CHAPTER 3
the interaction

EXERCISE 3.1

Choose two of the interface styles (described in Section 3.5) that you have experience of using. Use the interaction framework to analyze the interaction involved in using these interface styles for a database selection task. Which of the distances is greatest in each case?

answer

There is no single answer for this exercise, so we will provide an example of the style of answer that is suitable and the level of analysis that is appropriate.

You should be aware that, although the term distance is used, we have not associated any real measures to any of the translations in the interaction framework.

As a result, this analysis can only be informal and at this point is mainly informed by one's intuition and experience with various interface styles.

As was stated in Section 3.2.3, assessment of any interaction with the interaction framework can only be relative to some task. For this example we will choose a common database selection task - selecting records from an online library database. The two interface styles we will analyze are a natural language interface and a command line interface.

The task is to select a set of references from the library database that satisfy some search criteria. Once the task has been formulated in the user's task language (for instance, the user wants to see all of the books written by Alan Dix since 1990), that task must be articulated in the input language.

A natural language interface style would allow the user simply to type in the selection query exactly as they think of it. The articulation distance is small both because it is easy to articulate (possibly even easier if a spoken interface is provided rather than typing), and because the coverage is total (the user is allowed to articulate anything as a query). On the other hand, for a command line interface, the limited vocabulary of the input language makes it more difficult for the user to articulate a task even though the limited language provides complete coverage in terms of possible queries allowed.

The real difficulty for a natural language interface is how the system translates the input expression into the actual query that accesses the library records. This performance translation will be much easier for the command line interface since it may not even require any translation of an input expression, that language having already been constructed with the database engine in mind.

Therefore, we can see that for a natural language interface the performance distance is greatest, whereas for a command line interface it is the articulation distance that is greatest.

However, the above analysis only really deals with the execution translations. On the evaluation side, a natural language interface must try to present the results of the database query in the form in which the user phrased the question. This can in general be a difficult translation for the system as it attempts to answer questions in the style in which an arbitrary user has posed them.

Having accomplished that, the observation by the user should be easy to perform. For a command line interface, there is no guarantee that the result of the query will be displayed automatically, and the user may have to request a display explicitly (and they may have to express how the display be formatted).

Neglecting that point, presentation by the system is made easier, as the output language can be very constrained. Observation is made more difficult, as the user must translate the output into the terms of their original task formulation. For example, having asked for books by Alan Dix published after 1990, the user may have a difficult time locating author name and year of publication to determine if the resulting records match their expectations.

For evaluation, a natural language interface has a greater presentation distance and a command line interface a greater observation distance. In general, therefore, we would expect that a natural language interface would be easier from the user's perspective but more difficult from the system builder's perspective. The opposite should hold for a command language interface.

There are some issues that we haven't addressed in this example, such as displaying a large set of records that

satisfy the query, and being able to reuse the output of one query as the input to another in order to compound searches easily.
Since the performance translation is so difficult for a natural language interface style it is important for a natural language interface to present the results of the query in such a way that the user is able to determine if the system understood the original query in the way the user intended. This would involve the presentation translation reiterating both the user's query and the selected records simultaneously. In our example, since the user was interested in the author and date of publication, it would help if that information was prominently presented in the result set.
We have not considered, either, what effect experience with the system provides. As users become more comfortable with the syntax and semantics of a command language, its perceived difficulty will decrease. Another problem is that a verbose natural language output may limit the number of records it is possible to display from a result set.
The moral of the story is that despite their intuitive allure, such informal analyses as suggested by this exercise cannot be the last word on analysis of an interactive system. Ultimately, our judgements must be made more precise and concrete.

EXERCISE 3.2
Find out all you can about natural language interfaces. Are there any successful systems? For what applications are these most appropriate?
answer
This exercise is intended to encourage personal research in the form of a brief literature survey. Appropriate places to begin such a search would be: general text books on artificial intelligence (e.g. Janet and Alan's *An Introduction to Artificial Intelligence*), which will include basic information on natural language processing and famous systems such as SHRDLU; proceedings from conferences such as the AAAI and specialist journals, which will have more up to date research papers in the area; proceedings of HCI conferences such as CHI, Interact and HCI, which will include natural language systems particularly geared towards the interface. Other likely sources are popular journals such as BYTE and personal computer magazines, which are likely to review commercial systems. The student's response to the second part of the question will depend upon what is unearthed, but it is likely that the systems that they find out about operate in very constrained domains and that the natural language used is restricted. There are as yet no general purpose natural language interfaces.

EXERCISE 3.3
3.3 What influence does the social environment in which you work have on your interaction with the computer? What effect does the organization (commercial or academic) to which you belong have on the interaction?
answer
The aim of this exercise is to explore the social and environmental influences that affect interaction, often without the user being aware of them. The particular influences will vary from environment to environment, but we encourage you to consider some or all of the following.

- **work context** - Is the work place shared? Are the machines shared?
- **peer pressure** - Is there pressure to compete or impress?
- **management pressure** - Is there pressure to achieve? Is the interaction carried out in the presence of management?
- **motivation** - What motivates the interaction? Does this encourage or discourage experimentation?
- **organizational goals** - What is the objective of the organization? (profit? education? etc.) How does this affect the interaction?
- **organizational decision making** - Who determines the systems that you use? Do you have any choice or influence? Does this influence the way you interact with the system?
- In each case consider what influence there may be on the interaction. It may be helpful to consider other possible environments in order to identify how the interaction would differ under these different circumstances. For example, if you currently share a machine with colleagues, would your interaction practice change if you were given a personal machine?

Chapters 13 and 14 also discuss the influence of groups of workers within an organization on interaction, and are suggested as further reading material on this topic.

EXERCISE 3.4

(a) Group the following functions under appropriate headings, assuming that they are to form the basis for a menu-driven word-processing system - the headings you choose will become the menu titles, with the functions appearing under the appropriate one. You can choose as many or as few menu headings as you wish. You may also alter the wordings of the functions slightly if you wish.

save, save as, new, delete, open mail, send mail, quit, undo, table, glossary, preferences, character style, format paragraph, lay out document, position on page, plain text, bold text, italic text, underline, open file, close file, open copy of file, increase point size, decrease point size, change font, add footnote, cut, copy, paste, clear, repaginate, add page break, insert graphic, insert index entry, print, print preview, page setup, view page, find word, change word, go to, go back, check spelling, view index, see table of contents, count words, renumber pages, repeat edit, show alternative document, help.

(b) If possible, show someone else your headings, and ask them to group the functions under your headings. Compare their groupings with yours. You should find that there are areas of great similarity, and some differences. Discuss the similarities and discrepancies.

Why do some functions always seem to be grouped together?

Why do some groups of functions always get categorised correctly?

Why are some less easy to place under the 'correct' heading?

Why is this important?

answer

open-ended investigation

EXERCISE 3.5

3.5 Using your function groupings from Exercise 3.4, count the number of items in your menus.

(a) What is the average?

What is the disadvantage of putting all the functions on the screen at once?

What is the problem with using lots of menu headings?

What is the problem of using very few menu headings?

Consider the following: I can group my functions either into 3 menus, with lots of functions in each one, or into 8 menus with fewer in each. Which will be easier to use? Why?

(b) Optional experiment

Design an experiment to test your answers. Perform the experiment and report on your results.

answer

(a) The answer depends on the answer to Question 3.4. The problem with putting all functions on the screen at once is that they will occupy too much screen space, leaving little room for anything else. Too many menu headings will make it difficult for the user to decide under which heading a desired command resides. Too few menu headings means that each menu will consist of many menu items, complicating the visual search task to locate the menu item and increasing the average length of time it takes to drag the mouse and select an options. Fitts' Law gives us a way to understand the impact of length of menu items and selection times.

We would tend to go for a larger number of smaller menus, under the assumption that it is possible to create clear conceptual boundaries between menu categories. If the eight categories lead to an easy to understand decomposition of the commands, then it would be easier to decide which menu to select and then would be quick to select a menu item among a small number of options. A small number of menus might result in an unclear decision on where to place some menu items.

(b) Open-ended experiment

EXERCISE 3.6

Describe (in words as well as graphically) the interaction framework introduced in *Human-Computer Interaction*. Explain how it can be used to explain problems in the dialogue between a user and a computer.

answer available for tutors only

EXERCISE 3.7
Describe briefly four different interaction styles used to accommodate the dialog between user and computer.
answer available for tutors only

EXERCISE 3.8
The typical computer screen has a WIMP setup (what does WIMP stand for?) Most common WIMP arrangements work on the basis of a desktop metaphor , in which common actions are likened to similar actions in the real world. For example, moving a file is achieved by selecting it and dragging it into a relevant folder or filing cabinet. The advantage of using a metaphor is that the user can identify with the environment presented on the screen. Having a metaphor allows them to predict the outcome of their actions more easily. Note that the metaphor can break down, however. What is the real-world equivalent of formatting a disk? Is there a direct analogy for the concept of 'undo'? Think of some more examples yourself.
answer
open-ended

- a worked exercise
- a worked exercise
- a worked exercise
- a worked exercise

CHAPTER 9
evaluation techniques

EXERCISE 9.1
In groups or pairs, use the cognitive walkthrough example, and what you know about user psychology (see Chapter 1), to discuss the design of a computer application of your choice (for example, a word processor or a drawing package). (**Hint**: Focus your discussion on one or two specific tasks within the application.)
answer
This exercise is intended to give you a feel for using the technique of cognitive walkthrough (CW). CW is described in detail in Chapter 9 and the same format can be used here. It is important to focus on a task that is not too trivial, for example creating a style in a word processing package. Also assume a user who is familiar with the notion of styles (and with applications on the same platform (e.g. Macs, PCs, UNIX, etc.)) but not with the particular word processing package. Attention should be given to instances where the interface fails to support the user in resolving the goal and where it presents false avenues.

EXERCISE 9.2
What are the benefits and problems of using video in experimentation? If you have access to a video recorder, attempt to transcribe a piece of action and conversation (it does not have to be an experiment - a soap opera will do!). What problems did you encounter?
answer
The benefits of video include: accurate, realistic representation of task performance especially where more than one video is used; a permanent record of the observed behaviour.
The disadvantages include: vast amounts of data that are difficult to analyse effectively; transcription; obtrusiveness; special equipment required.
By carrying out this exercise, you will experience some of the difficulties of representing a visual record in a semi-formal written format. If you are working in a group, discuss which parts of the video are most difficult to represent, and how important these parts are to understanding the clip.

EXERCISE 9.3

In Section 9.4.2 (*An example: evaluating icon designs*), we saw that the observed results could be the result of interference. Can you think of alternative designs that may make this less likely? Remember that individual variation was very high, so you must retain a within-subjects design, but you may perform more tests on each participant.

answer

Three possible ways of reducing interference are:

- During the initial training period, swap back and forth between learning the two sets of icons, with the aim of getting the subjects used to swapping between the two sets of remembered icons. However, this design could be argued to suffer the same flaws as the original. If the abstract icons had been taught in isolation perhaps they might have fared far better.
- We could invent a third set of 'random' icons (call them R). We could then interpose them in the experiment, that is present the icons in the orders RARN and RNRA. The intention is to swamp any transfer effect in the 'noise' of the random icons. It could be argued that our experiment then measures the robustness of the icon sets to such 'noise'!
- We could give the subjects multiple presentations, for example ANAN and NANA presentation orders. This would not remove transfer effects, but it would give us some way to quantify them. Imagine that in the ANAN group the second presentation of the abstract icons was significantly worse than the first, but there was not a similar effect for natural icons in the NANA group. This would give us both positive evidence of a transfer effect, and perhaps some quantitative measure. However, even going from this additional evidence to a strong conclusion will be difficult.

Notice that all the above measures require additional subject time and one has to constantly weigh up the advantages of richer experiments against those of larger subject groups.

EXERCISE 9.4

Choose an appropriate evaluation method for each of the following situations. In each case identify
(i) The participants.
(ii) The technique used.
(iii) Representative tasks to be examined.
(iv) Measurements that would be appropriate.
(v) An outline plan for carrying out the evaluation.
(a) You are at an early stage in the design of a spreadsheet package and you wish to test what type of icons will be easiest to learn.
(b) You have a prototype for a theatre booking system to be used by potential theatre-goers to reduce queues at the box office.
(c) You have designed and implemented a new game system and want to evaluate it before release.
(d) You have developed a group decision support system for a solicitor's office.
(e) You have been asked to develop a system to store and manage student exam results and would like to test two different designs prior to implementation or prototyping.

answer

Note that these answers are illustrative; there are many possible evaluation techniques that could be appropriate to the scenarios described.

Spreadsheet package

(i) Subjects	Typical users: secretaries, academics, students, accountants, home users, schoolchildren
(ii) Technique	Heuristic evaluation
(iii) Representative tasks	Sorting data, printing spreadsheet, formatting cells, adding functions, producing graphs
(iv) Measurements	Speed of recognition, accuracy of recognition, user-perceived clarity

(v) Outline plan	Test the subjects with examples of each icon in various styles, noting responses.

Theatre booking system

(i) Subjects	Theatre-goers, the general public
(ii) Technique	Think aloud
(iii) Representative tasks	Finding next available tickets for a show, selecting seats, changing seats, changing date of booking
(iv) Measurements	Qualitative measures of users' comfort with system, measures of cognitive complexity, quantitative measures of time taken to perform task, errors made
(v) Outline plan	Present users with prototype system and tasks, record their observations whilst carrying out the tasks and refine results into categories identified in (iv).

New game system

(i) Subjects	The game's target audience: age, sex, typical profile should be determined for the game in advance and the test users should be selected from this population, plus a few from outside to see if it has wider appeal
(ii) Technique	Think aloud
(iii) Representative tasks	Whatever gameplay tasks there are - character movement, problem solving, etc.
(iv) Measurements	Speed of response, scores achieved, extent of game mastered.
(v) Outline plan	Allow subjects to play game and talk as they do so. Collect qualitative and quantitative evidence, follow up with questionnaire to assess satisfaction with gaming experience, etc.

Group decision support system

(i) Subjects	Solicitors, legal assistants, possibly clients
(ii) Technique	Cognitive walkthrough
(iii) Representative tasks	Anything requiring shared decision making: compensation claims, plea bargaining, complex issues with a diverse range of expertise needed.
(iv) Measurements	Accuracy of information presented and accessible, veracity of audit trail of discussion, screen clutter and confusion, confusion owing to turn-taking protocols
(v) Outline plan	Evaluate by having experts walk through the system performing tasks, commenting as necessary.

Exam result management

(i) Subjects	Exams officer, secretaries, academics
(ii) Technique	Think aloud, questionnaires
(iii) Representative tasks	Storing marks, altering marks, deleting marks, collating information, security protection
(iv) Measurements	Ease of use, levels of security and error correction provided, accuracy of user
(v) Outline plan	Users perform tasks set, with running verbal commentary on immediate thoughts and considered views gained by questionnaire at end.

EXERCISE 9.5

9.4 Complete the cognitive walkthrough example for the video remote control design.

answer

Continue to ask the four questions for each Action in the sequence. Work out what the user will do and how the sytem will respond. If you can analyse B and C, you will find that Actions D to I are similar.
Hint: Remember that there is no universal format for dates.
Action J: Think about the first question. Will the user even know they need to press the transmit button? Isn't it likely that the user will reach closure after Action I?

EXERCISE 9.6
9.5 In defining an experimental study, describe
(a) how you as an experimenter would formulate the hypothesis to be supported or refuted by your study
(b) how you would decide between a within-groups or between-groups experimental design with your subjects
answer available for tutors only

EXERCISE 9.7
9.6 What are the factors governing the choice of an appropriate evaluation method for different interactive systems? Give brief details.
answer available for tutors only

- Design an experiment to test whether adding colour coding to an interface will improve accuracy. [page 339]
- You have been asked to compare user performance and preferences with two different learning systems, one using hypermedia (see Chapter 21), the other sequential lessons. Design a questionnaire to find out what the users think of the system. How would you go about comparing user performance with these two systems? [page 351]

CHAPTER 6
HCI in the software process

EXERCISE 6.1
(a) How can design rationale benefit interface design and why might it be rejected by design teams? (b) Explain QOC design rationale using an example to illustrate.
answer available for tutors only

EXERCISE 6.2
Imagine you have been asked to produce a prototype for the diary system discussed in the worked exercise in Section 7.2.3. What would be an appropriate prototyping approach to enable you to test the design using the usability metrics specified, and why?
answer available for tutors only

- What is the distinction between a process-oriented and a structure-oriented design rationale technique? Would you classify psychological design rationale as process or structure oriented? Why? [page 255]

CHAPTER 7
design rules

EXERCISE 7.1

7.1 What was the problem with the synthesis example comparing a command language interface with a visual interface? Can you suggest a fix to make a visual interface really immediately honest?

answer

To demonstrate the principle of synthesizability within learnability, it was stated in this example that a visual interface to a file management system provided immediate information about the changed location of some file after a move operation performed by the user. In contrast, a command language interface requires the user to remember the directory to which a file is moved and explicitly issue commands to browse the directory to verify that the file has been moved. To be really sure that a move occurred, the user would also have to browse the original directory to determine that the file was no longer there. The fallacy in this argument is the assumption that visual file management systems always provide information about the new whereabouts of a moved file. To take a counterexample using the Macintosh instance from the text, if a file is moved from an open folder (in which the contents of the folder are revealed to the user) to a closed folder (contents not revealed), then the location of the moved file is not indicated to the user unless she remembers to open up the destination folder to reveal its contents. This is an example of eventual honesty and not immediate as the example suggests.

We could 'fix' this problem of eventual honesty for the visual system by demanding that the destination folder be an open folder (probably too restrictive, given the limited screen size) or by having the destination folder temporarily open up to reveal that the file is now located within it. This last suggestion is also a bit tricky, for we might still want to determine that the file no longer resides in the original folder, so we would have to be sure that the new folder did not obstruct the view of the old folder. In practice, this might be too difficult to guarantee in general.

EXERCISE 7.2

7.2 It has been suggested in this chapter that consistency could be considered a major category of interactive principles, on the same level as learnability, flexibility and robustness. If this had been the case, which principles discussed in this chapter would appear in support of consistency?

answer

The discussion of consistency suggested that it can take many forms, because it is usually referred to in relation to some other feature of the interaction between user and system. Mentioned already in the text we have consistency related to the following principles:

- **Familiarity** - consistency with respect to prior real-world experience
- **Generalizability** - consistency with respect to experience with the same system or set of applications on the same platform

In addition, we could interpret some other principles as contributors to consistency:

- **Affordance** - consistency with understood intrinsic properties of an object, so a soft button on the screen should allow us to always 'push' on it to select some action
- **Predictability** - consistency of system response with user's expectation, given the user has some information about past interaction history
- **Substitutivity** - consistent permission from system to allow use of equivalent values for input and output
- **Commensurate effort** - consistency of effort with respect to doing and undoing tasks
- **Response time stability** - consistency of system response for similar actions

Some other principles for consistency from the text and elsewhere:

- Consistency can be relative to the form of input/output expressions relative to the user's conceptual model of the system. An example in the text involves using keys whose relative positions are similar to commands for the systems (any set of four typewriter keys that form a diagonal to indicate up, down, left and right information for an input command).
- As discussed in the exercise on colour, consistency can be with respect to social or cultural conventions (e.g., using red to indicate stop or hot, green for go, blue for cool).

EXERCISE 7.3

Find as much information as you can on ISO standards that relate to usability. (Hint: many standards are discussed in terms of ergonomics). How many different standards and draft standards can you find?

answer

open-ended research

EXERCISE 7.4

7.4 Can you think of any instances in which the 'noun-verb' guideline for operations, as suggested in the Apple human interface guidelines for the Desktop Interface, would be violated? Suggest other abstract guidelines or principles besides consistency which support your example. (Hint: Think about moving files around on the Desktop.)

answer

The noun-verb guideline suggests that we can view all operations that the user will perform as being composed of an action (the verb) acting with one argument (the noun). In the case of moving a file (or copying, for that matter), the action (move or copy) requires more than one argument. The way the move operation is performed requires the user first to select the icon for the file to be moved and then to indicate the move operation implicitly by dragging the selected icon to the destination folder. The nouns in this dialogue are the file to be moved and the destination folder. The verb is the move operation. The natural way to express this is in the order noun-verb-noun. Strictly speaking, in order to stick with the noun-verb guideline, we would have to indicate both the target file and the destination folder before indicating the move operation. That would be consistent, relative to input expression, with most other commands on the desktop. However, some principles of direct manipulation and familiarity to the user are more important. Moving files by dragging them on the desktop is very similar to the way we can pick up any object in the physical world and move it to its new location. And the dragging operation is incremental and easily recoverable; moving to one place can be undone within the same operation since the dragging can continue until the file is released.

The file-moving example is a slightly contrived one, because some could argue that there is no violation of the noun-verb guideline (hence, moving is still consistent with respect to input expression) because the verb is 'move to destination folder'. Perhaps a better example is a command to search a file system for files matching some specification. Here, the action is to do the qualified search and the argument or noun is the set of folders or volumes of the system that you want searched. Typically, this kind of operation is defined by some dialog box that allows the user to indicate in any order the specifics of the operation (the search parameters) and the folders or volumes to search. Once this unordered dialog is complete, the user then indicates that it is OK for the system to perform the operation. This kind of form-filling dialog subscribes to neither the noun-verb or verb-noun guideline; the order is more flexible for the user than consistent.

EXERCISE 7.5

Can you think of any instances in which the user control guideline suggested by Apple is not followed? (Hint: Think about the use of dialog boxes.)

answer

The user control guideline states that, 'The user, not the computer, initiates and controls all actions.' In the case of dialog boxes, this guideline is clearly contradicted. A dialog box can be used to indicate when an error occurs in the system. Once this error has been detected and presented to the user in the dialog box, the only action that the system allows the user is to acknowledge the error and dismiss the dialog box. The system preempts the user dialog, with good reason. The preemptive nature of the dialog box is to ensure that the user actually notices that there was an error. Presumably, the only errors that will be produced in such an intrusive manner are ones which the user must know about before proceeding, so the preemption is warranted. But sometimes dialog boxes are not used to indicate errors and they still prevent the user from performing some actions that they might otherwise wish to perform. The dialog box might be asking the user to fill in some information to specify parameters for a command. If the user does not know what to provide, then they are stuck. A lot of the time, the user can find out the information by browsing through some other part of the system, but in order to do that they must exit the dialog box (and forfeit any of the settings that they might have already entered), find out the missing information and begin again. This kind of preemption is not

desirable. It is probably this kind of preemption the user control guideline is intended to prevent, but it doesn't always get applied.

EXERCISE 7.6

Find a book on guidelines. List the guidelines that are provided and classify them in terms of the activity in the software life cycle to which they would most likely apply.

answer

We use as a source of guidelines Mayhew's book *Principles and Guidelines in Software and User Interface Design* [230]. In general, all guidelines offer constraints on the design activity and so should be known during the requirements phase. In the following list, we will concentrate on what other stages (architectural design, detailed design, coding and unit testing, integration and testing) will be most affected by the guidelines. The numbers in parentheses indicate the page reference for the given guideline.

Architectural design

- Present functionality through a familiar metaphor. (97)
- Provide similar execution style of analogous operations in different applications. (97)
- Organize the functionality of a system to support common user tasks. (442)
- Make invisible parts and processes visible to the user. (95)

Detailed design

- Consistent dialog style for different functions. (97)
- Match menu structure to task structure. (144)
- Create logical, distinctive and mutually exclusive semantic categories with clear meanings. (150)
- Design and organize a fill-in form to support the task. (184)
- Consider voice synthesis as an output device when the user's eyes are busy, when mobility is required, or when the user has no access to a workstation or screen. (427)

Coding and unit testing

- On full-screen text menus, present menu choice lists vertically. (148)
- In a fill-in form, use white space to create a balance and symmetry and lead the eye in the appropriate direction. (186)
- Avoid frequent use of shift or control keys. (256)
- Place high-use function keys within easy reach of the home row on the keyboard. (281)

Integration and testing

- Allow full command names and emphasize them in training, even if abbreviations are allowed. (261)

EXERCISE 7.7

(a) Distinguish between principles, guidelines and standards, using examples of each to illustrate.
(b) Why is context important in selecting and applying guidelines and principles for interface design? Illustrate your answer with examples.

answer available for tutors only

EXERCISE 7.8

(a) Why are there few effective HCI standards?
(b) How do "golden rules" and heuristics help interface designers take account of cognitive psychology? Illustrate your answer with examples.

answer available for tutors only

EXERCISE 7.9

Using the web design pattern language in *The Design of Sites* [356] produce a design for an e-commerce site for a small retail business. How well does the language support the design process?

answer

project

- Look at some of the principles outlined in this section, and use one or two to provide a usability specification (see Chapter 6, Section 6.3) for an electronic meetings diary or calendar. First identify some of

the tasks that would be performed by a user trying to keep track of future meetings, and then complete the usability specification assuming that the electronic system will be replacing a paper-based system. What assumptions do you have to make about the user and the electronic diary in order to create a reasonable usability specification? [page 273]

- Look up and report back guidelines for the use of colour. Be able to state the empirical psychological evidence which supports the guidelines. Do the guidelines conflict with any other known guidelines? Which principles of interaction do they support? [page 281]