Component 3 Learning Aim D Planning and communication in digital systems D1 Forms of Notation
Information and Data Flow Diagrams

Presenting Information

Information may be presented in a number of different ways:

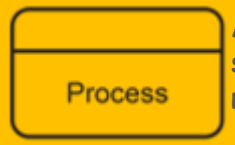
- Written descriptions
- Tables
- Charts
- Diagrams
- Storyboards
- Infographics
- Dashboards

Data Flow Diagrams

A data flow diagram shows:

- Who or where the input data comes from
- How data flows around the system
- How the data is processed
- What data is stored
- Who or where data from the system is output to.

A person, organisation or another system which sends or receives information



A process or function, sometimes but not necessarily numbered

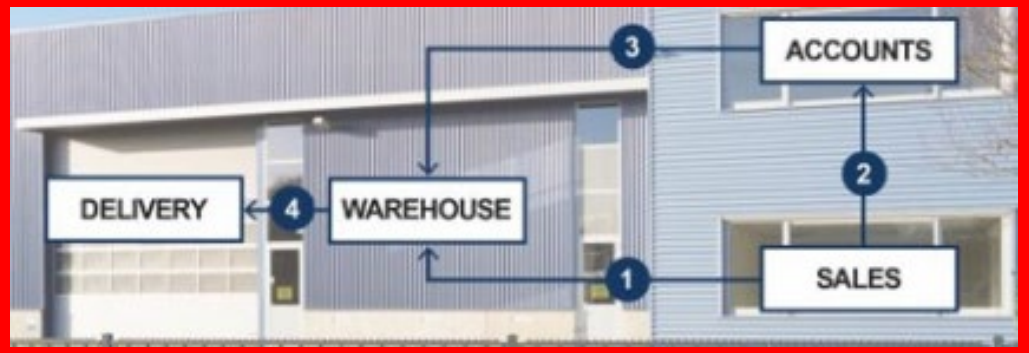
A file or database

Data or information flow shown by the direction of the arrow

Information Flow Diagrams (IFDs)

IFDs show how information flows through a system or organisation including:

- People / users of the system
- How information flows between organisations and how information flows between different areas of an organisation

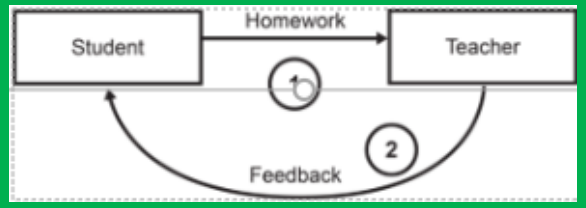


How to create IFDs

Use squares for key parts of the system such as people or departments.

Use arrows to show how the information flows around the system

Label the arrow with what information is being transferred

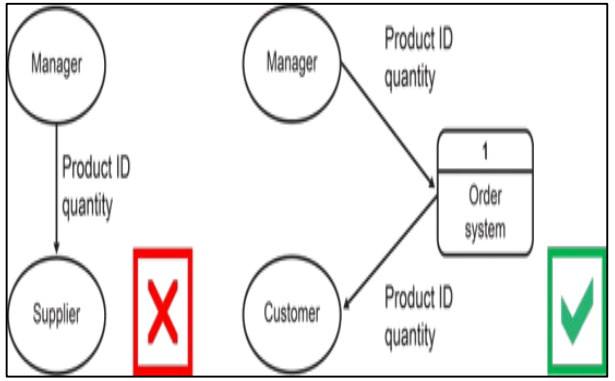


To create a data flow diagram:

- Identify the **process** and the **entities** shown in the data flow diagram (DFD)
- Label the data flows

Points to note when creating data flow diagrams:

- You should never draw a data flow line between two entities
- Data flows always go to, or come from, a process
- A process box needs at least one input and at least one output
- Do not draw a data flow from an external entity directly to or from a data store
- Numbering process boxes may be useful if you need to refer to the processes
- Data stores can also be numbered. D can also be used for a digital store and M for a manual store



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Flowcharts

Flowcharts

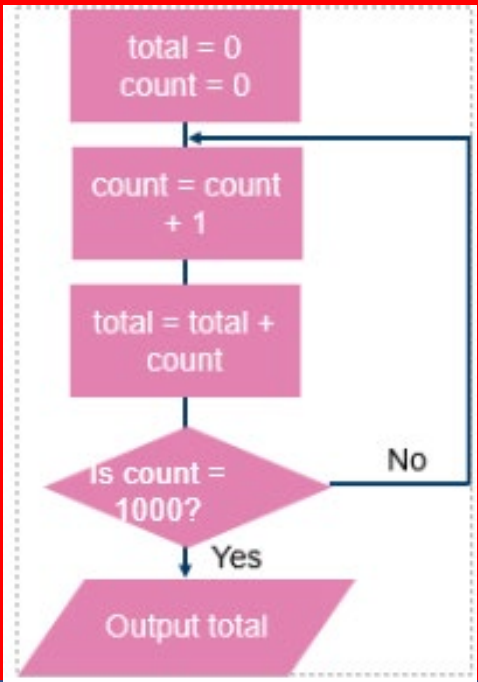
A flowchart is often a clearer way to present the steps required

They are easy to understand

They are less likely to be misunderstood than a list of text

Counting in a flow chart

The statement count = count + 1 means "Add 1 to the variable called count"

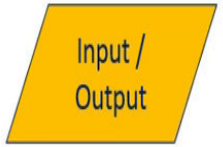


Flowchart Symbols

Terminator
Used to represent the Start and end of a program with the Keywords BEGIN and END.

Decision
Used to split the flowchart sequence into multiple paths in order to represent SELECTION and REPETITION.

Process
An instruction that is to be carried out by the program.



Input / Output
Used to represent data entry by a user or the display of data by the program.

Arrow
Indicates the flow of the algorithm pathways.

Subprogram
References another program within the program.

Real uses for flow charts

Companies will often create flowcharts to show what to do when a problem occurs, such as:

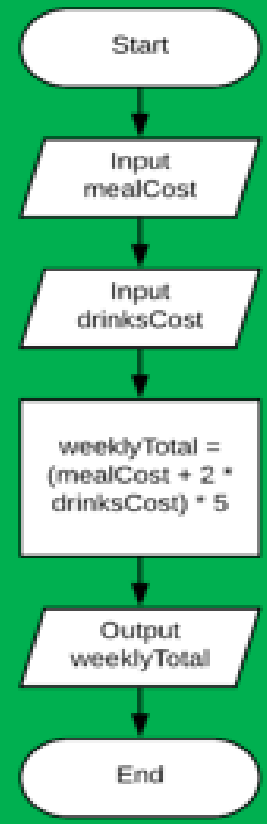
- Fire procedures
- Customer complaints
- Manufacturing defects
- Companies may also have procedures to help employees to do their day to day work

Variables in a flow chart

Variables allow us to store a number or text in a flowchart

Variables are often used in calculations Calculations will always be in a process box

You can input or output what is stored in the variable



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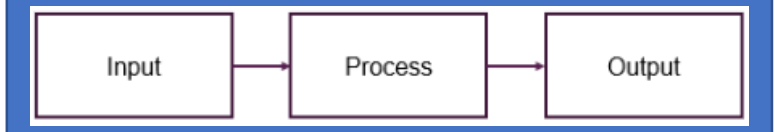
Systems Diagrams

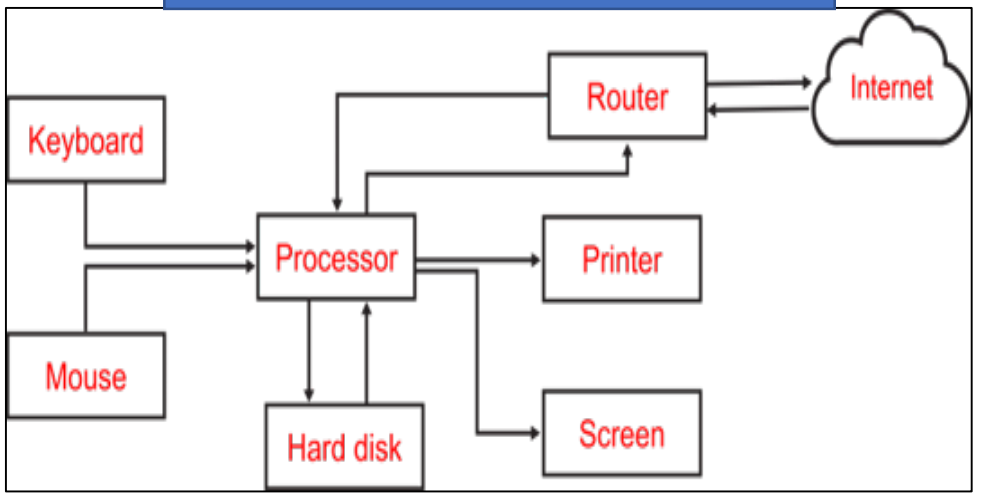
Computer Systems

A computer system consists of all the hardware and software required to perform the required tasks

At its simplest, a computer system consists of input, processing and output



A Simple System Diagram

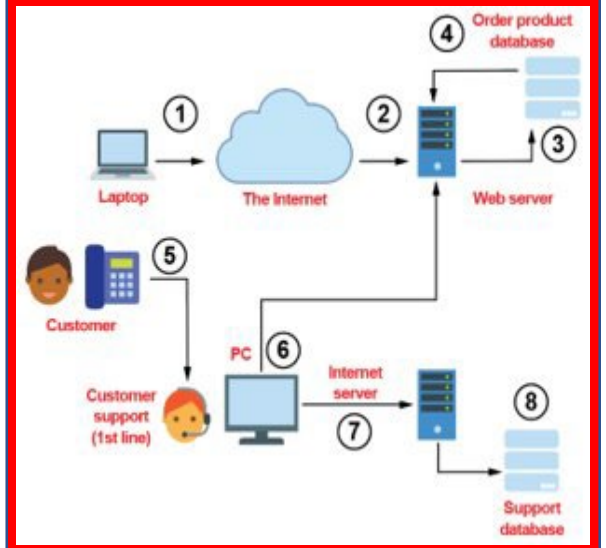


Other uses for Systems Diagrams

System diagrams can also be used for an organisation

System diagrams may use standard icons or be more informal

You may choose to just use boxes with text inside



Drawing a systems diagram

Most IT system diagrams will include:

- Hardware
  - Input / output devices
  - Storage devices / databases
  - Network equipment such as Wi-Fi access points
  - Computers / Smartphones / Tablets
- People involved in the system can also be included
- Processes or events are described

Step 1: Identify the key components
Step 2: Draw the key parts
Step 3: Connections
Step 4: Label the diagram

Why use system diagrams?

- They can give a lot of information in a small space:
  - Input and output devices
  - Connections between components and data or signals
  - Computers / servers involved
  - Communication devices
  - Feedback loops
- They are a good way to communicate designs, infrastructure and processes about IT and an organisation's systems
- They help in designing workable systems

Component 3 Learning Aim D Planning and communication in digital systems D1 Forms of Notation
Tables and Written Information

Written information

Written information is good for giving further analysis of data.

Uses in business

- Policies
- Catalogues
- Reports
- Emails
- Letters

Rules on writing:

- Write concisely
- Use appropriate language for your audience
- Check your writing for spelling, punctuation and grammar
- Include references and acknowledgements

For long documents or business reports:

- Include page numbers and a contents page
- Include a summary

Tables

Tables are a useful way of presenting information How the data is presented in a table makes a difference to how easy it is to extract useful information

Uses of tables:

- Timetabling
- Financial models
- Planning
- Survey results
- Flight departures / arrivals

Disadvantage:

A table may not be able to show all the required information

How to improve table design:

Giving the table a title

- Referencing the source of the data
- Including units for the speed
- Considering what data the audience needs
- Use formatting features to help the reader:
  - Conditional formatting makes it easier to see the difference in speeds
  - Bold column titles are clearer

Example Exam Question

4.A coffee shop chain is currently researching when their shops have the most demand from customers. They will be using this information to work out how many baristas they need to employ at any given time.

Their research will be presented as a report to the board of directors to help them make decisions.

(a) Describe **three** features that could be used in the report to make it easier to read.[6]

(b) As part of the research, a large amount of data has been found which shows how many customers use the shops in each hour they are open. This data will be presented in a table.

Describe **two** guidelines for creating a useful table.[4]