HCI

Chapter 1

1. Devise experiments to test the properties of (i) short-term memory, (ii) long-term memory, using the experiments described in this chapter to help you. Try out your experiments on your friends. Are your results consistent with the properties described in this chapter?

2. Observe skilled and novice operators in a familiar domain, for example touch and 'hunt-and-peck' typists, expert and novice game players, or expert and novice users of a computer application. What differences can you discern between their behaviors?

3. From what you have learned about cognitive psychology devise appropriate guidelines for use by interface designers. You may find it helpful to group these under key headings, for example visual perception, memory, problem solving, etc., although some may overlap such groupings.

4. What are mental models, and why are they important in interface design?

5. What can a system designer do to minimize the memory load of the user?

6. Human short-term memory has a limited span. This is a series of experiments to determine what that span is. (You will need some other people to take part in these experiments with you – they do not need to be studying the course – try it with a group of friends.)
   (a)   Kim's game
            Divide into groups. Each group gathers together an assortment of objects – pens, pencils, paper clips, books, sticky notes, etc. The stranger the object, the better! You need a large number of them – at least 12 to 15. Place them in some compact arrangement on a table, so that all items are visible. Then, swap with another group for 30 seconds only and look at their pile. Return to your table, and on your own try to write down all the items in the other group's pile.
            Compare your list with what they actually have in their pile. Compare the number of things you remembered with how the rest of your group did. Now think introspectively: what helped you remember certain things? Did you recognize things in their pile that you had in yours? Did that help? Do not pack the things away just yet. Calculate the average score for your group. Compare that with the averages from the other group(s).

   Questions: What conclusions can you draw from this experiment? What does this indicate about the capacity of short-term memory? What does it indicate that helps improve the capacity of short-term memory?

(b) 'I went to market . . .'
In your group, one person starts off with 'I went to market and I bought a fish' (or some other produce, or whatever!). The next person continues 'I went to market and I bought a fish and I bought a bread roll as well'. The process continues, with each person adding some item to the list each time. Keep going around the group until you cannot remember the list accurately. Make a note of the first time someone gets it wrong, and then record the number of items that you can successfully remember. Some of you will find it hard to remember more than a few, others will fare much better. Do this a few more times with different lists, and then calculate your average score, and your group's average score

7. Locate one source (through the library or the web) that reports on empirical evidence on human limitations. Provide a full reference to the source. In one paragraph, summarize what the result of the research states in terms of a physical human limitation.
   In a separate paragraph, write your thoughts on how you think this evidence on human capabilities impacts interactive system design.