→ Responsibilities of an OS

→ Interleave execution
→ Allocate resources
→ Share info
→ Sync among process

→ Process

→ Program in execution
→ Assigned to and execute on processor (maybe shared)

More than 1 word

→ Elements

→ Program Code
↳ Resources are assigned, but not a part of the process
→ Set of data on which it works

→ Attributes describing state of process
↳ Identifier (PID)
↳ State (on/off)
↳ Priority (Level)
↳ Counter (order)
↳ Pointer (Data)
↳ Context (Registers)
↳ I/O (Devices)

Meta Data

↳ Accounting (Time)

Process Control Block → Data struct that has all process elements

→ Process = Code + Data + PCB

Trace of a Process
↓
List

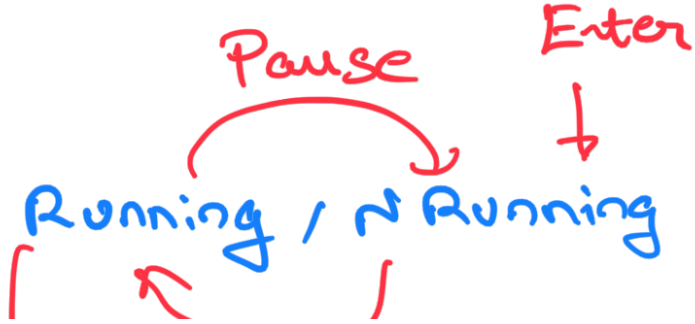
→ Time slot for every process - Slicing
→ Time slice is in ms; we see it as everything at sametime

Dispatcher → Switches from one process to another

Processor POV
↳ Dispatcher steps absent in process POV
↳ Interleaving

Trace of A
↓
Dispatcher
↓
Trace of B
⋮
And so on

State Process Model →



Exit Dispatch

Not Running

→ n processes
  ↳ Queue is used here

Process Birth and Death

→ Traditionally, OS created all processes
→ Process can create another process (Process spawning)

→ Termination
  ↳ Hardware
  ↳ User Action
  ↳ Fault or error
  ↳ Parent shuts Down

Reasons to Pause a Process

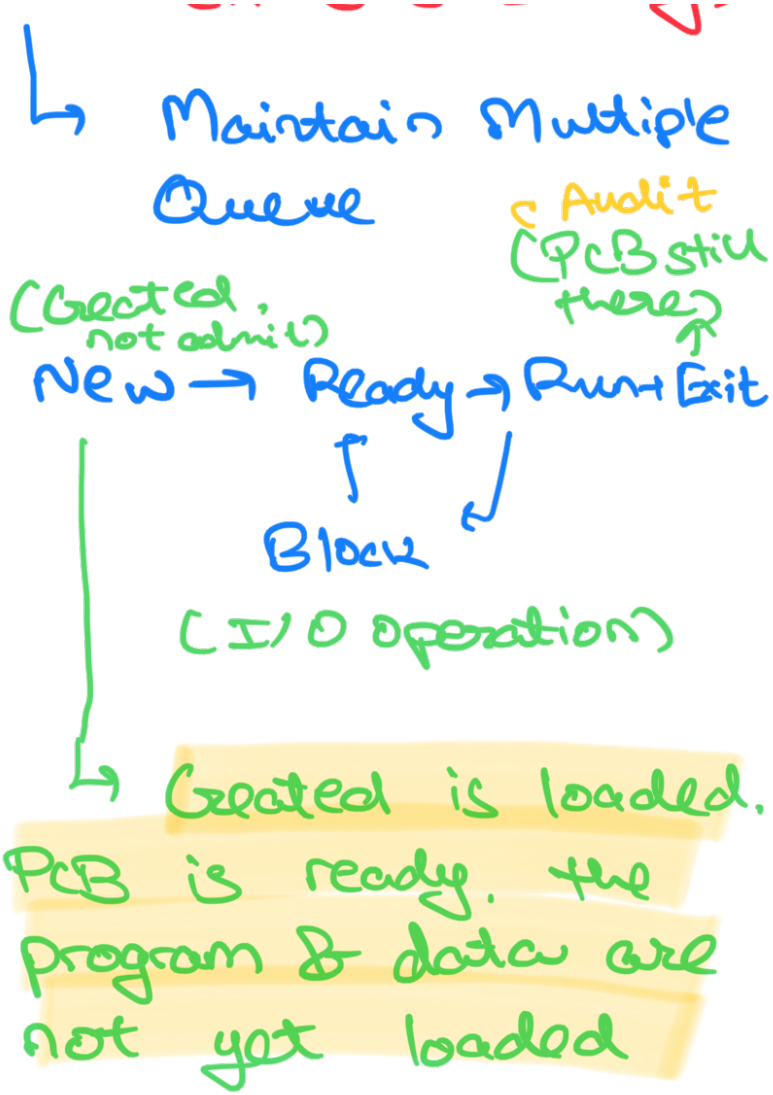
→ I/O Request
→ Ready to Run in next slot

Role of the Dispatcher

→ Scan the queue and get ready to run (Time consuming)

↳ Maintain Multiple Queue

★ 5 State Process Model



Ready - Exit → If a parent is exited / killed, child in ready → Exit
→ OS terminates for higher priority

Block - Exit → OS may require more memory

Multi Blocked Queue → Multiple queue for each event in

the blocked queues

→ They are async processes.

Summary: Process - Elements of a process - Program control board - meta data - Dispatcher - 3 State Process Model - Queing of a process - 5 State Process Model - Diff queue for Block and Ready process - Multi Block Queue - Transition states - Ready to Exit & Block to exit - Parent & child processes - Trace of process - Birth & Death of processes.