Digital Solutions 2019 v1.2

Supporting resource: Using data flow diagrams

Purpose

The purpose of this resource is to provide supporting information to the syllabus requirements for *Digital Solutions 2019*.
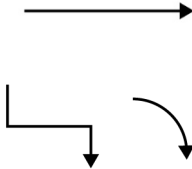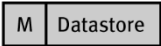
Syllabus subject matter

Process-oriented analysis methods

Data flow diagrams (DFD), which include data source, data flow, data storage and process, are used to represent system interrelationships, data, system or process-oriented workflow.

DFDs are graphical representations of data flow through an information system. They do not represent programming logic or processing steps. Data flow symbols are used to represent data source, flow, storage and processes (Figure 5).

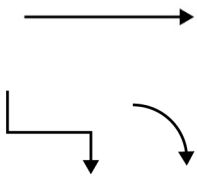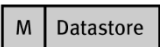**Figure 5: Data flow diagram symbols, their names and functions**

Symbol	Name and function	Symbol	Name and function
	Data source or **External entity** — a source or destination of data flow that is outside the area of study		**Data flow** — a connector shows relationships between the representative shapes
M Datastore	**Data store** — repository of data; 'D' indicates a permanent computer file; 'M' indicates a manual file; 'T' indicates a transient store, deleted after processing	Level Process	**Process** — transforms incoming data flow into outgoing data flow

See: Section 1.2.5 Subject matter in the *Digital Solutions 2019 syllabus*, www.qcaa.qld.edu.au/senior/senior-subjects/technologies/digital-solutions/syllabus.

Further considerations

Digital Solutions 2019 subject matter describes conventions for writing pseudocode (above). While these are not exhaustive, additional information outlined in the tables that follows may also be useful when providing students with learning opportunities.

Symbol	Name and function	Symbol	Name and function
	Data source or **External entity** — a source or destination of data flow that is outside the area of study		**Data flow** — a connector shows relationships between the representative shapes
	These elements: • must connect to at least one process • are labelled with nouns.		These connectors: • must travel in only one direction and to or from a process • are labelled with nouns • describe information, not actions.
M | Datastore	**Data store** — repository of data	Level Process	**Process** — transforms incoming data flow into outgoing data flow
	These elements are labelled with: • nouns • a 'D' to indicate a permanent computer file • an 'M' to indicate a manual file • a 'T' to indicate a transient store which is deleted after processing.		These elements: • must have at least one input flow and one output flow • must transform data • are numbered for identification purposes • are labelled with verbs.

Supplementary explanations

The following explanations also provide support for teaching and learning.

Term	Explanation
external data	data that is from a source external to the digital solution; it includes open data, flat files, databases managed by a DBMS, data streams or logs collected from remote sensors and media collections
internal data	data that is part of the digital solution; it includes data stored in memory, entered by the user through the user interface or collected by local sensors, and may also include local files or databases created by coded components of the digital solution
data structure	a particular way of organising data in a computer so that it can be used effectively, e.g. lists, dictionaries, arrays and objects; the aim is to reduce the space and time complexities of different tasks