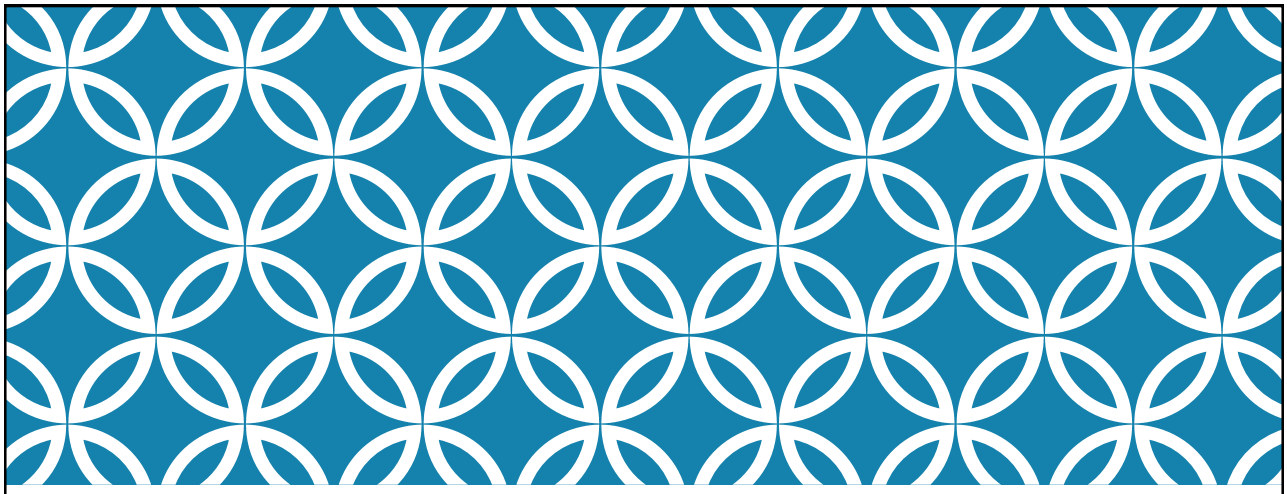

# CSCI 4210 OPERATING SYSTEMS

CPU Scheduling

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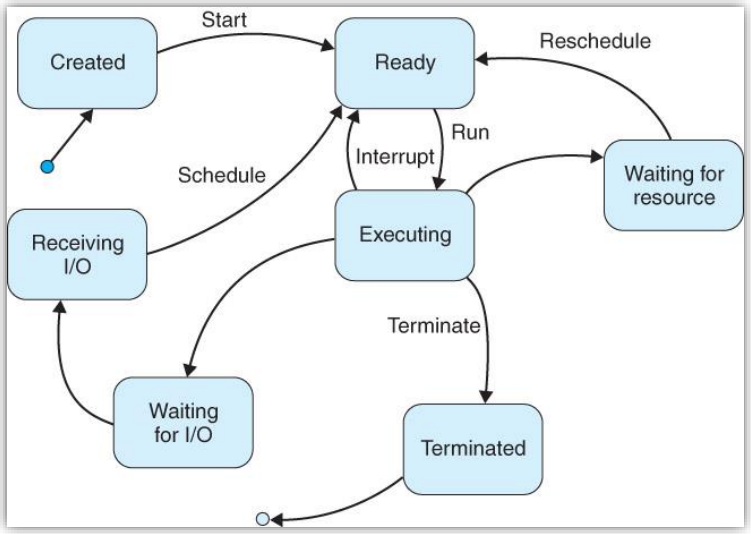
# PROCESS STATES

Each process in an operating system is in a specific state

State changes occur for a variety of reasons, e.g., an interrupt occurs, a timer expires, a resource becomes available, a signal is received, etc.

Most of the time, processes are in a "waiting" state of some sort




From Garrido et al [ISBN 978-1-449-62634-1]

# CONTEXT SWITCH

A context switch occurs each time the operating system switches its *context* from one process to another

The operating system maintains a Process Control Block (PCB) for each process, regardless of process state

PCBs contain register values, program counter, file descriptor table, page tables, etc.

$t_{context\text{-}switch} << t_{cpu\text{-}burst}$

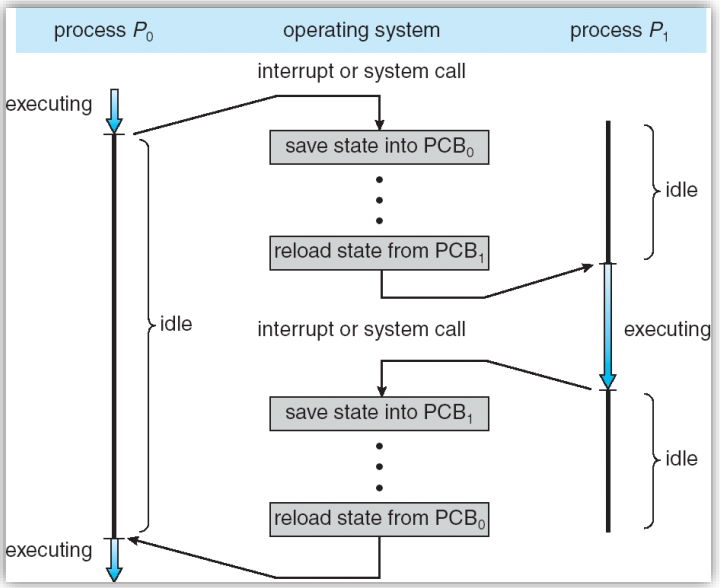



Figure 3.4 of Silberschatz et al [ISBN 978-1-118-80492-6]

# HISTOGRAM OF CPU BURST TIMES

CPU burst times for a typical process…

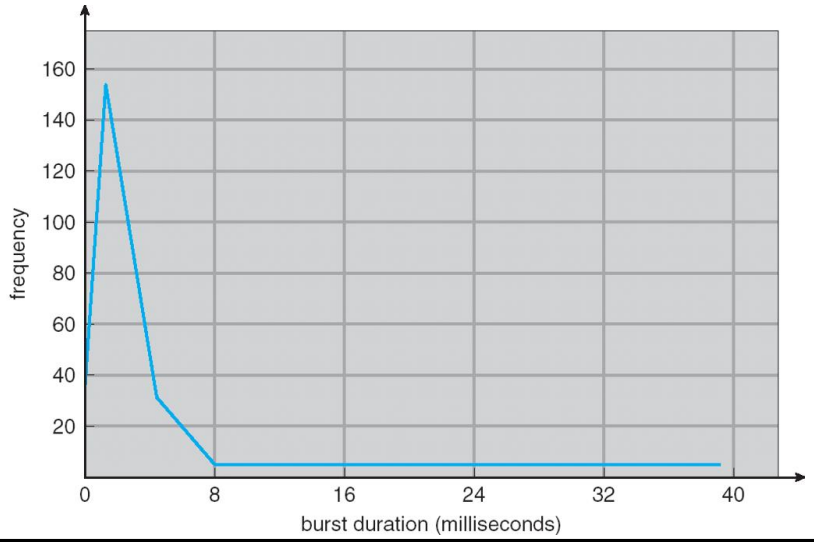



Figure 6.2 of Silberschatz et al [ISBN 978-1-118-80492-6]

# CPU UTILIZATION & MULTIPROGRAMMING

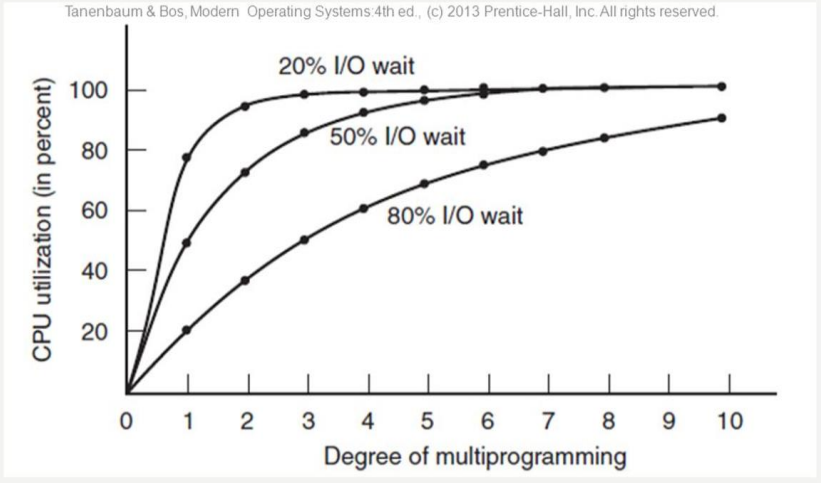



Figure 2-6. CPU utilization as a function of the number of processes in memory.

Figure 2.6 of Tanenbaum and Bos [ISBN 978-0-133-59162-0]