CPSC 101/WMST 201 Sample Midterm Questions

Following are sample questions for the midterm exam. Questions from the past quizzes are also good samples. In the actual exam, blank space will be provided in which you can write your answers.

1. In part (a) of this question, check ONE OR MORE boxes, for each answer that you think is correct.

   (a) The party protocol coordinates message delivery on

   ☐ an Ethernet channel.

   ☐ a point to point network.

   ☐ the World Wide Web.

   ☐ a TCP/IP protocol.

   (b) For each pixel in an image, the intensities of three colours are stored. In the model described in the text and in class, what are these colours?

   (c) If the colour of a pixel is a shade of gray, what constraints must the three colour intensities satisfy?

   (d) Give the decimal and hexademical numbers corresponding to the following binary numbers.

Binary	Decimal	Hexadecmial
10011111		
01010000		

2. Transmission Control Protocol/Internet Protocol (TCP/IP) is used to send messages across the internet. Summarize in your own words how TCP/IP works.

3. Let `greek` be the array on the facing sheet, which has 31 entries - all of them the names of Greek gods and heroes. (To fit the array on a sheet, the entries are written vertically rather than horizontally.)

   Given a value for `query`, the following binary search algorithm outputs the index of the position in array `greek` where `query` is stored, assuming that the value of `query` is in the array. For example, if `query` has value *Hera*, then the algorithm outputs 15. (Note that the algorithm is described in pseudocode, rather than in any specific programming language.)

```
1.   first = 1;
2.   last = 31;

3.   middle =  (first + last)/2;
4.   if query == greek[middle] then
5.      {
6.      output middle (and stop)
7.      }
8.   else
9.      {
10.     if (query < greek[middle]) then { last  = middle - 1; }
11.     if (query > greek[middle]) then { first = middle + 1; }
12.     }
13.  search in the array (from line 4 above) between first and last
```

   In this problem, suppose that the value of `query` is *Agis*. In the boxes below, fill in the values of variables `first`, `middle`, `last`, and `greek[middle]`, at the end of each successive execution of line 3 of the code.

query	first	middle	last	greek[middle]
Agis				
				Agis

ε

Table 1: array `greek`

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Agesilaus	Agis	Alexander	Aphrodite	Apollo	Ares	Aristides	Artemis	Athene	Demeter	Dion	Dionysos	Hades	Hephaistos	Hera	Hermes	Hestia	Jason	Lycurgus	Nicias	Pelopidas	Perseephonee	Pericles	Philopoemen	Phocion	Plutarch	Poseidon	Pyrrhus	Solon	Theseus	Timoleon