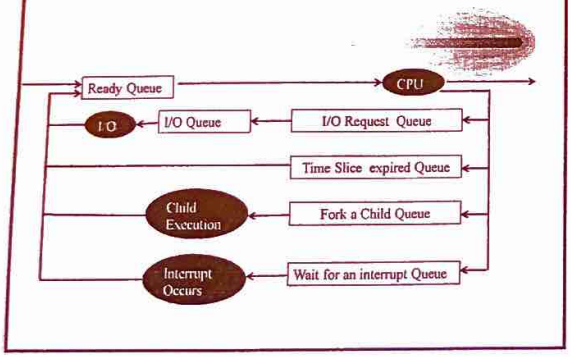
Processes

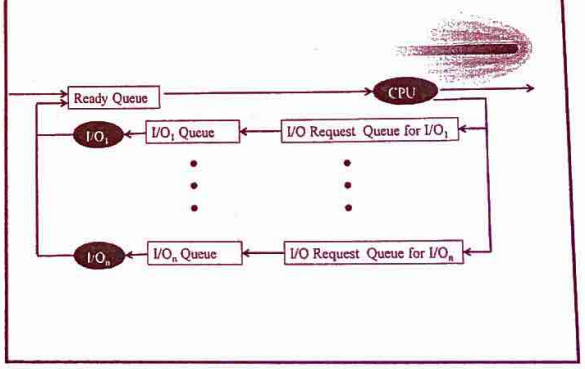
- What is a process?
- Why a process is referred to as an active entity?
- States of a process?
- Process Control Block
- Steps in Process scheduling
  - Queues
  - Schedulers

Process

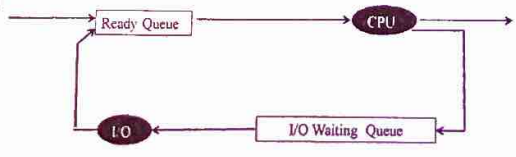
Queues involved in Process Scheduling

- Job Queue
- Ready Queue
- Other Queues
  - I/O Queues (one queue per I/O device)
  - Time Slice Expired Queue
  - Wait For An Event Queue
  - Fork a Child Queue

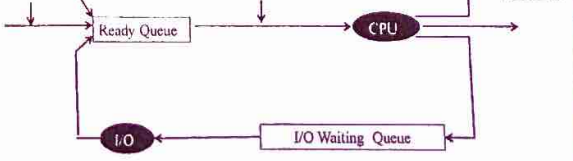




To focus on CPU scheduling the following simplified diagram is used.



To focus on CPU scheduling the following simplified diagram is used.



Processes Scheduling

Process Schedulers
- Long term
- Short term
- Medium-term

Processes Scheduling

Process Schedulers
- Long term
- Short term
- Medium-term

Comparison

a- Frequency of selecting a job
b- Speed

Processes Scheduling

Long term
- Degree of Multiprogramming
- Balancing the type of loaded programs

(I/O and CPU bound programs)

Processes Scheduling

Dispatcher

A module that actually gives control of the CPU to the process selected by the short-term scheduler.

Context Switch

Problem: Pure overhead
Solution: Having Multiple Register sets.
Example: DEC System 20

Processes Scheduling

Operations on a process
- Process Creation
- Process Termination

Processes Creation

A Process Creates a new process.
- Execution
  - (sequential or parallel)
- Sharing
  - (all, partial, or no sharing of resources and global variables)

Processes Termination

A Process is terminated when:

- Finished successfully
- A parent wish
  - Due to no further use for the task performed by the child process
  - Child over stepped its boundary in use of resources
- A Cascading termination occurs