

2.1 Types and methods of data transmission

Name: _____ Class: _____ Date: _____

Total: 10 marks

Objective

Build the skills to answer exam questions on **data transmission** 数据传输—**packets** 数据包 and packet switching, **serial/parallel** 串行/并行, and **simplex/duplex** 单工/双工.

You must be able to:

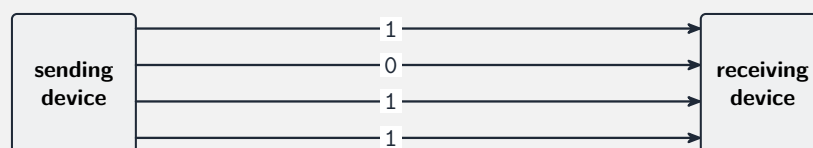
- describe a packet (header, payload, trailer) and packet switching
- compare serial and parallel transmission
- compare simplex, half-duplex and full-duplex

1 Worked examples

■ Transmission methods

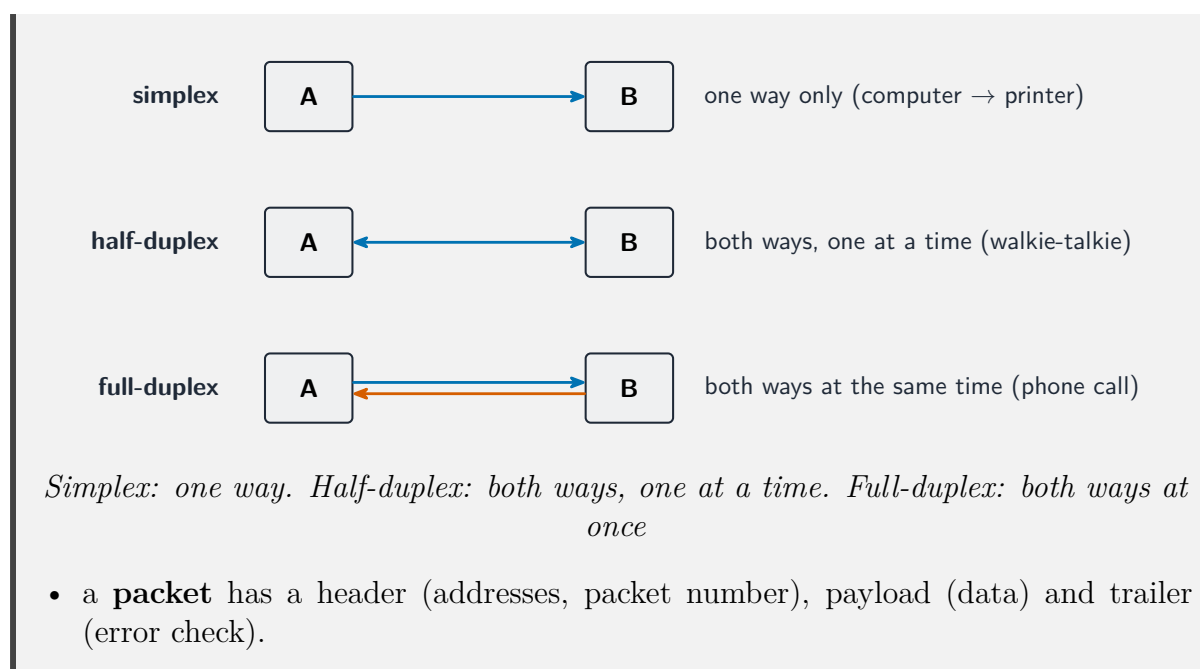


serial: one bit at a time, one wire



parallel: several bits at once, several wires

Serial: one bit at a time, good over long distances, cheaper. Parallel: several bits at once, short distances



2 Practice

2.1 Name the three parts of a packet. [3]

2.2 State the difference between serial and parallel transmission. [2]

3 Exam-style questions

3.1 A walkie-talkie, where only one person speaks at a time, uses: [1]

- A simplex
- B half-duplex
- C full-duplex
- D parallel

3.2 Data is sent across a network as packets.

(a) State two benefits of sending data as packets. [2]

(b) Explain why packets may need to be reordered at the receiver. [2]

4 Go further

You are now ready for the real exam questions on this subtopic. Open the **2.1 Data transmission** past-paper sheet in the Library, or try these in **Practice mode**:

- 0478/13 N25 —Q3 (data transmission)
- 0478/11 J24 —Q4 (serial / parallel)

Solutions

2.1 header; payload; trailer.

2.2 serial sends one bit at a time down one wire; parallel sends several bits at once down several wires.

3.1 B. One at a time both ways is half-duplex.

3.2 (a) any two of: only a lost packet is resent (not the whole file); packets can take different routes; many users share the connection.

(b) packets can take different routes and arrive out of order; the packet numbers are used to put them back in the right order.