EXERCISE 2.1

Individually or in a group find as many different examples as you can of physical controls and displays.
(a) List them
(b) Try to group them, or classify them.
(c) Discuss whether you believe the control or display is suitable for its purpose. (section 3.9.3 may also help)

answer

open-ended investigation

EXERCISE 2.2

Exercises 2.2 and 2.3 involve you examining a range of input and output devices in order to understand how they influence interaction.

A typical computer system is comprised of a QWERTY keyboard, a mouse, and a colour screen. There is usually some form of loudspeaker as well. You should know how the keyboard, mouse and screen work - if not, read up on it.

What sort of input does the keyboard support? What sort of input does the mouse support? Are these adequate for all possible applications? If not, to which areas are they most suited? Do these areas map well onto the typical requirements for users of computer systems?

If you were designing a keyboard for a modern computer, and you wanted to produce a faster, easier to use layout, what information would you need to know and how would that influence the design?

answer available for tutors only

EXERCISE 2.3

Pick a couple of computer input devices that you are aware of (joystick, light pen, touchscreen, trackball, eyegaze, dataglove, etc.) and note down how each has different attributes that support certain forms of interaction. You ought to know a little about all of these devices - if you do not, research them.

answer

open-ended investigation

EXERCISE 2.4

What is the myth of the infinitely fast machine?

answer available for tutors only
EXERCISE 2.5

Pick one of the following scenarios, and choose a suitable combination of input and output devices to best support the intended interaction. It may help to identify typical users or classes of user, and identify how the devices chosen support these people in their tasks. Explain the major problems that the input and output devices solve.

Environmental database

A computer database is under development that will hold environmental information. This ranges from meteorological measurements through fish catches to descriptions of pollution, and will include topographical details and sketches and photographs. The data has to be accessed only by experts, but they want to be able to describe and retrieve any piece of data within a few seconds.

Word processor for blind people

A word processor for blind users is needed, which can also be operated by sighted people. It has to support the standard set of word-processing tasks.

answer available for tutors only

EXERCISE 2.6

Describe Fitts' Law (see chapter 1). How does Fitts' Law change for different physical selection devices, such as a 3-button mouse, a touchpad, or a pen/stylus? (You'll need to do some research for this.)

answer available for tutors only

Worked exercises in book

- What input and output devices would you use for the following systems? For each, compare and contrast alternatives, and if appropriate indicate why the conventional keyboard, mouse and CRT screen may be less suitable. [page 105]
  (a) portable word processor
  (b) tourist information system
  (c) tractor-mounted crop-spraying controller
  (d) air traffic control system
  (e) worldwide personal communications system
  (f) digital cartographic system

- What is the basic architecture of a computer system? [page 114]

- How do you think new, fast, high-density memory devices and quick processors have influenced recent developments in HCI? Do they make systems any easier to use? Do they expand the range of applications of computer systems? [page 119]