commands to manipulate the data, understand the system responses and outputs, and deal with errors.

Once we have a profile of a typical user, we have to consider how the system can best respond to their needs. Is it a priority that the system is quick and easy to learn? Or that there are a number of different ways of carrying out a task? Or that a lot of support is provided to help the user cope with errors? Is the most efficient method of data entry going to be keyboard, touch screen or speech recognition? Each user-computer relationship is different and what is ideal for one user will be hopeless for another. However, there are some general guidelines that are useful to bear in mind when designing any user interface; some of these are listed below.

- The system should be consistent, for example screen layouts should follow the same general pattern, similar tasks should be performed in similar ways, and messages from the system to the user should always be in the same format.

- User tasks that are boring and prone to error should be minimized; this means that the system should provide shortcuts for experienced users and, where possible, data should be entered by selecting from a menu rather than typing.

- Screens should be free of clutter, containing all the relevant information and no more. An overcrowded screen is tiring to look at and irritating to work with. Dramatic colour combinations and flashing signals should be avoided and highlighting should only be used to pick out important information, not to add decoration to the screen. Screens should be self-sufficient and self-explanatory. It should not be necessary to refer constantly to on-line help or the user manual to find out what to do next or how to escape out of the screen. As an example, Figure 9.9 shows a screen for entering customer details from the Wheels system.

- The dialogue with the system should be easy to follow and it should be obvious to users how to navigate their way through the various screens. A simple menu hierarchy that is easy to grasp and use is much more effective than a sophisticated navigation system that may be impressive, but is difficult for users to find their way around. Figure 9.10 shows the main menu screen from the Wheels system with the option 'Maintain customer list' selected. This takes the user to the customer menu screen shown in Figure 9.11 with the 'Add customer' option highlighted, which takes the user to the customer details entry screen shown in Figure 9.9.