# CSCI 120 Introduction to Computation
# Homework 6
# Due 05/11/09

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**PART 1: I/O ports**

(a) Describe the difference between a serial port and a parallel port and list an example of each.

(b) Which of the following interfaces is recommended for hard drives in todays PCs: Skuzzy, IDE, PATA, SATA? Give at least two reasons for such preference.

(c) Explain the term "twisted pair wire" and elaborate on why they are preferred over regular wires.

(d) Explain the difference in how a mouse, a printer, and a video camera communicate over a USB port.

**PART 2: I/O devices**

(a) A 3.1 megapixel digital camera takes pictures with a 3:2 ratio. What should be the largest print size to maintain good quality?

(b) Explain how an LCD works and list at least two advantages over CRTs?

(c) List few image formats and provide a comparison between them in terms of quality, size, and portability.

(d) Explain the following terms: resolution, dot pitch, PPI, DPI, and NIT.

**PART 3: Coloring**
(a) Do some Internet research on the 4 coloring theorem and write a paragraph or two on what you find interesting regarding the topic.

parts (b), (c), and (d) not to be handed in, just for fun.

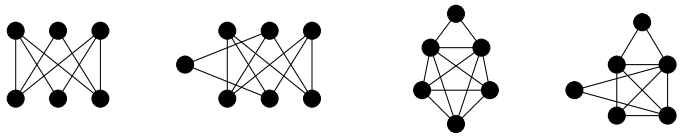
(b) Download the file map.bmp from the course web site and color all the states in the map using only 4 colors such that every two neighboring states will have different color.

(c) Save your colored map as BMP, GIF, and JPG. Observe the quality of the images and the size in KB of the corresponding files.

(d) Download fb.exe from the course web site. Using fb -b followed by the file name, read the binary files for each of the formats you produced in (c) and observe why the BMP format is called a bitmap.

**PART 4: Planar graphs**

For each of the following graphs, determine which is planar and which is not. If planar, redraw the graph to show that property, if not, say why (usually the way you show that a graph in not planar is by showing that if it is planar it would imply that $K_{3,3}$ or $K_5$ is planar).



**PART 5: Binary search trees**

For the set of numbers {1, 4, 5, 10, 16, 17, 21}, draw binary search trees of height 2, 3, 4, 5, and 6.