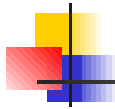


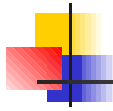
E-Genting Programming Competition 2004

Pre-Competition Workshop, Week 3
5 October 2004



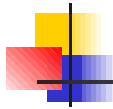
Programs versus Systems

- ¶ If a programming problem can be conveniently solved by top-to-bottom pseudo-code alone, it's a program.
- ¶ If a programming problem can only be solved by considering multiple cooperating processes, it's a system.



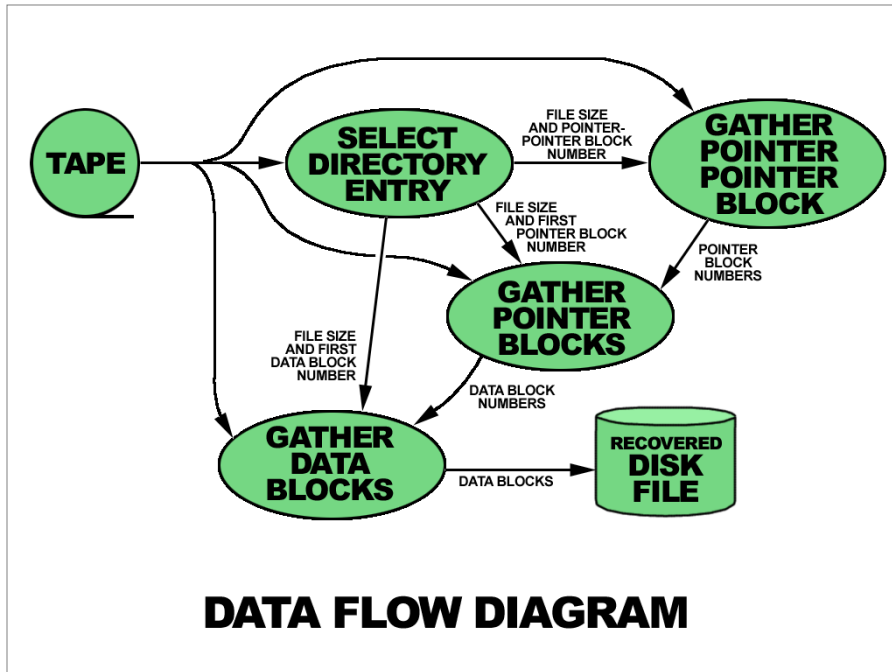
System Design Tools

- dataflow diagrams;
- pseudo-code;
- state transition diagrams and tables;
- entity relationship diagrams.



A Common Theme

- dataflow diagrams;
- flowcharts;
- state transition diagrams;
- syntax diagrams.

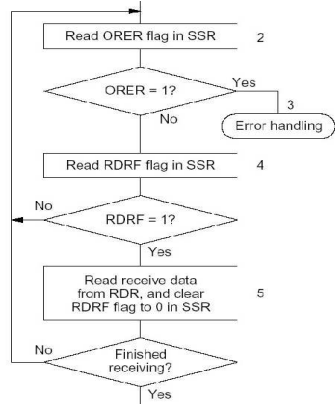


What is a Process?

A process is an encapsulated computational entity that:

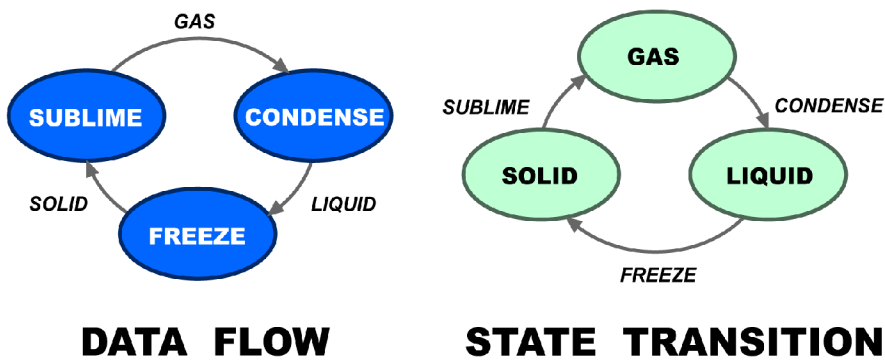
- ▣ receives input data;
- ▣ processes data;
- ▣ emits output data; and/or
- ▣ stores state information.

Flowcharts



A flowchart is a type of dataflow diagram in which the only datum that passes between the processes is the control token.

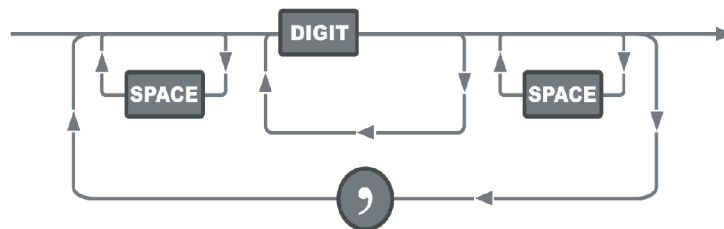
State Transition Diagrams 1



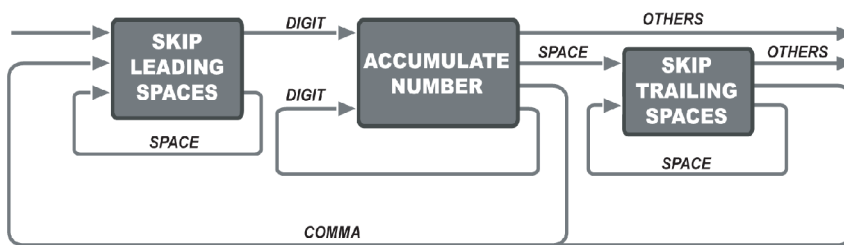


State Transition Diagrams 2

A state transition diagram is a specialised subtype of dataflow diagram that emphasises the treatment of an imagined or real variable by enclosing a description of each of the variable's states in a bubble; and then representing the processes that may operate on the variable by lines from one state to another.



SYNTAX DIAGRAM



STATE TRANSITION DIAGRAM



Think dataflow if there is:

- a requirement for a complex process that needs to be partitioned into sub-processes that are simpler and easier to program;
- a requirement to access information at one time, when the information is delivered at a different time;
- a requirement to read information in the middle of a top-to-bottom sequence, but the information is delivered via a call to the application (the client-client standoff).

