Process States and the Process State Graph

Processes
- a program in execution (simple definition)
- a process is an active entity, while a program is a static entity
- at most one process can be running on the CPU (or a single processor in a multiprocessor machine) at one time

Process States
- Each process is in exactly one of the following states at each instant of time:

  - **New**: The process is being created
  - **Running**: Instructions are being executed.
  - **Waiting**: The process is waiting for some event to occur (such as an I/O completion)
  - **Ready**: The process is ready to execute, but it must wait to be assigned to the processor
  - **Terminated**: The process has finished execution.

Process State Graph
- The process state graph is a conceptual model of how a process can change states.
- It does not correspond directly to a data structure in the operating system.
- It shows the valid changes that can be made to the process state and when these changes are made.