

Peripherals

STARTER

1

Identify the peripherals in this computer application. Divide them into input and output devices.

Input devices
 electronic scales
 Barcode reader
 swipe card reader
 Numeric keypad

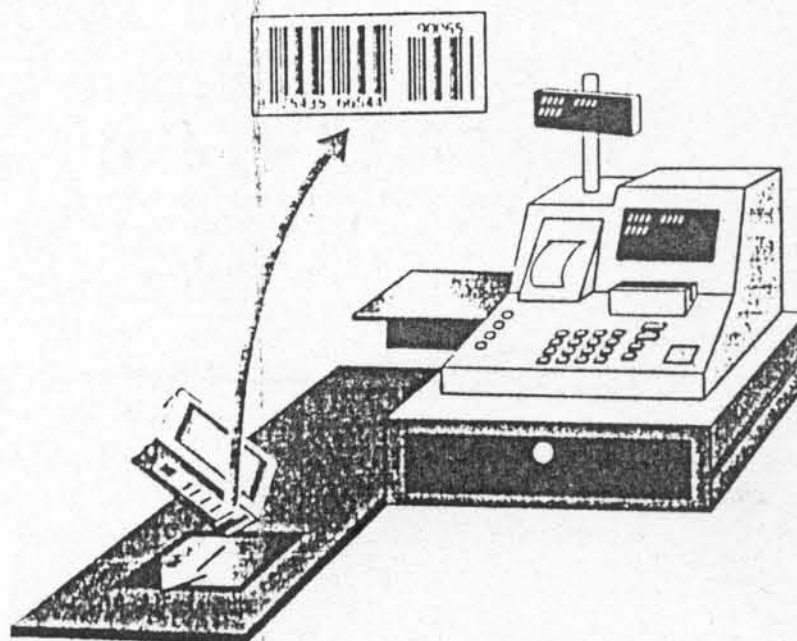


Fig 1
EPOS till

2

Link the inputs on the left and the outputs on the right with the appropriate peripherals in the centre.

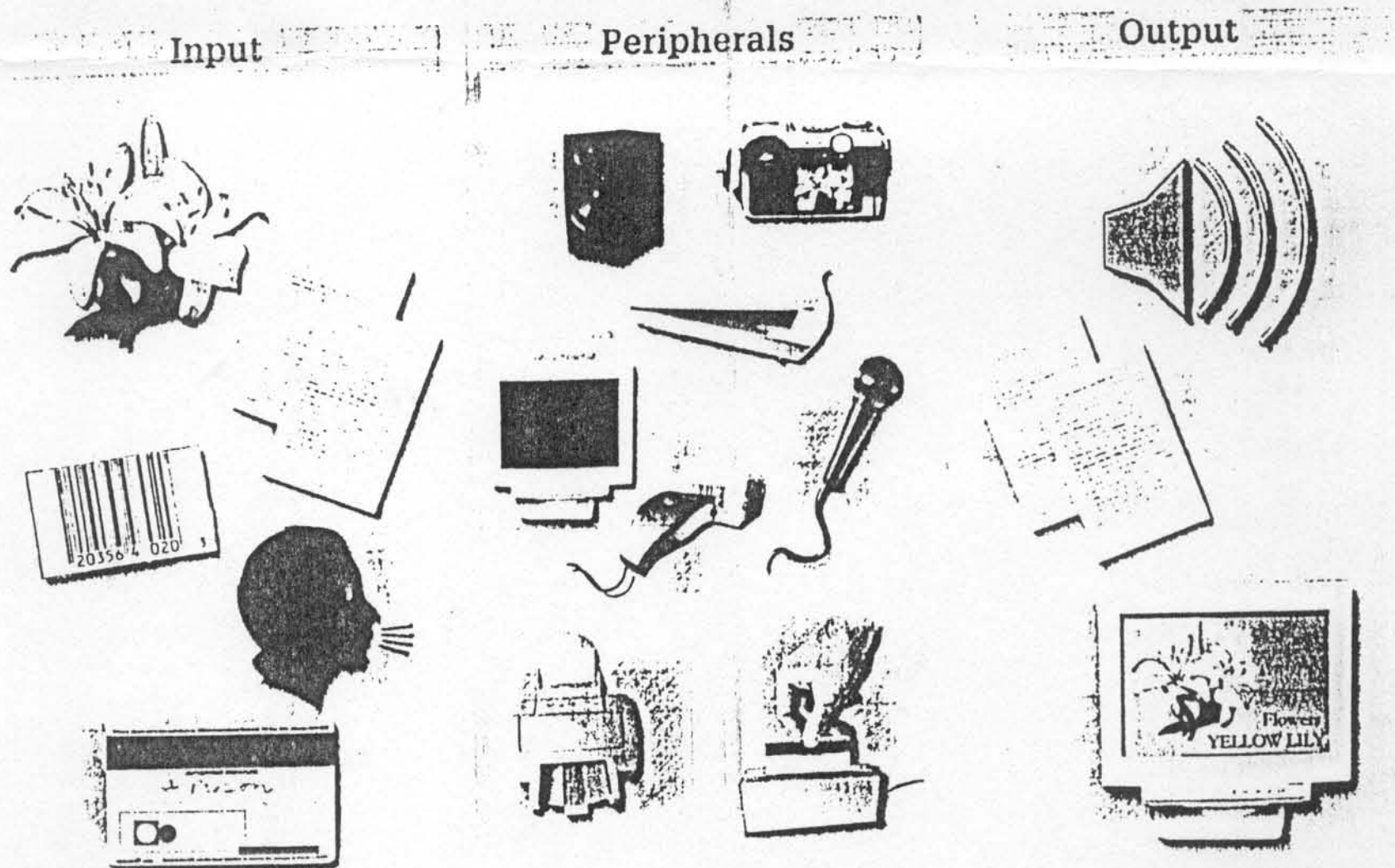


Fig 2
Input and output devices

LISTENING**3**

Study this description and answer these questions.

- 1 How do digital cameras differ from conventional cameras?
- 2 How do they work?
- 3 What are their advantages and disadvantages compared to conventional cameras?

How a digital camera works

Digital cameras store images on memory cards so pictures can be transferred easily to a computer.

A lens focuses the image on to a CCD unit or Charge-Coupled Device where the film would normally be.

So you can aim the camera accurately, there is an optical viewfinder.

So you can play back the images and decide which to keep and which to re-shoot, the image is passed to a small LCD screen on the back of the camera.

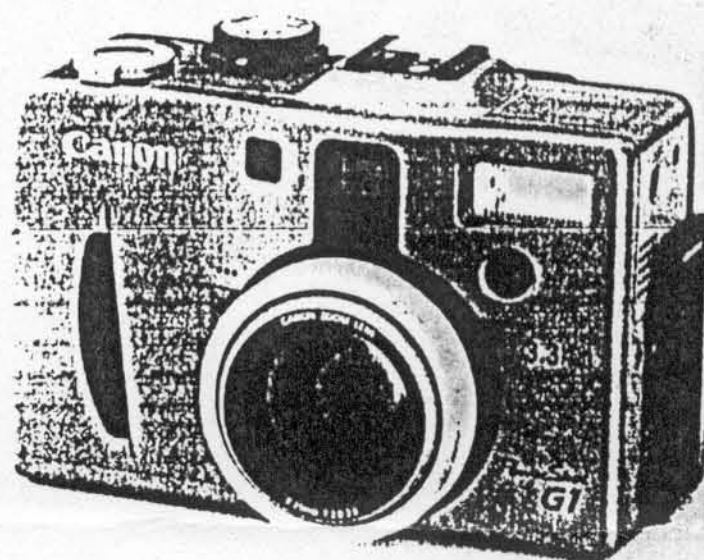


Fig 3
Canon PowerShot, G1


4

Listen to Part 1 of this discussion between A and B and complete this table of similarities and differences between conventional and digital cameras. Tick (✓) or cross (X) the boxes.

| Feature | Digital | Conventional |
|----------------------------------|---------|--------------|
| lens | | |
| viewfinder | | |
| requires chemical processing | | |
| film | | |
| transfer images directly to PC | | |
| can delete unsatisfactory images | | |

5

Listen to Part 2 of the dialogue to list the disadvantages of digital cameras.

6  Now listen to both parts again to find the answers to these questions:

- 1 What does a CCD contain?
- 2 What is a pixel?
- 3 How can you view pictures before they are downloaded to a PC?
- 4 When you have downloaded the images, what can you do with them?
- 5 Is special software required?
- 6 Why is the resolution important?
- 7 What does the capacity of a digital camera depend on?
- 8 Why is it worth getting a rechargeable battery?

LANGUAGE WORK

Revision: Comparison and contrast

Study this comparison of digital and conventional cameras.

| FEATURE | DIGITAL | CONVENTIONAL |
|----------------------------------|---------|--------------|
| lens | ✓ | ✓ |
| viewfinder | ✓ | ✓ |
| requires chemical processing | ✗ | ✓ |
| film | ✗ | ✓ |
| transfer images directly to PC | ✓ | ✗ |
| can delete unsatisfactory images | ✓ | ✗ |

Note how we can compare and contrast these types of cameras.

Comparing features which are similar:

- 1 Both cameras have lenses.
- 2 Like the conventional camera, the digital camera has a viewfinder.

Contrasting features which are different:

- 3 The conventional camera requires chemical processing whereas the digital camera does not.
- 4 The conventional camera uses film unlike the digital camera.
- 5 With a digital camera you can transfer images directly to a PC but with a conventional camera you need to use a scanner.
- 6 With digital cameras you can delete unsatisfactory images however with conventional cameras you cannot.

(but) = whereas [weərs] - but but
require [rɪkwaɪə]

7 Study this data about storage devices. Then complete the blanks in the following sentences comparing and contrasting the different types.

| Device | Read/Write | Speed | Media Capacity | Media Removable | Cost |
|---------------------|----------------|----------------|----------------|-----------------|--------|
| Floppy disk | Read and write | Slow | Very low | Yes | Low |
| Fixed hard disk | Read and write | Fast | Very high | No | Medium |
| Removable hard disk | Read and write | Medium to fast | High | Yes | Medium |
| CD-ROM | Read only | Medium | High | Yes | Low |
| CD-R | Recordable | Slow | High | Yes | Medium |
| CD-RW | Read and write | Medium | High | Yes | Medium |
| CD-MO | Read and write | Medium | High | Yes | High |
| DVD-ROM | Read only | Medium | High | Yes | Medium |
| DVD-RAM | Read and write | Medium | Very high | Yes | High |
| Magnetic Tape | Read and write | Very slow | High | Yes | Medium |

- 1 You can write to hard disks faster than optical disks. *kanecery*
- 2 Floppy disks have a lower capacity than other devices. *age*
- 3 CD-ROMs and floppy disks are both low priced.
- 4 DVD-RAM has a higher capacity than other optical disks.
- 5 CD-ROMs cannot be re-recorded but some other optical disks can be.
- 6 Like hard disks, you can read from and write to CD-MO drives.
- 7 Unlike CD-ROMs, CD-Rs are recordable. *enobay*
- 8 Magnetic tape is much slower other devices.
- 9 Both DVD-RAM and fixed hard disks have very high media capacity. *muqua*
- 10 Floppy disks are cheap but DVD-RAM is expensive. *boye*

8

Write your own comparison of printer types.

| Type | Speed | Text Quality | Graphics Capability | Colour Quality | Cost |
|------------------|---------------------|-------------------|---------------------|---------------------------------|----------------|
| Dot-matrix | Slow to medium | Fair to good | Limited | Fair if you add a colour option | Low |
| Ink-Jet | Medium to fast | Good to excellent | Good to excellent | Good to Very Good | Low to high |
| Laser | Medium to very fast | Excellent | Good to excellent | Good in colour laser printers | Medium to high |
| Thermal Transfer | Medium to fast | Excellent | Good to excellent | Good to superior | Medium to high |
| Solid Ink | Medium to fast | Excellent | Good to excellent | Good | Medium to high |
| Electro-static | Slow to fast | Fair to good | Fair to good | Fair to good | Low to high |

PROBLEM-SOLVING**9**

Study this list of needs. Which type of peripheral would you advise in each case?

- 1 inputting printed graphics
- 2 building cars
- 3 controlling the screen cursor in a fast action game
- 4 making choices on a screen in a public information terminal
- 5 recording moving images
- 6 recording a book loan in a library
- 7 printing very high quality text and graphics
- 8 creating drawings
- 9 printing building plan drawings
- 10 recording sound
- 11 listening to music without disturbing others
- 12 storing programs and data
- 13 inputting a lot of text
- 14 backing up large quantities of data

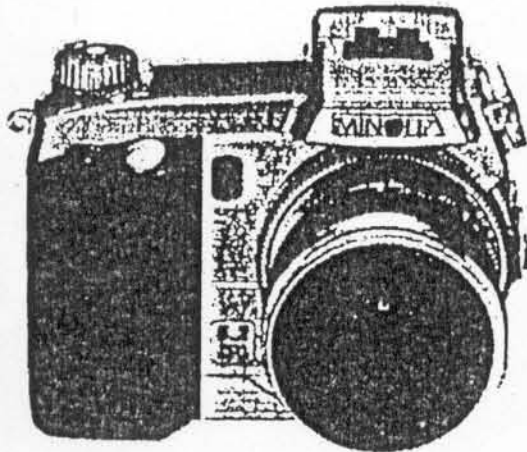
WRITING

10 Describe the EPOS till shown in Fig 1. Explain the function of each peripheral using the structures studied in Unit 2.

11 Check these websites for the latest digital cameras. Compare the newest cameras with the one described in Fig 3. You will find its specifications on www.canon.com.



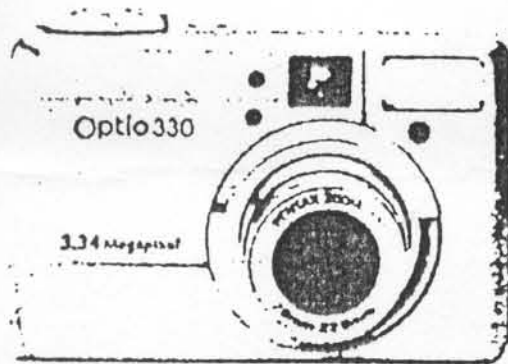
www.minolta.com



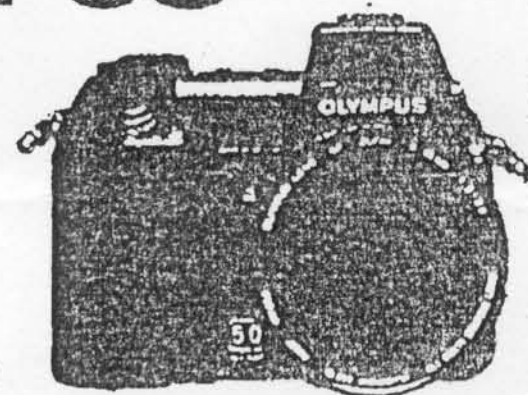
www.fujifilm.com



www.pentax.com



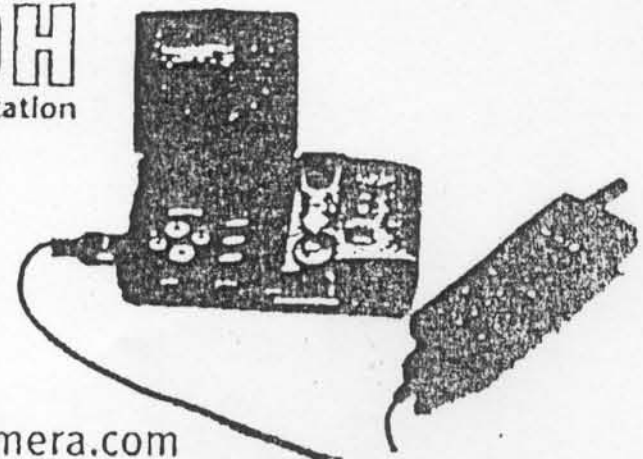
www.olympus.com



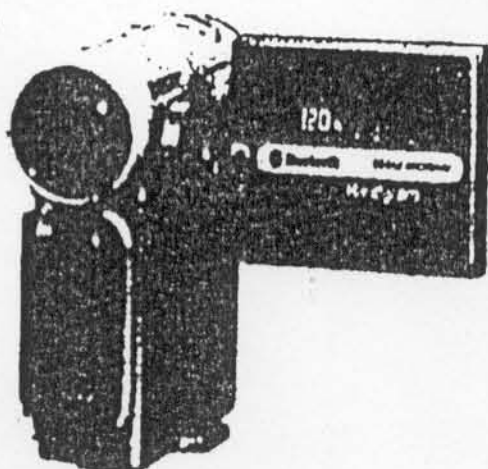
www.samsungcamera.com



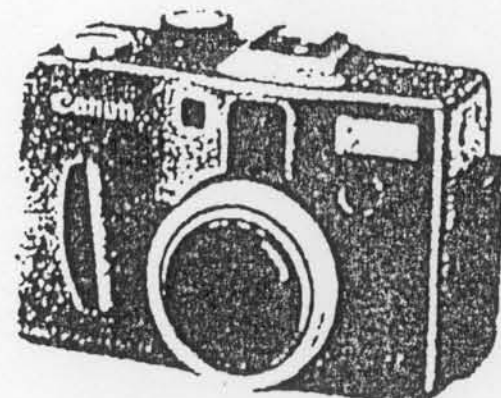
www.ricohcamera.com



www.sony.com



www.canon.com



SPECIALIST READING

A Find the answers to these questions in the following text.

- 1 What is Currie Munce's main aim?
- 2 How quickly did the possible areal density of hard disks increase in the 1990s?
- 3 How long does Munce think magnetic recording technology will continue to make rapid advances in capacity?
- 4 What problem does he predict for magnetic storage?
- 5 What is the predicted limit for discrete bit magnetic storage capacity?
- 6 What storage technologies might replace current magnetic systems? /
- 7 What is the advantage of holographic storage being three-dimensional?
- 8 What improvements are predicted due to the fast access rates and transfer times of holographic storage?
- 9 What is predicted to be the most important high capacity removable storage media in the next 10 years?
- 10 What method of software distribution is likely to replace optical disks?

Ready for the Bazillion-Byte Drive?

Thinking about writing your memoirs – putting your life story down on paper for all eternity? Why not skip the repetitive strain injury and just capture your whole life on full-motion video, putting it all in a device the size of a sugar cube? It might not be as far off as you think.

- Currie Munce, director of IBM's Advanced HDD Technology Storage Systems Division, has one avowed goal: Build bigger storage. Recently Munce and his fellow Ph.Ds restored Big Blue's lead in the disk space race with a new world record for areal (bit) density: 35.3 gigabits per square inch – roughly three times as dense as any drive shipping at press time.
- During the 1990s, areal density doubled every 18 months, keeping pace with the transistor density gains predicted by Moore's Law. But increasingly daunting technical challenges face those who would push the storage envelope further. 'I think magnetic recording technology has another good 5 to 10 years,' says Munce. 'After that, we'll see substantial difficulties with further advances at the pace people are accustomed to.'

- From here on, a phenomenon called superparamagnetism threatens to make densely-packed bits unstable. Provided that new developments continue to thwart superparamagnetic corruption, scientists speculate that the theoretical limit for discrete bit recording is 10 terabits per square inch (1 terabit = 1,000 gigabits).

Approaching this limit will require new technologies. Two possible contenders are atomic force microscopy (AFM) and holographic storage.

- 35 AFM would use a spinning plastic disk, perhaps inside a wristwatch, and a tiny, 10-micron cantilever with a 40-angstrom tip (an angstrom represents the approximate radius of an atom) to write data. In theory, AFM will allow densities of
40 300 to 400 gigabits per square inch.

While AFM is still in the lab, holographic storage is closer to reality. According to Rusty Rosenberger, optical program manager for Imation, 'We are targeting a 5 $\frac{1}{4}$ -inch disk with
45 125GB of storage and a 40MB-per-second transfer rate.' Future iterations of holographic systems should improve substantially.

The three-dimensional nature of holography makes it an appealing storage medium because
50 'pages' of data can be superimposed on a single volume – imagine transferring a whole page of text at once as opposed to reading each letter in sequence. Hans Coufal, manager of IBM's New Directions in Science and Technology Research
55 division, predicts that the fast access rates and transfer times of holographic storage will lead to improved network searches, video on demand, high-end servers, enterprise computing, and supercomputing.

60 Meanwhile, also-ran technologies are thriving. Tape, first used for data storage in 1951 with the Univac I, has been revitalized by the corporate hunger for affordable archiving solutions. In the consumer arena, says Dataquest analyst Mary
65 Craig, recordable CD-ROMs and DVDs will remain the dominant high-capacity removable storage media for the next decade. Despite their failure to match the areal density gains of hard disks, optical disks are cheap to produce, making
70 them ideal for software distribution (until a mature digital rights management system facilitates online delivery). Finally, solid state options such as flash cards can't yet match the pricing of hard disks at high capacities.

75 Further out, scientists salivate over the prospect of data manipulation and storage on an atomic level. Because consumer demand for capacity is lagging behind what technology can deliver, bringing new storage options to the masses will
80 depend on seeing the need for more space.

B Re-read the text to find the answers to these questions.

1 Match the terms in Table A with the statements in Table B.

Table A

- | | |
|---|---------------------------|
| a | Big Blue |
| b | Areal density |
| c | Moore's Law HT |
| d | Superparamagnetism |
| e | Terabit HT |
| f | AFM |
| g | Angstrom |

Table B

- | | |
|------------------|--|
| A i | Atomic force microscopy |
| ii | The approximate radius of an atom |
| a iii | IBM |
| b iv | The data capacity of a storage device measured in bits per square inch |
| c v | Prediction that the number of transistors that can be incorporated into a processor chip will double every 18 months |
| vi | A phenomenon that threatens to make densely packed bits unstable in magnetic storage devices |
| d vi | One thousand gigabits |

2 Mark the following statements as True or False:

- The development of AFM is more advanced than holographic storage.
- The predicted maximum storage density of AFM is 400 gigabits per square inch.
- Holography works in 3D.
- Univac I was the first computer to use tape storage devices.
- Users want higher capacity storage devices than technology can provide.