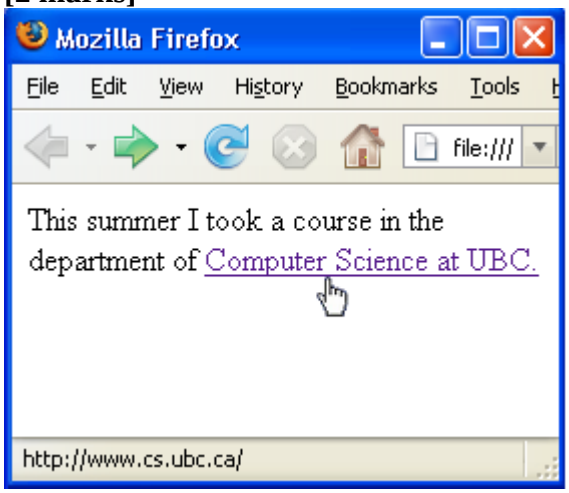
2. Using the concepts we learned in the HCI unit, explain why a North American driver will find it difficult to drive a car in England.

   Hint: recall that in North America we drive on the right side of the road and the driver sits on the left side of the car, but in England they drive on the left side of the road, and therefore the driver sits on the right side of the car. **[6 marks]**

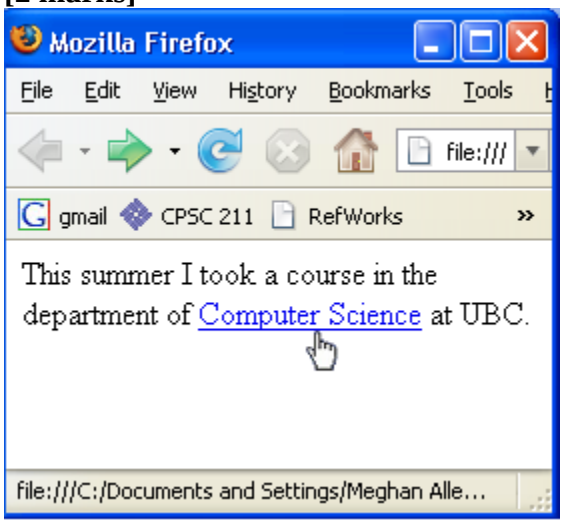
3. Imagine that you are working a webpage and you have attempted to create a link to the Computer Science webpage (www.cs.ubc.ca). Your goal is to create the website directly below.

Each screenshot below is displaying a webpage that contains an error. For each screenshot, suggest one potential cause of the problem

a) [2 marks]



b) [2 marks]



4. Describe two problems with the following algorithm. Be sure to explain **why** they are problems! **[6 marks]**

   Cooking pasta:
   1. The pasta pot is on the counter
   2. Boil the water
   3. Put the pasta in the water
   4. Drain the pasta, serve with sauce

5. Explain how music can be represented using samples. You must refer to at least three different, relevant aspects of sampling to receive full marks. **[6 marks]**

6. Based on what we learned in the Privacy and Security unit, what are five things you can do to protect yourself as a computer user? For each answer, explain why it can protect you. Your answers may be related to passwords, software, online banking, email use, or anything else we discussed! **[10 marks]**

7. You are having a conversation with a friend who doesn't understand how a search engine works. Explain how a search engine is able to find relevant documents on the world wide web. To get full marks, you must mention the user interface, the query processor and the crawler and explain how each of them works. **[9 marks]**

8.

a) Translate the decimal number 99 to an 8 bit binary number **[2 marks]**

b) Translate the binary number 00001101 to decimal **[2 marks]**

c) Using the chart in the appendix, fill in the blank to set the background colour of a webpage to 190, 10, 50 (RGB) **[2 marks]**

```
<body bgcolor="_____">
```

d) What colour is represented by "#007878"? **[2 marks]**

9. a) Asimo is Honda's robot that can (among other things!) walk up and down stairs, run, recognize and react to people's posture and gestures (eg, wave back when someone waves to him), conduct symphonies, and serve food on a tray. Is Asimo intelligent? Give at least two reasons for your answer. **[6 marks]**

   b) What are two benefits of 'intelligent' computer applications? **[2 marks]**

   c) What are two risks of creating and using 'intelligent' computer applications**? [2 marks]**

10. a) What is digital art? **[3 marks]**

    b) How has the increased accessibility to computers in recent years affected digital art? **[3 marks]**

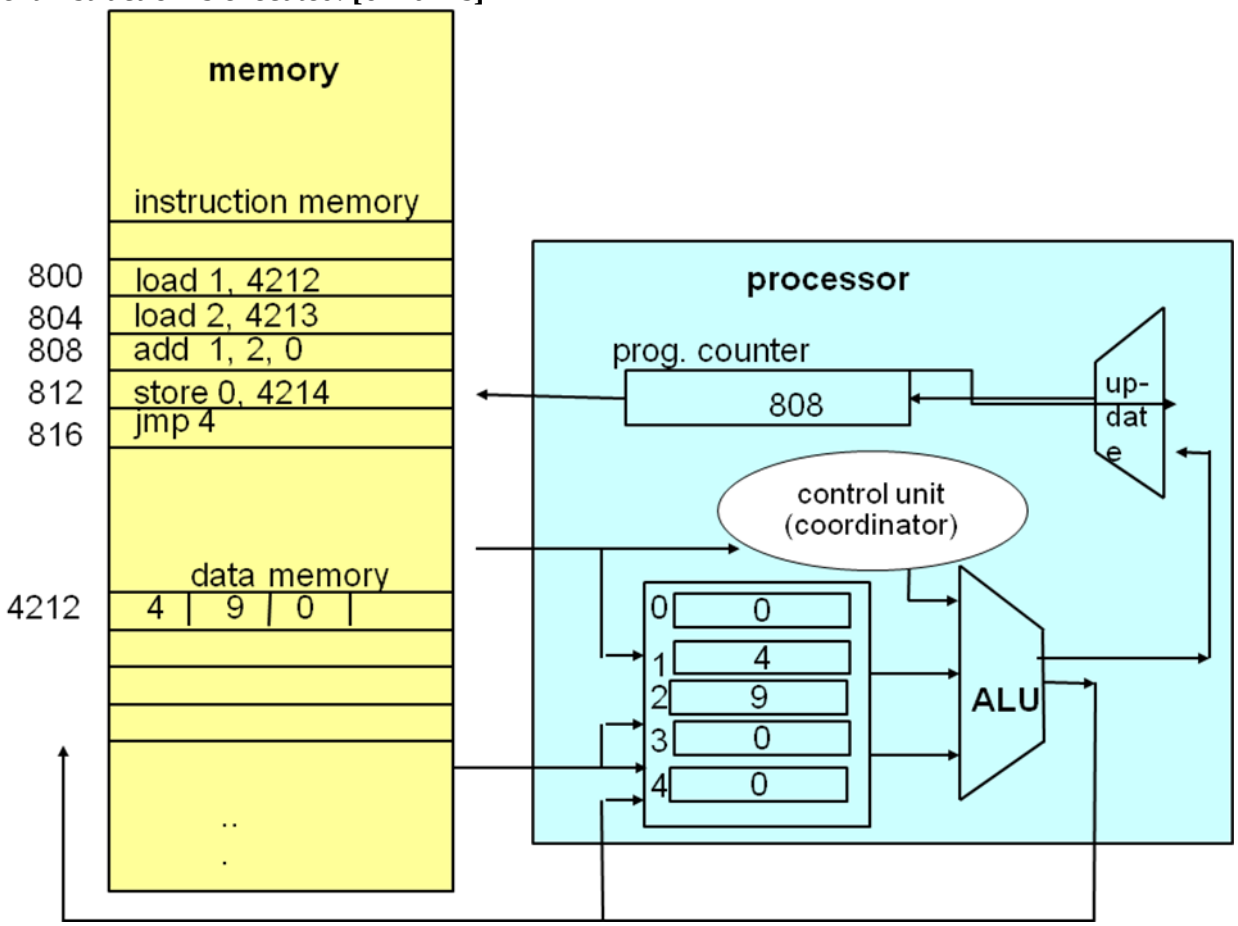
11.
    a. What is **your** definition of a computer. **[3 marks]**

    b. Given your definition for a computer, is a calculator a computer? Why or why not? **[3 marks]**

    c. Give our course's definition of a computer (below), is a calculator a computer? Why or why not? **[3 marks]**

    Our course's definition of a computer: A device that receives a list of instructions (drawn from a well-defined set of possible instructions) and interprets them to perform some process in the world, such as physical activity or transformation of information.

12. Consider the following diagram of a CPU. Clearly indicate the changes that will occur when the next instruction is executed. **[6 marks]**



13.

```
<html>
<head><title>Searching in JavaScript</title></head>
<body>

<script>

  function calc(num, text)
  {
    return num + text;
  }

  var values = new Array(4,"cat", -1, 1+2, calc(1,"dog"));
  values[2] = values[2] + values[0] - 3;

  function search(target, values)
  {
    var index = 0;
    while (index < values.length){
      if (values[index] == target{
        return index;
      }
      index = index + 1;
    }
    return -1;
  }

  var val = "dog";

  var index = search(val, values);

  if (index == -1){
    alert("The element " + val + " was not found in the array");
  }
  else {
    alert("The element " + val + " was found at index " + index);
  }

  var counter = 0;

  while (counter < values.length)
  {
    var pos = search(counter, values);

    if (pos == -1){
      alert("The element " + counter + " was not found in the array");
    }
    else {
      alert("The element " + counter + " was found at pos " + pos);
    }
    counter = counter + 1;
  }

</script>
</body></html>
```

[6]

a) In the code above circle and label one example for each of the following **[4 marks]**
   - function declaration
   - assignment statement
   - variable declaration
   - condition (in an `if` or `while` statement)

b) How many alert boxes will pop up when the html page on the left is loaded? **[2 marks]**

c) What text will be in the first alert box when the code on the left is loaded? **[2 marks]**

d) What text will be in the alert box after the following JavaScript code has executed? **[3 marks]**

```
var x = 8;

function sub(v1, v2)
{
   return v1 - v2;
}

function compute(num1, num2)
{
   return sub(num1, num2);
}

alert(compute(1, x));
```

e) Write a JavaScript function that takes an array of numbers as a parameter, calculates the sum of all of the numbers in the array, and returns the sum. Hint: remember that if your array is called `values`, `values.length` will give you the length of the array. **[4 marks]**

Appendix

Decimal	Hexadecimal
00	00
10	0A
20	14
30	1E
40	28
50	32
60	3C
70	46
80	50
90	5A
100	64
110	6E
120	78
130	82
140	8C
150	96
160	A0
170	A4
180	B4
190	BE
200	C8
210	D2
220	DC
230	E6
240	F0
250	FA