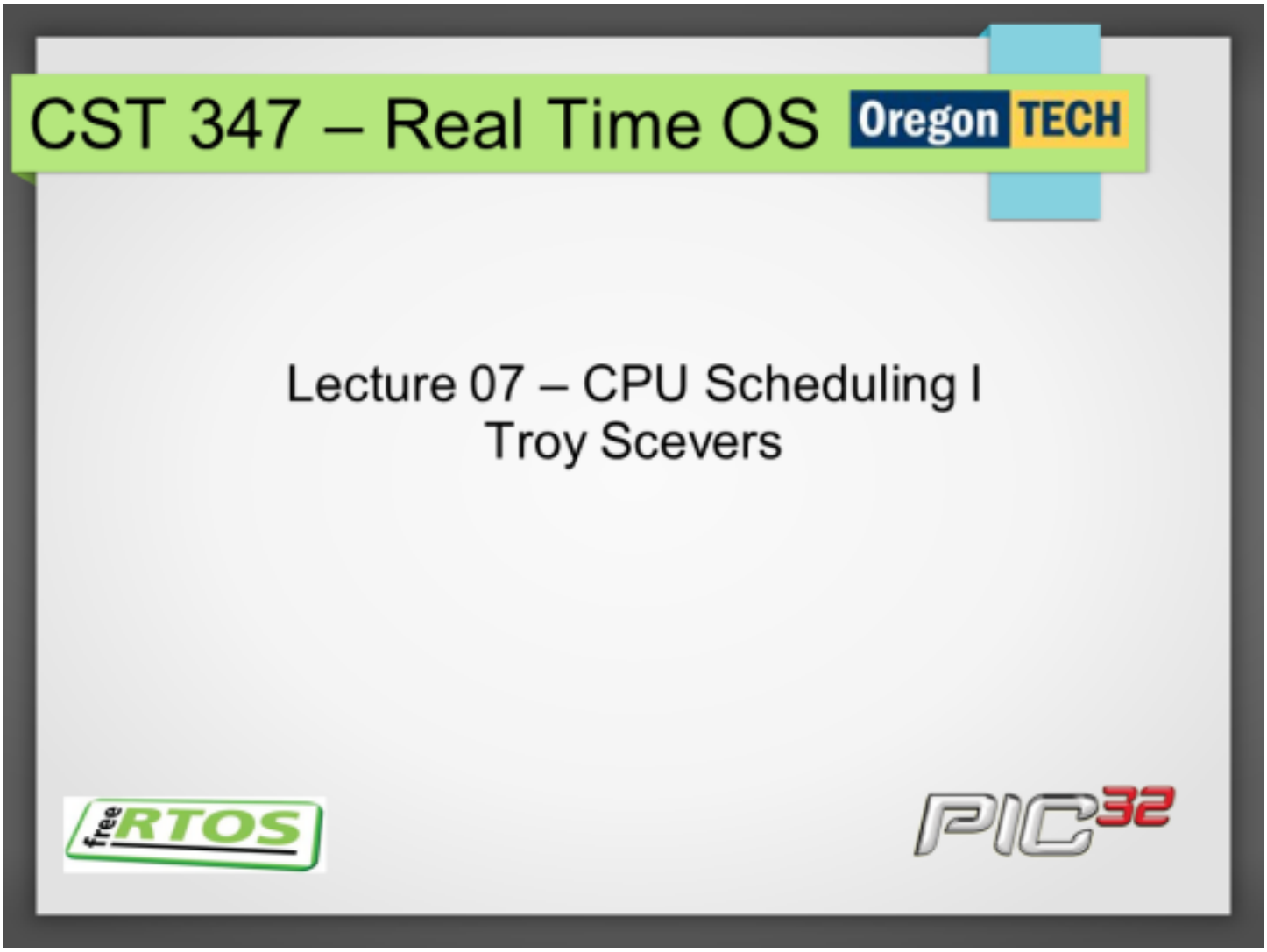
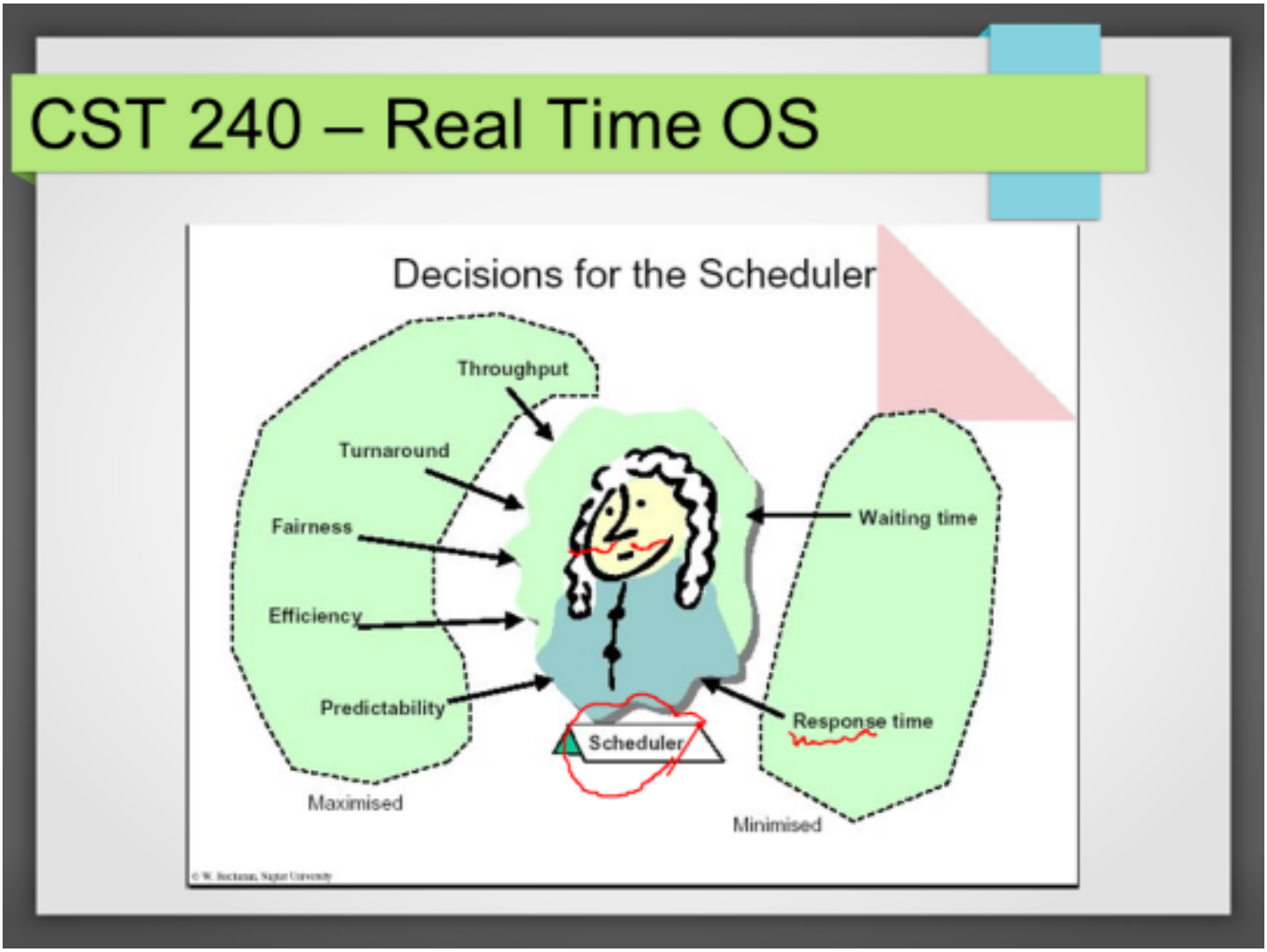
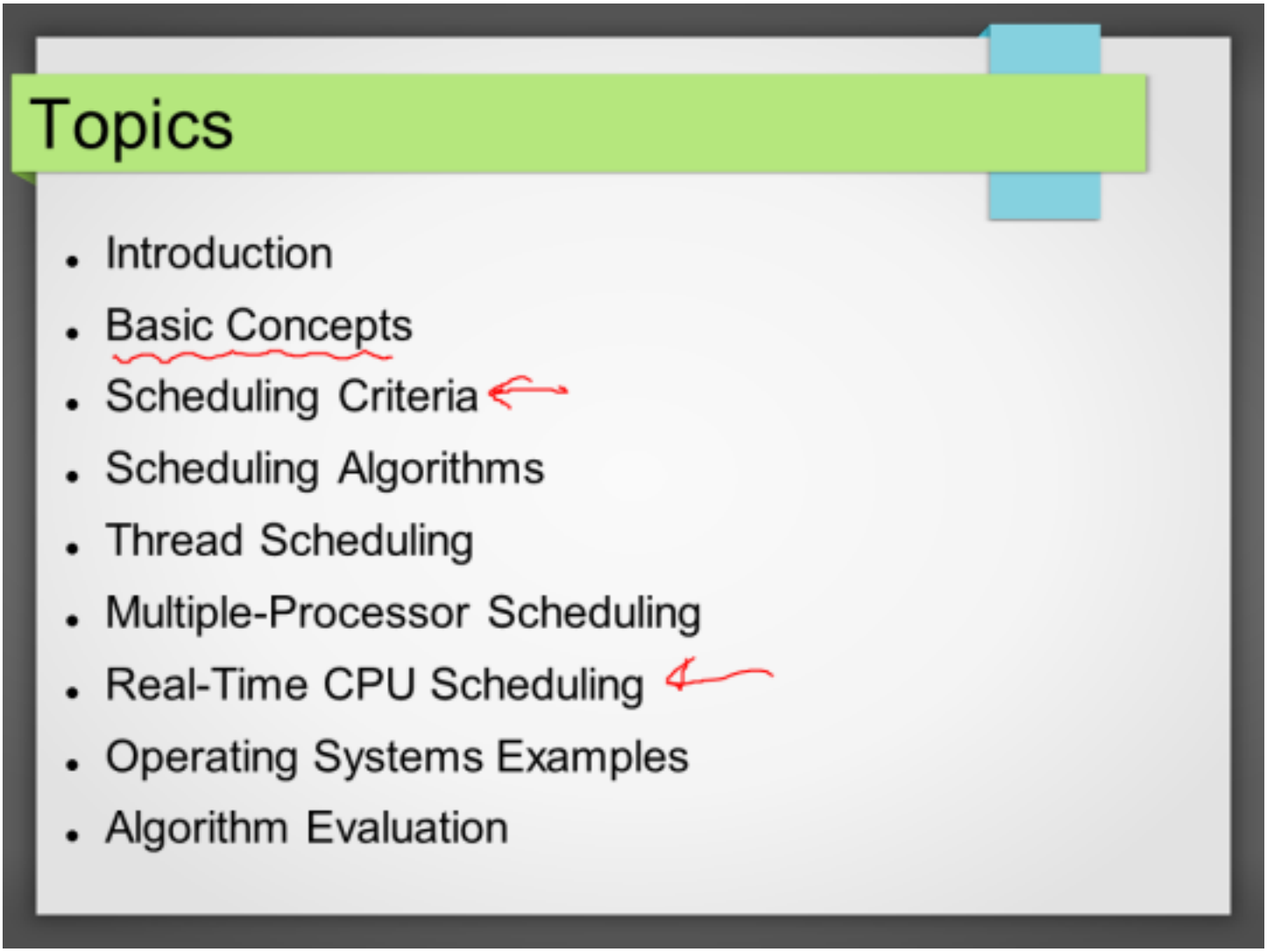
CST 347 ?? Real Time OS



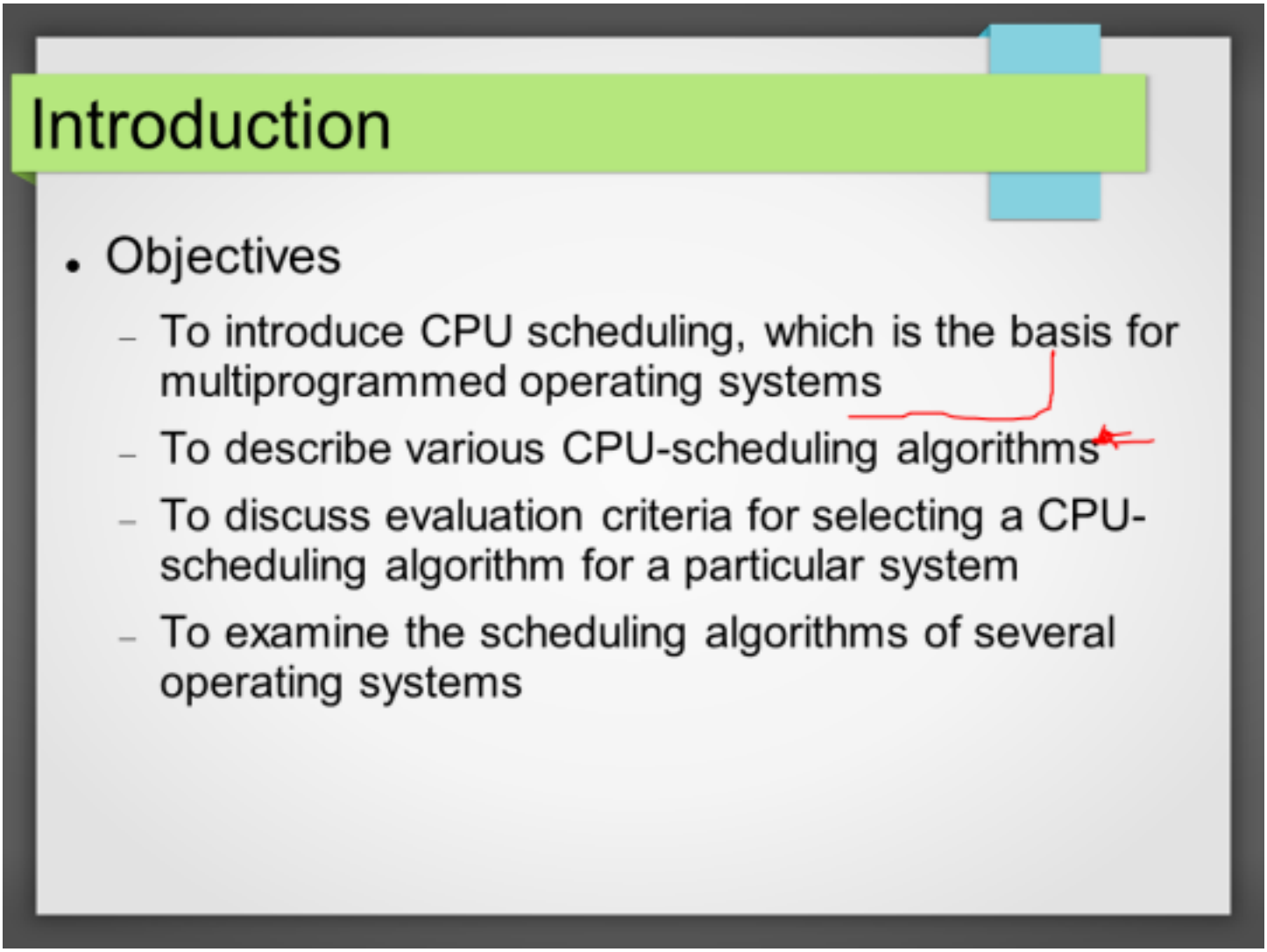
CST 240 ?? Real Time OS



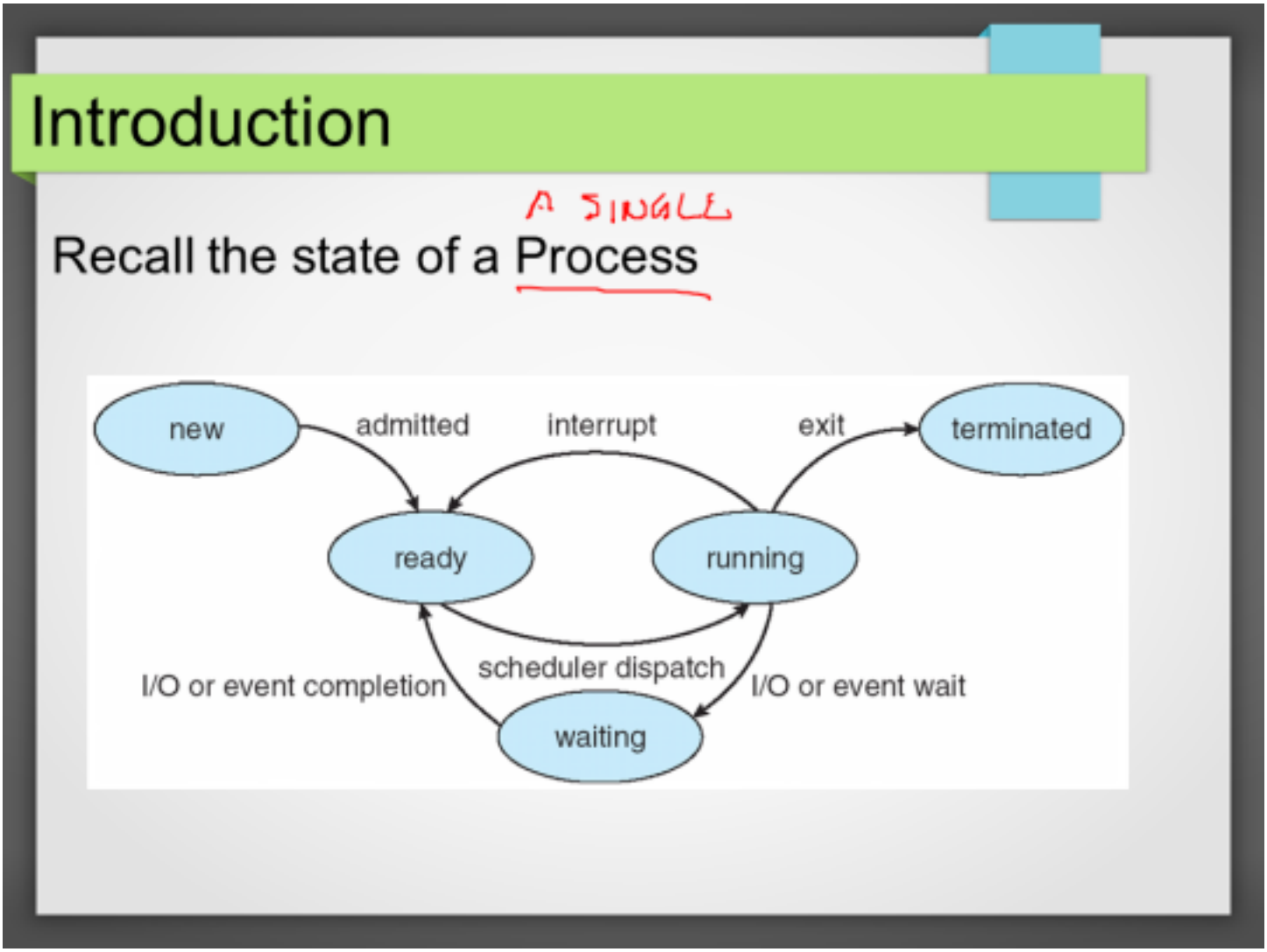
Topics


Topics
Introduction
Basic Concepts
Scheduling Criteria
Scheduling Algorithms
Thread Scheduling
Multiple-Processor Scheduling
Real-Time CPU Scheduling
Operating Systems Examples
Algorithm Evaluation

Introduction



Introduction



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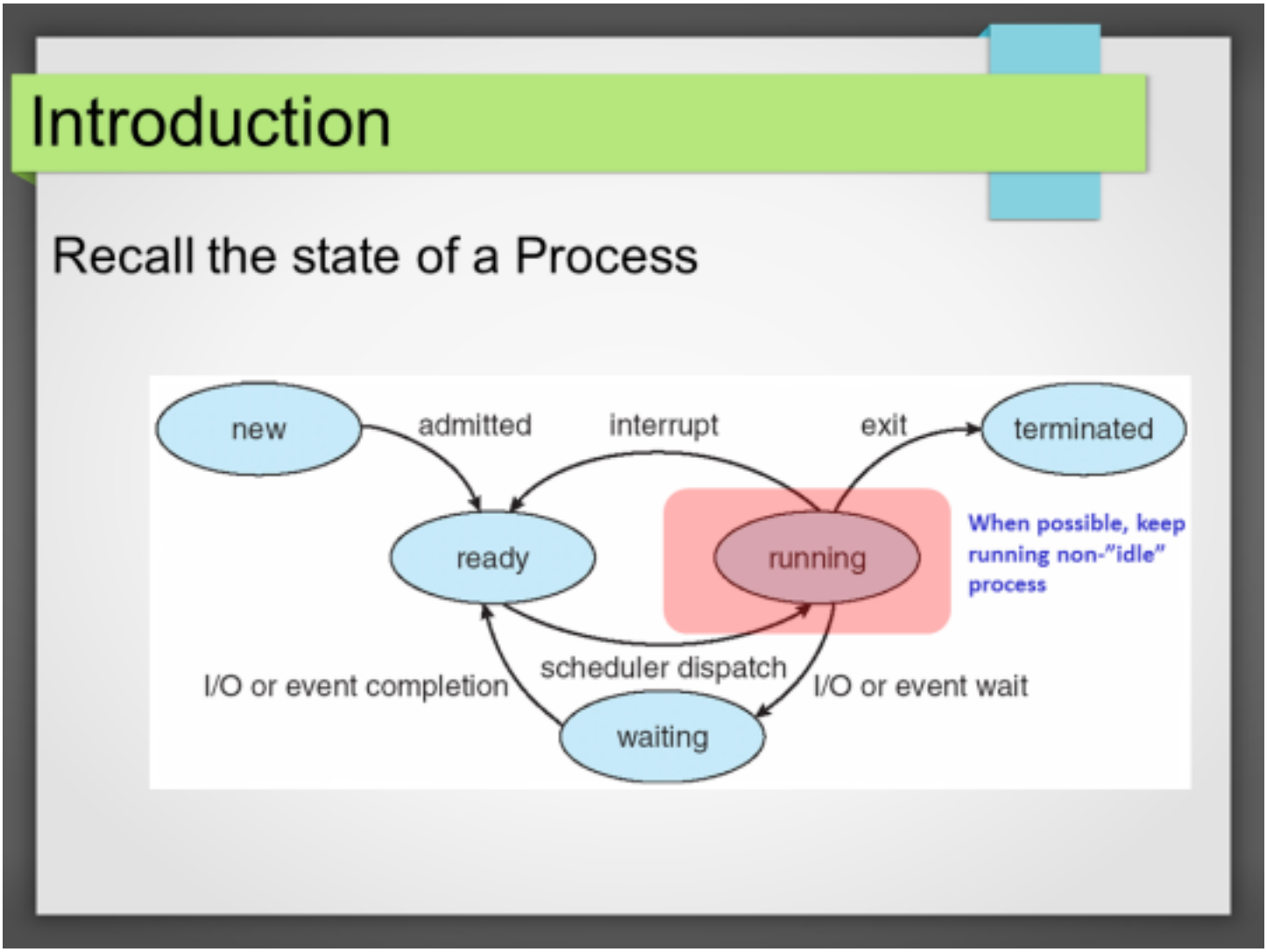

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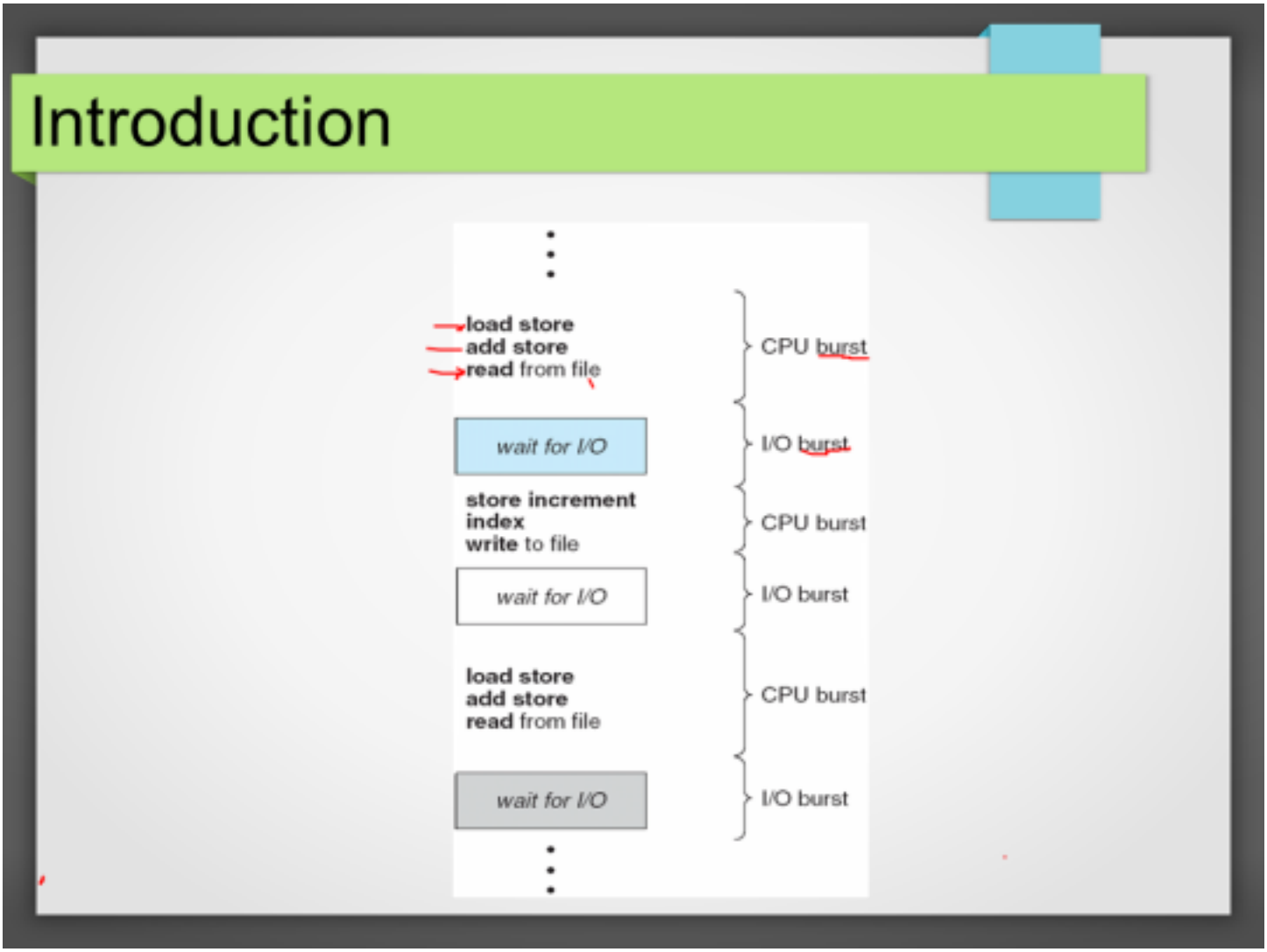

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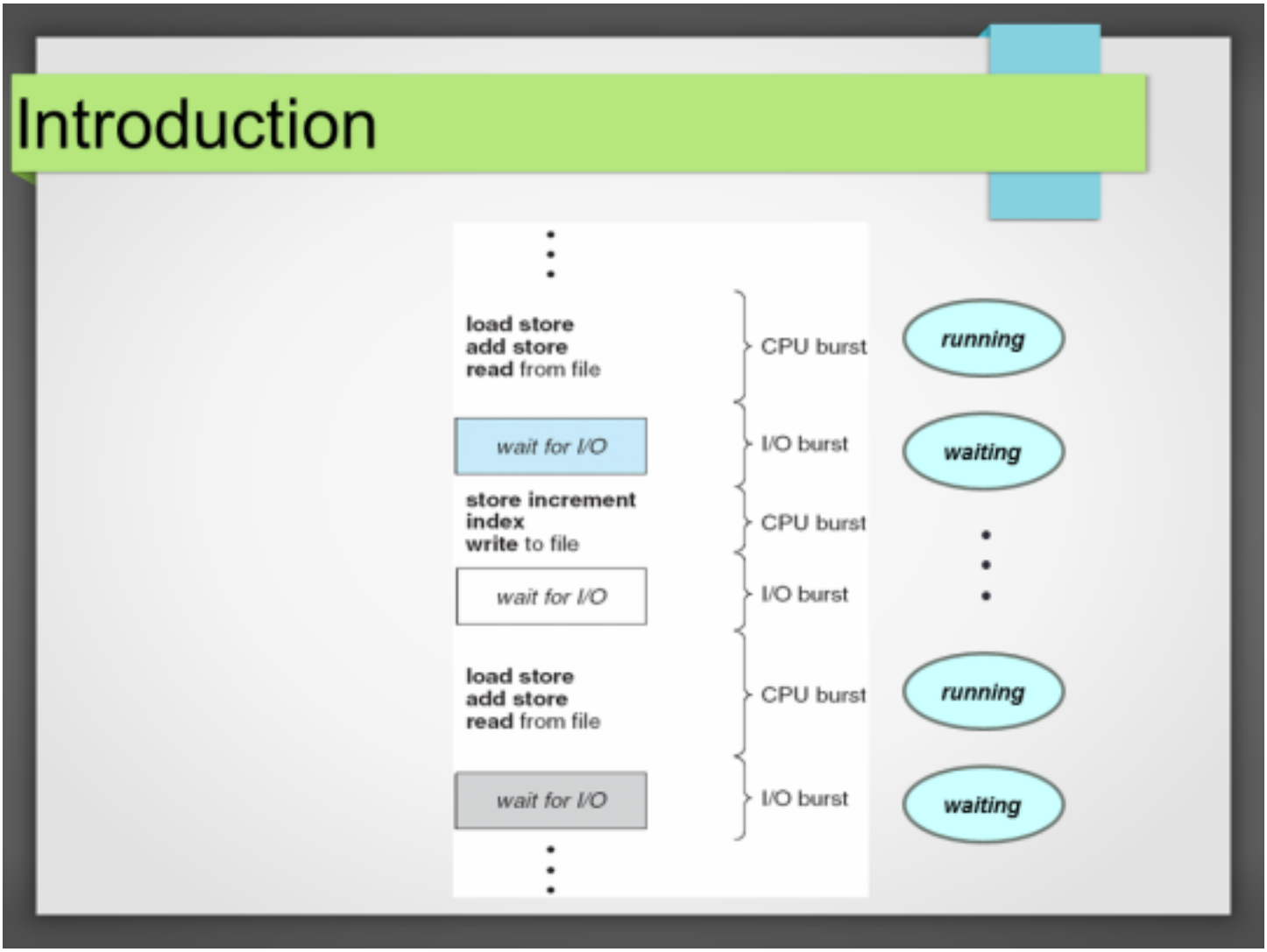

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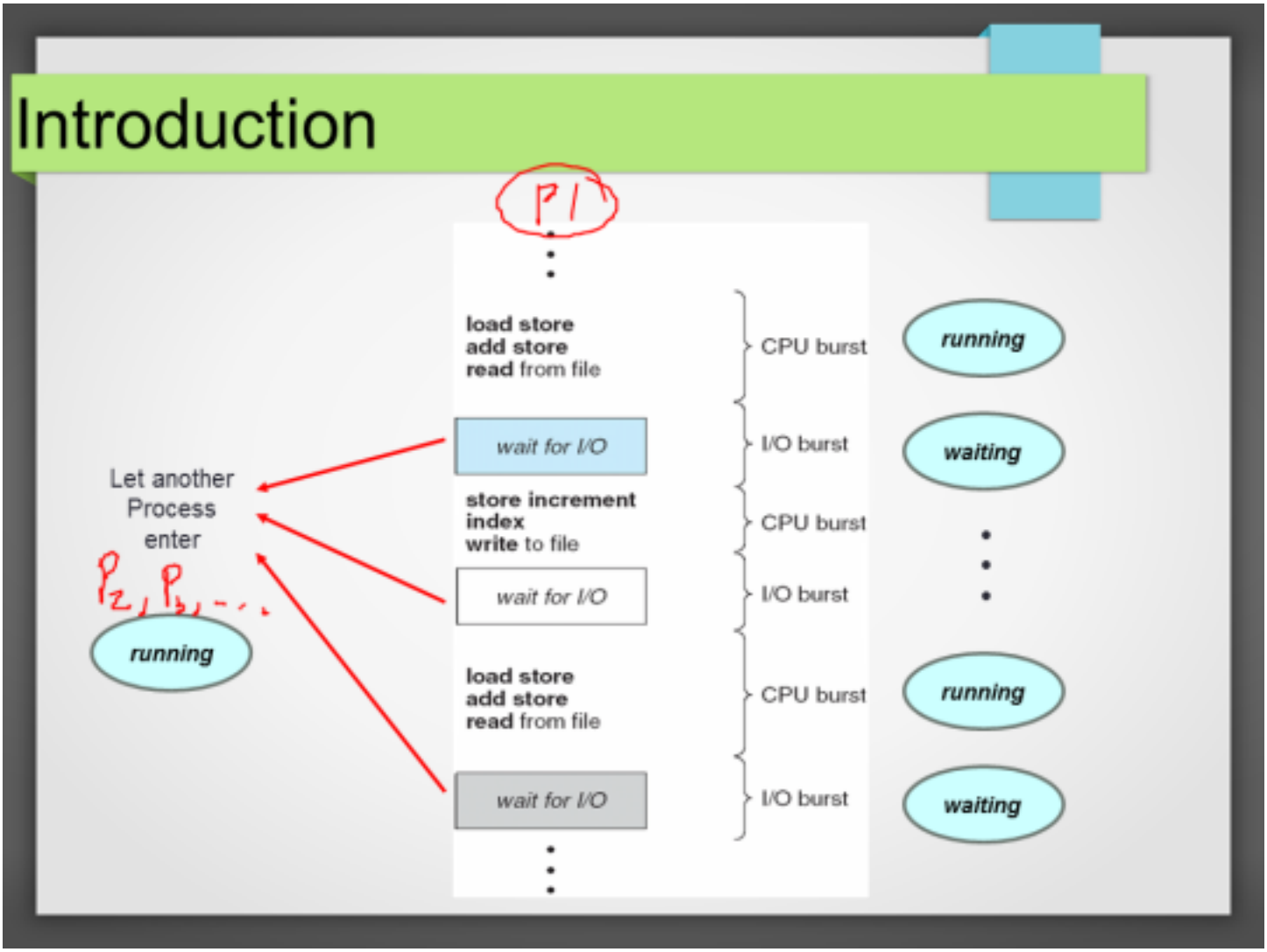
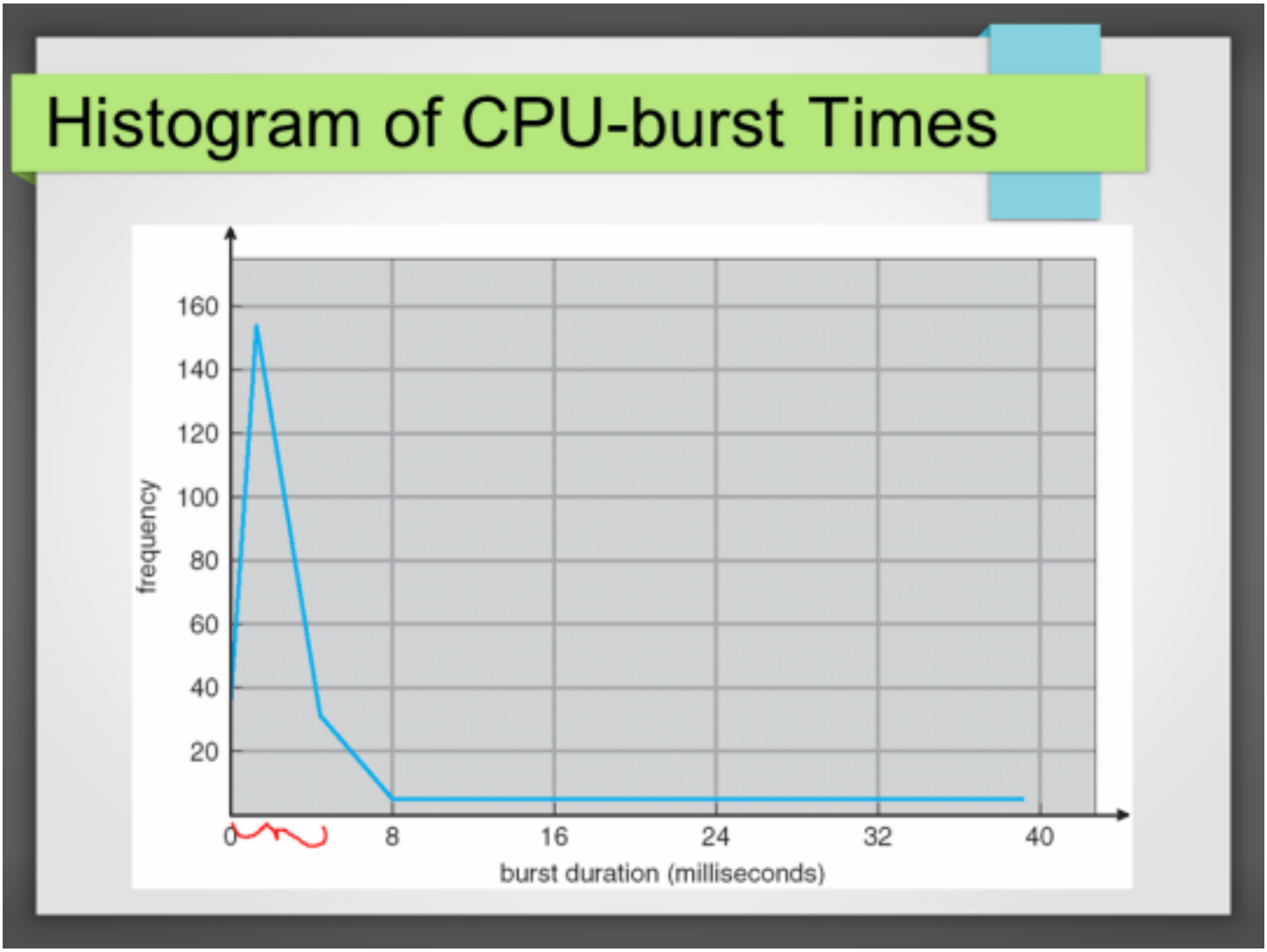


Histogram of CPU-burst Times

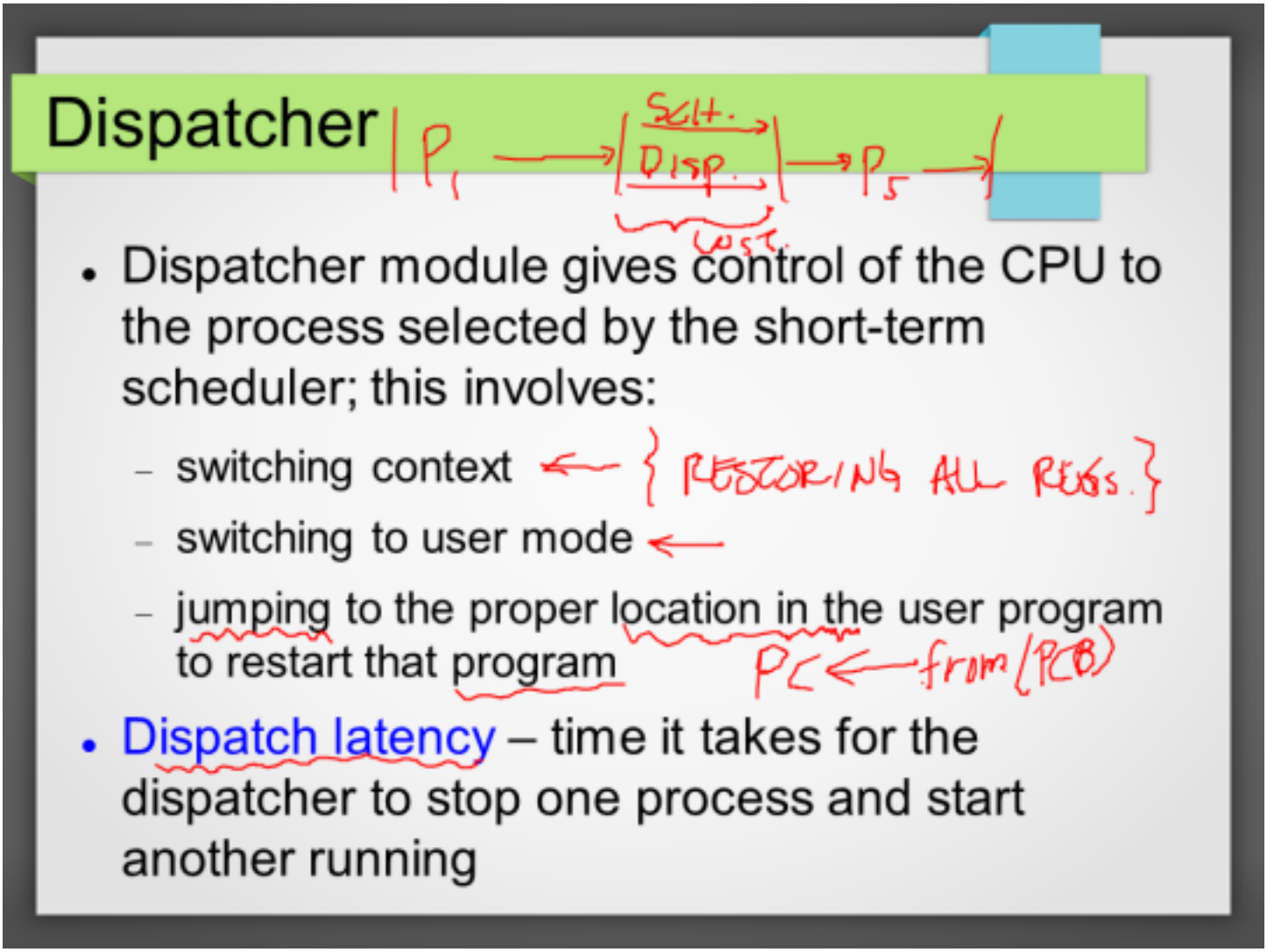


CPU Scheduler

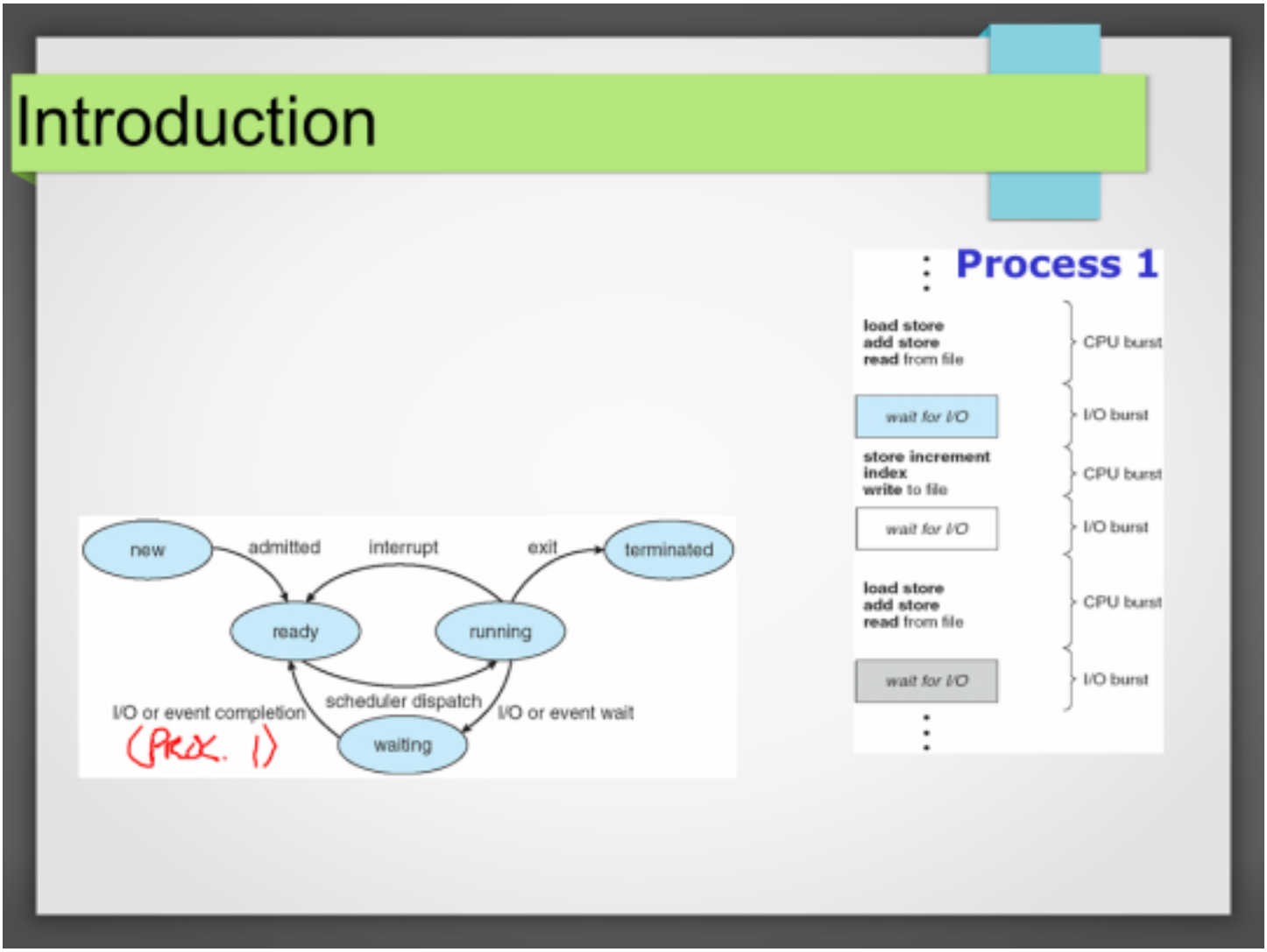
CPU Scheduler

- Short-term scheduler selects from among the processes in ready queue, and allocates the CPU to one of them
  - Queue may be ordered in various ways
- CPU scheduling decisions may take place when a process:
  1. Switches from running to waiting state
  2. Switches from running to ready state
  3. Switches from waiting to ready
  4. Terminates
- Scheduling under 1 and 4 is non-preemptive
- All other scheduling is preemptive
  - Consider access to shared data
  - Consider preemption while in kernel mode
  - Consider interrupts occurring during crucial OS activities

Dispatcher


Dispatcher
P1
Disp.
P5
Dispatcher module gives control of the CPU to the process selected by the short-term scheduler; this involves:
switching context
switching to user mode
jumping to the proper location in the user program to restart that program
Dispatch latency – time it takes for the dispatcher to stop one process and start another running

Introduction



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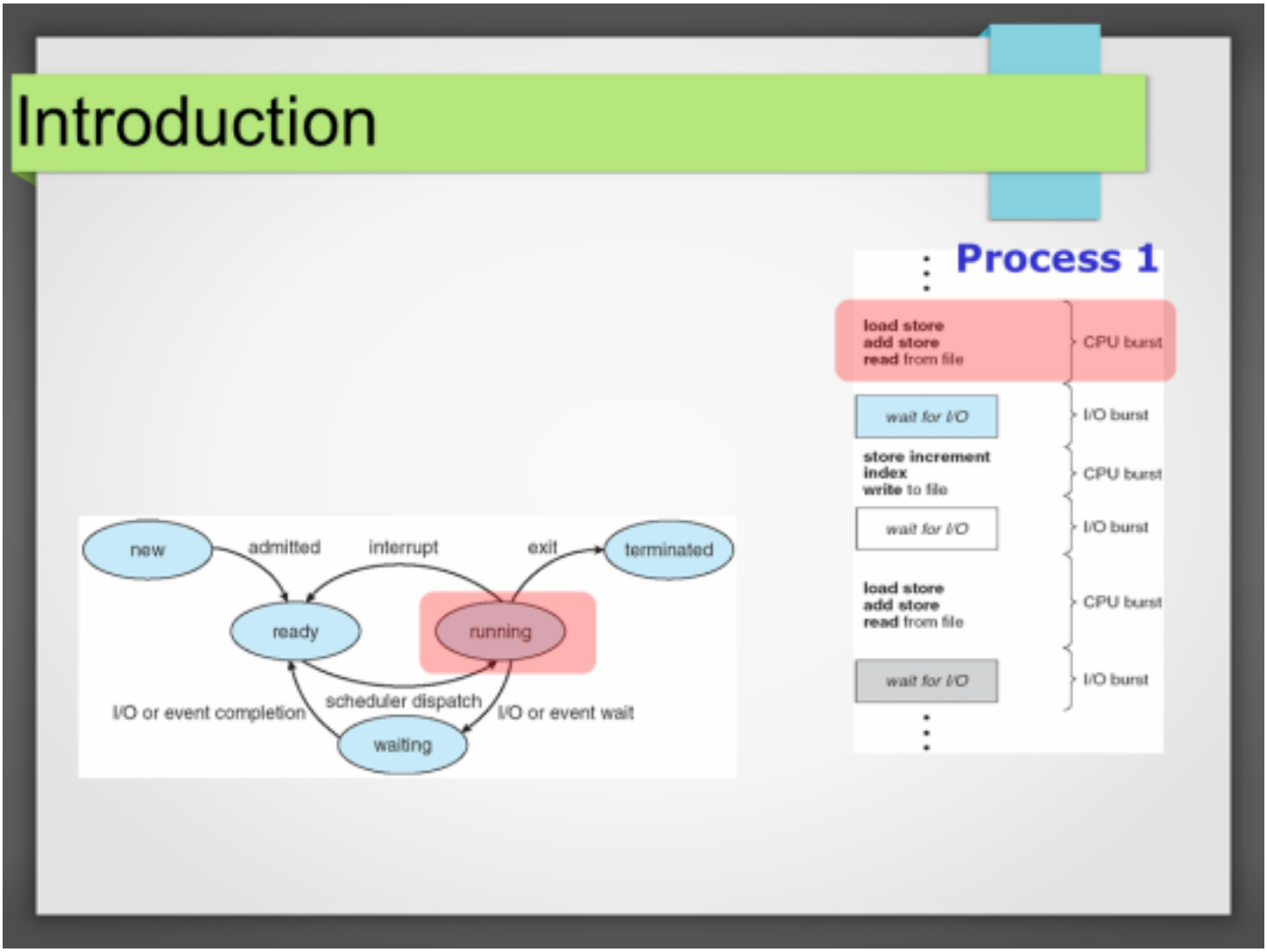

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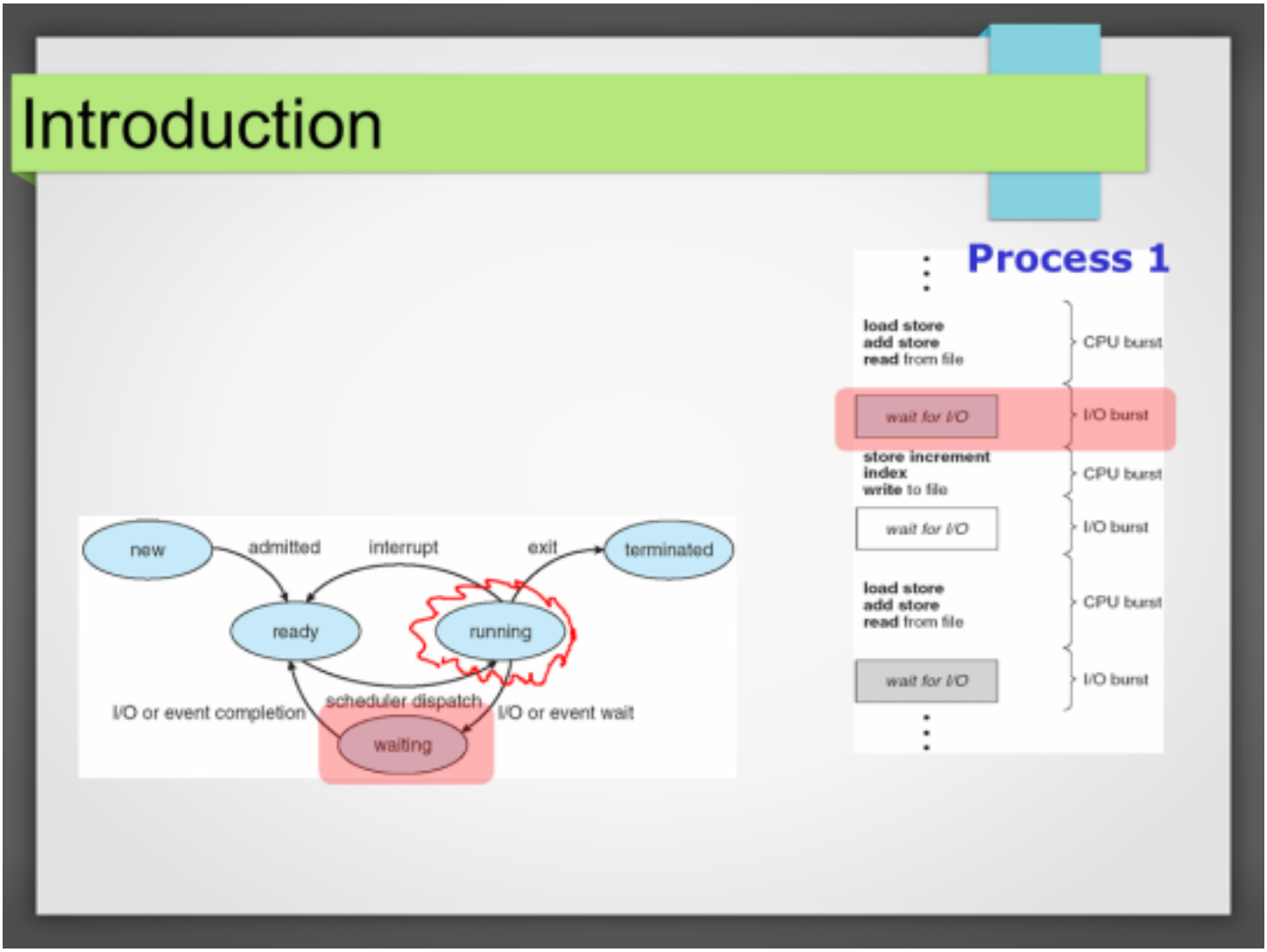

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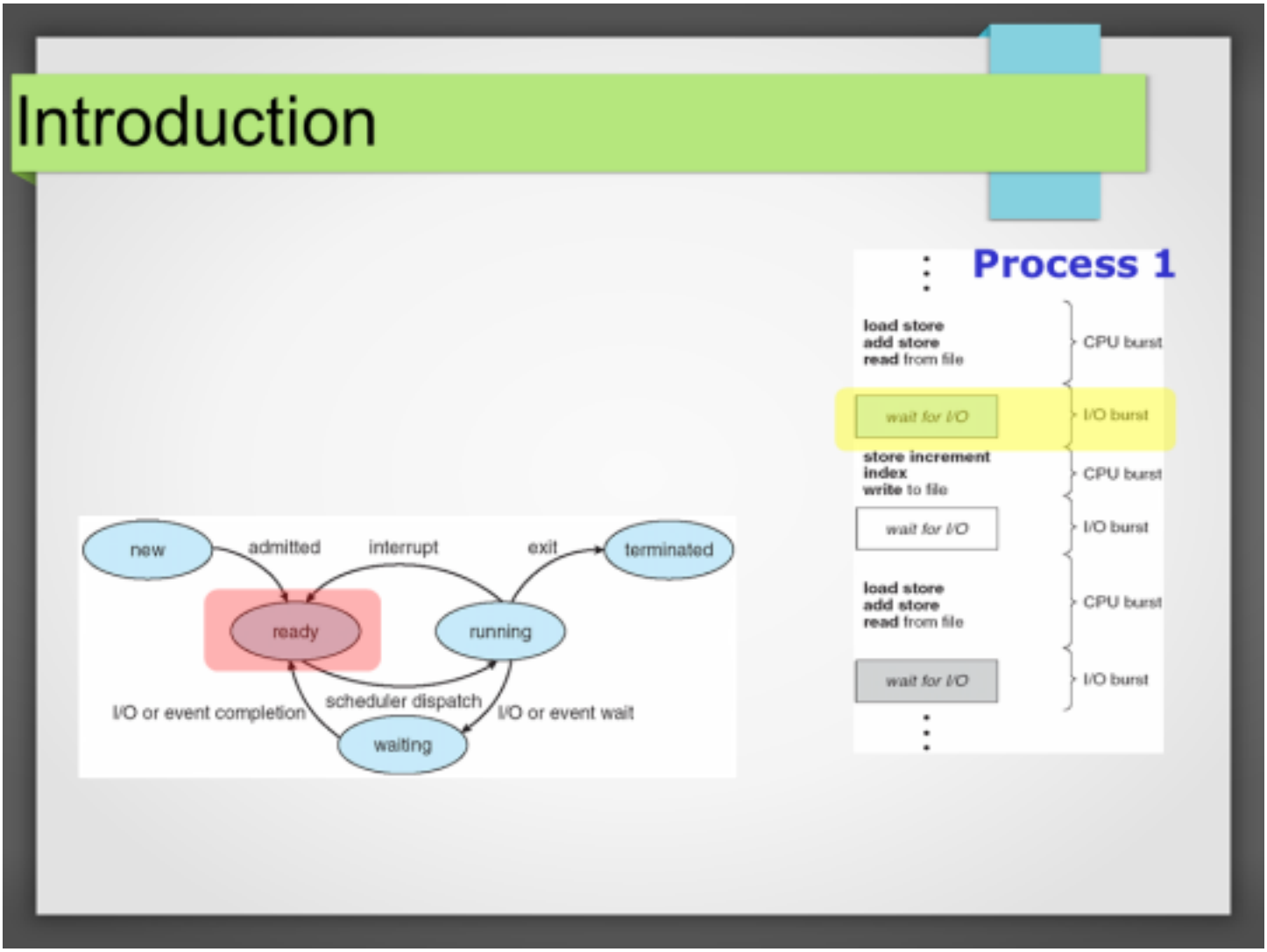

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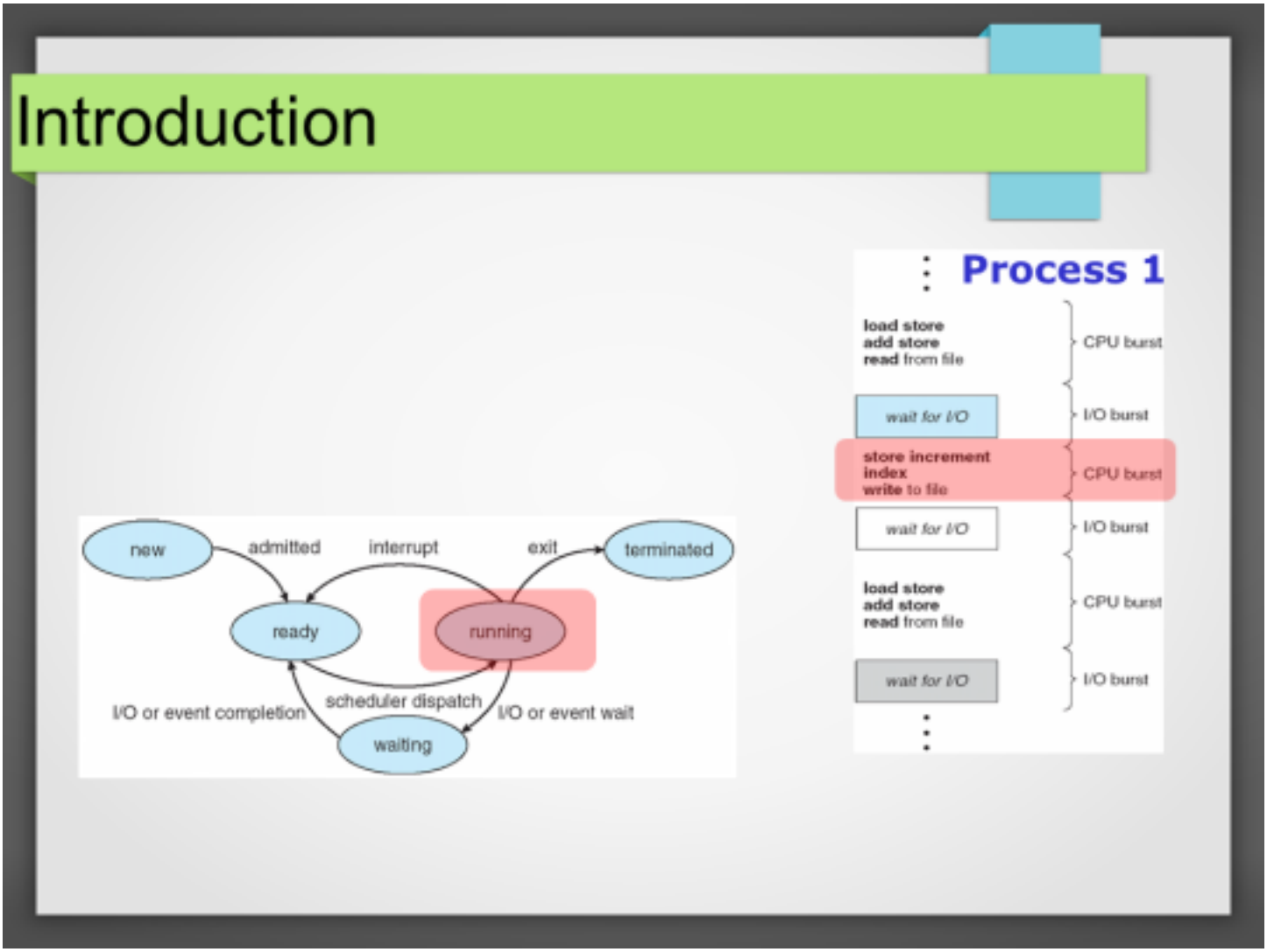

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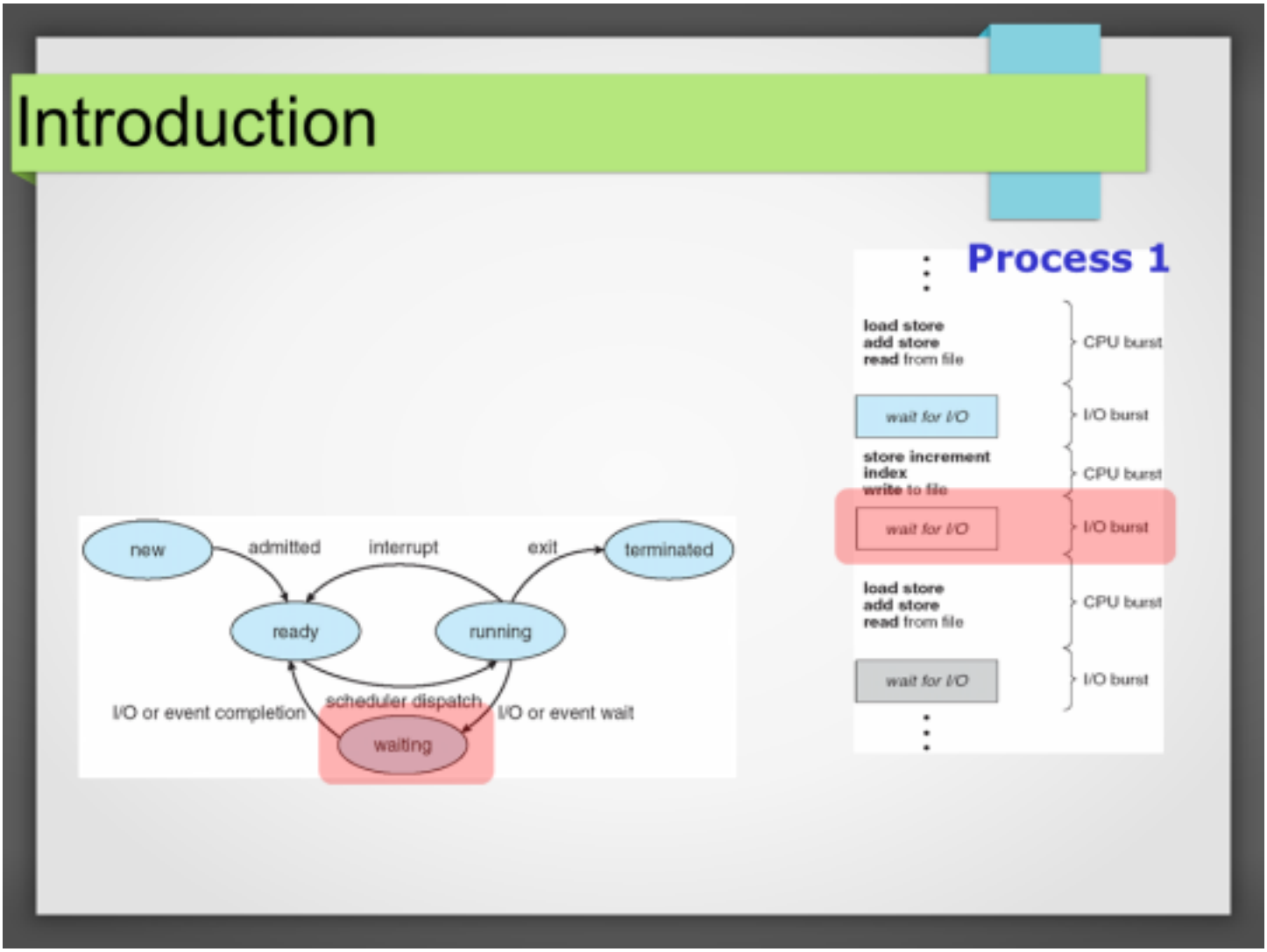

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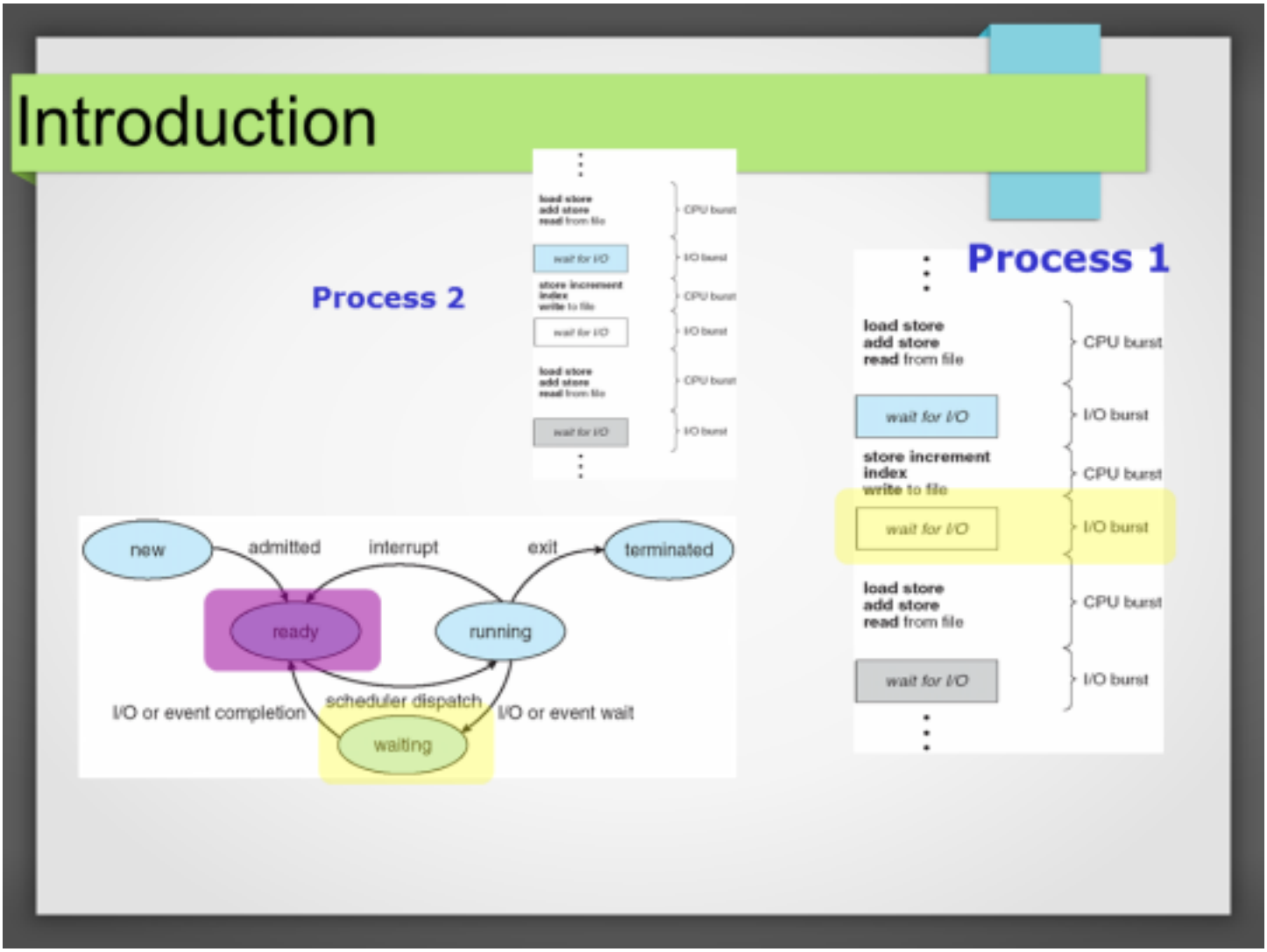

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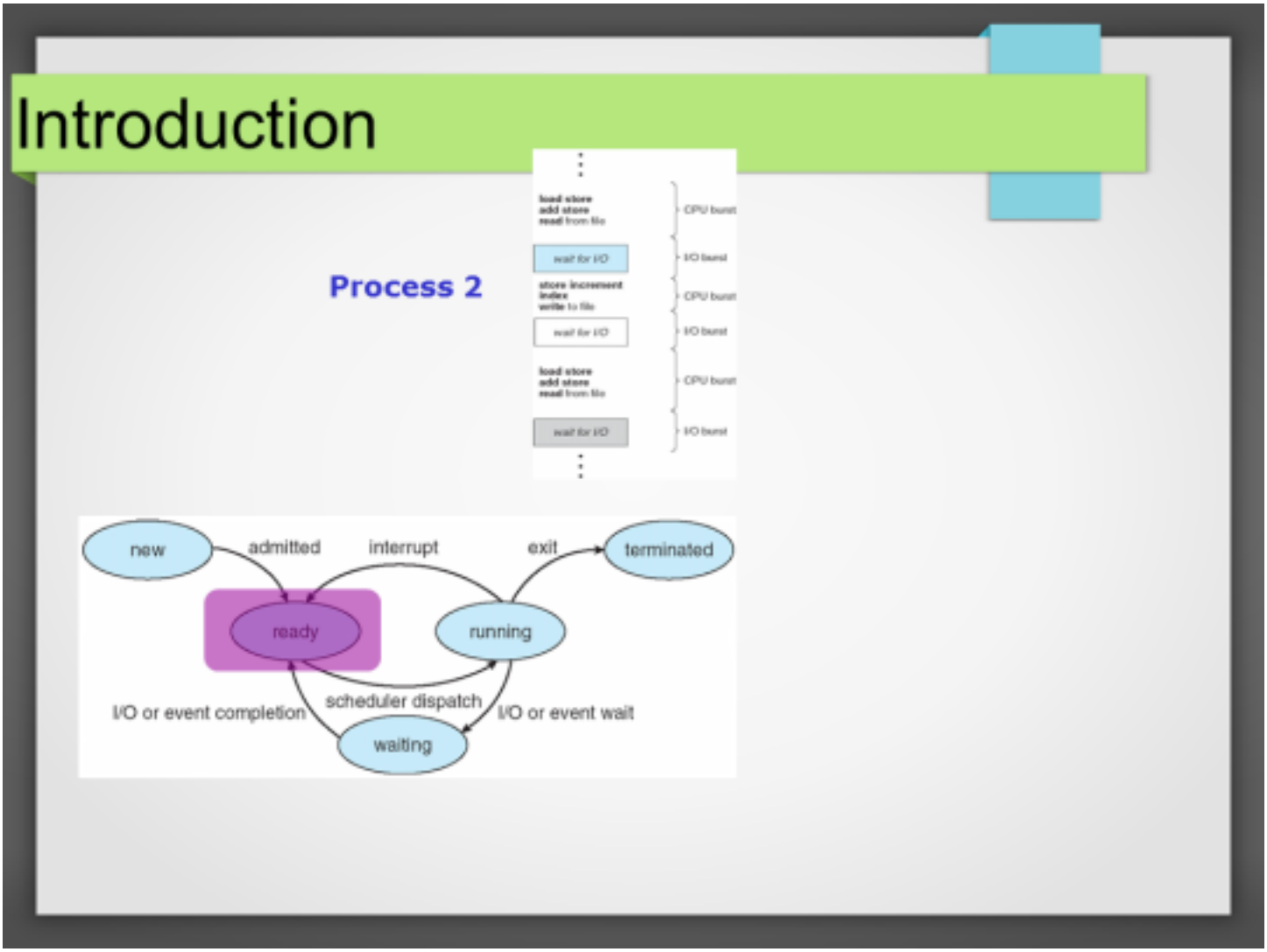

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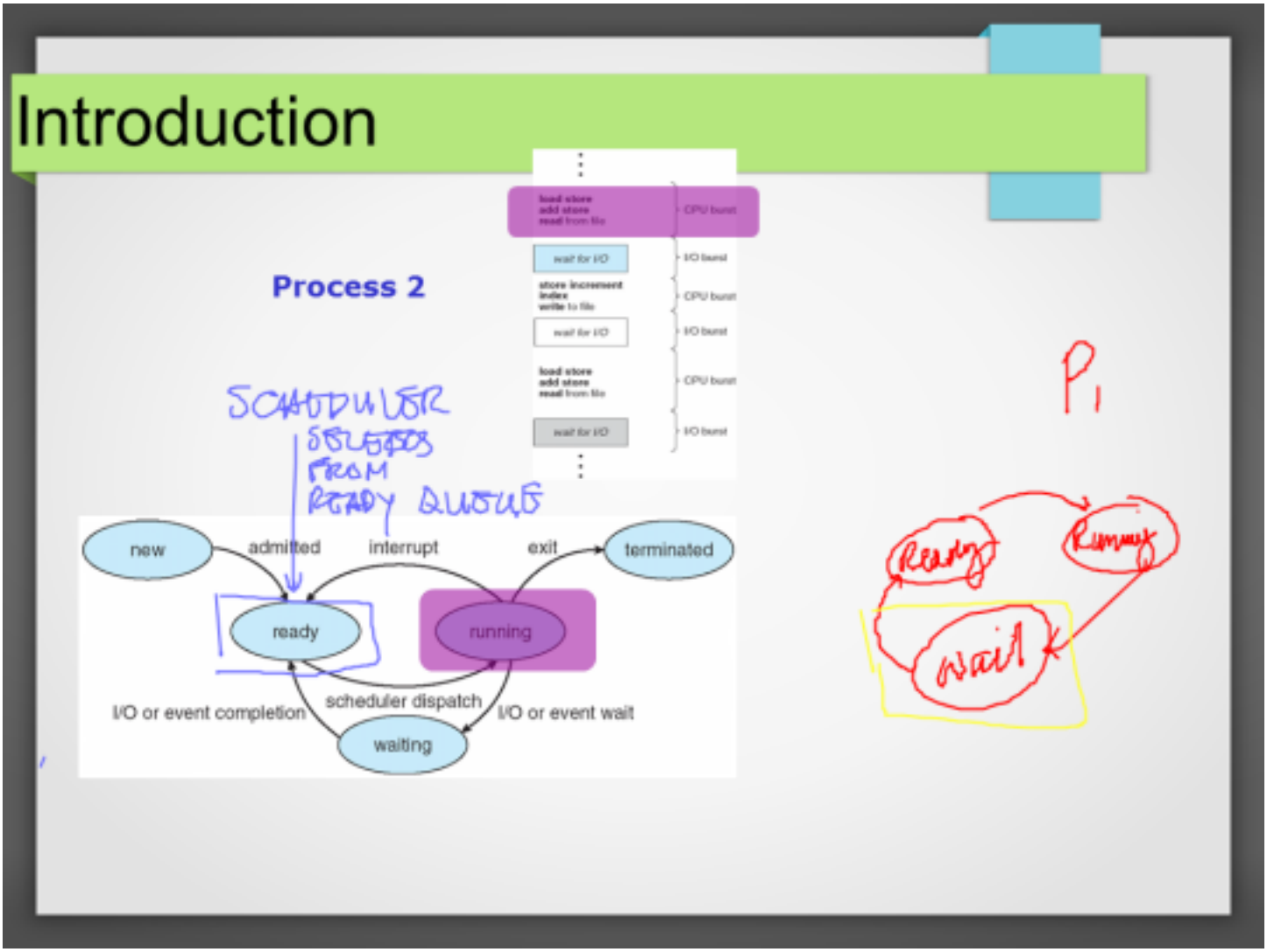

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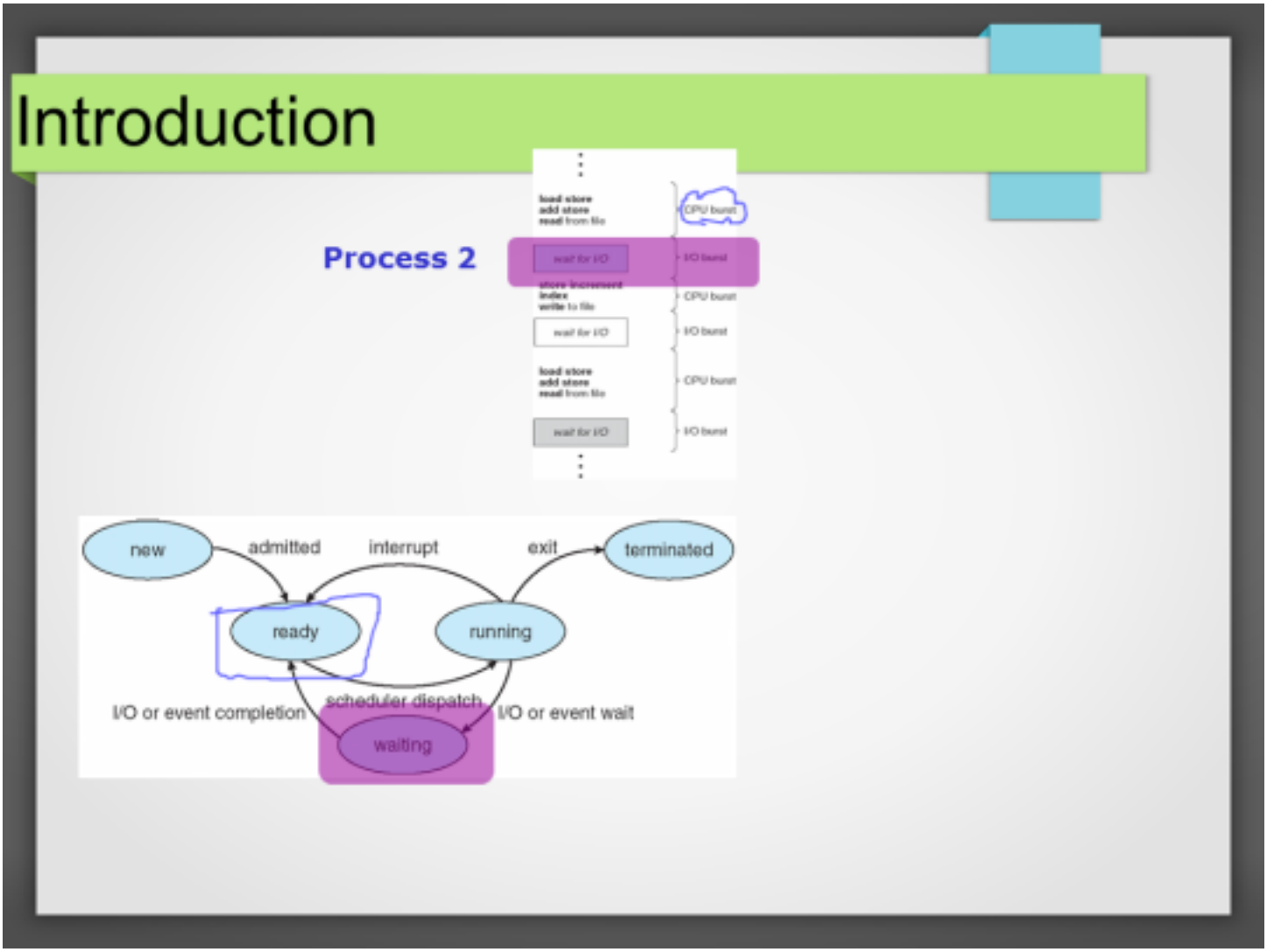

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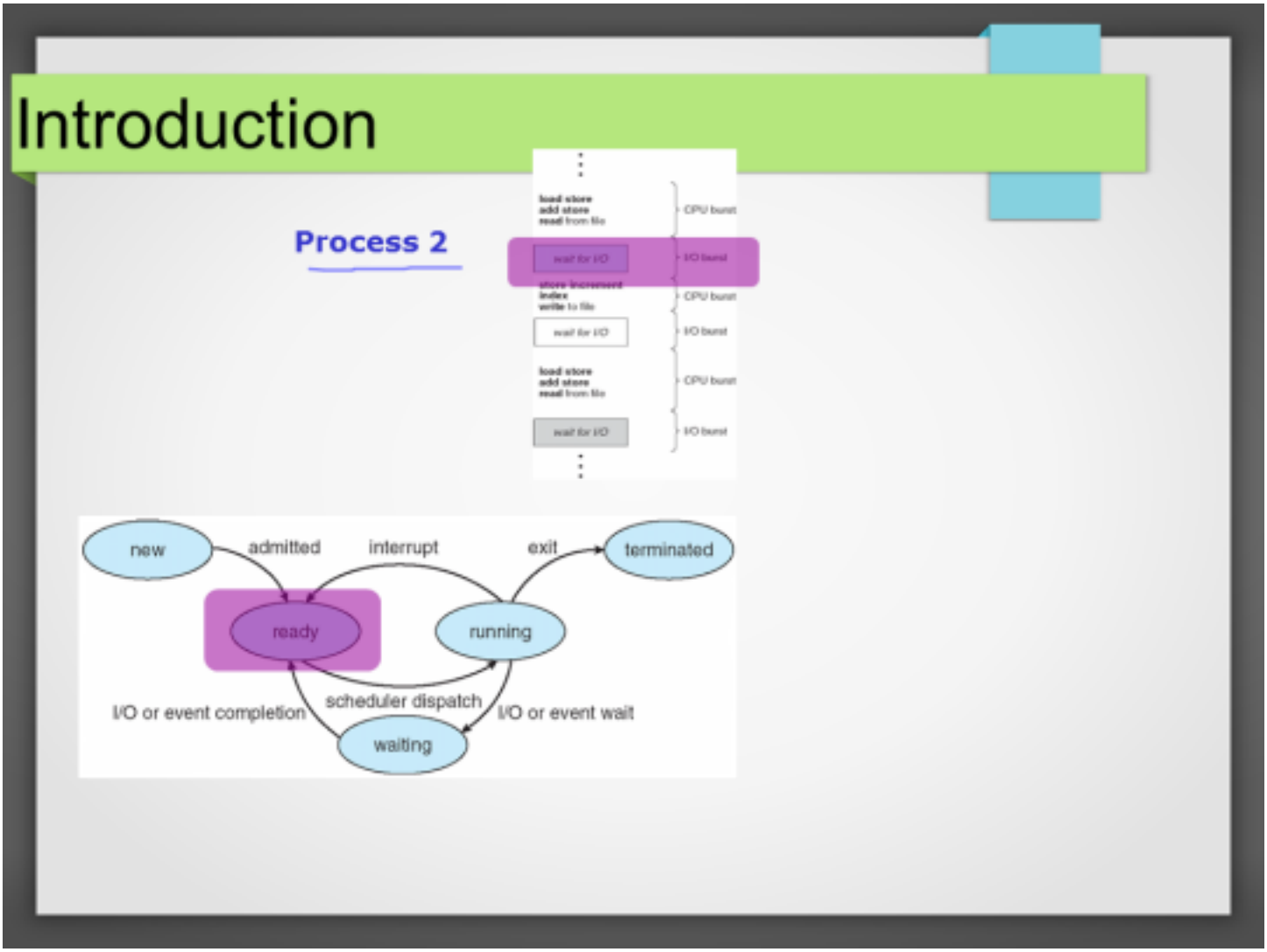

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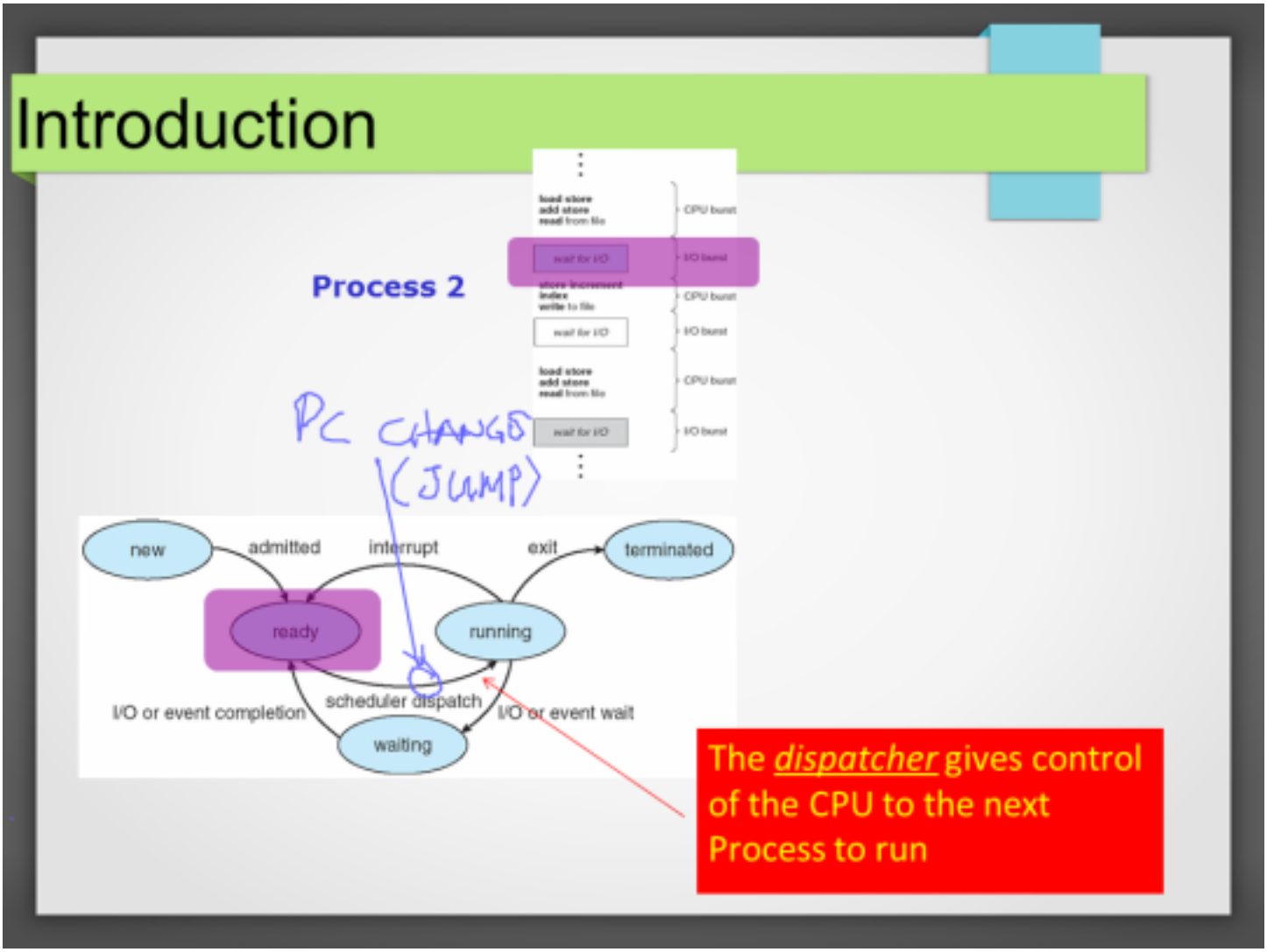
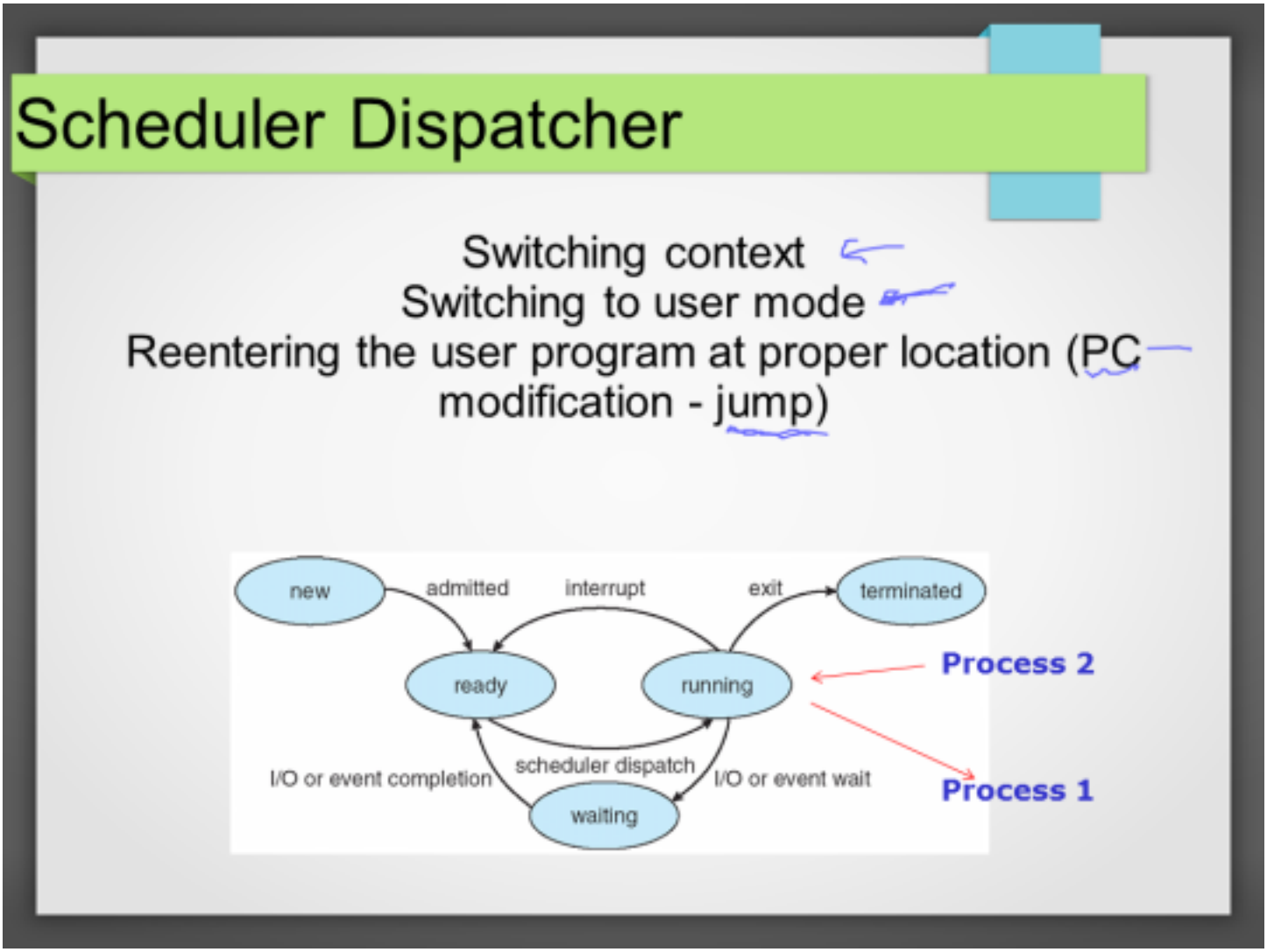
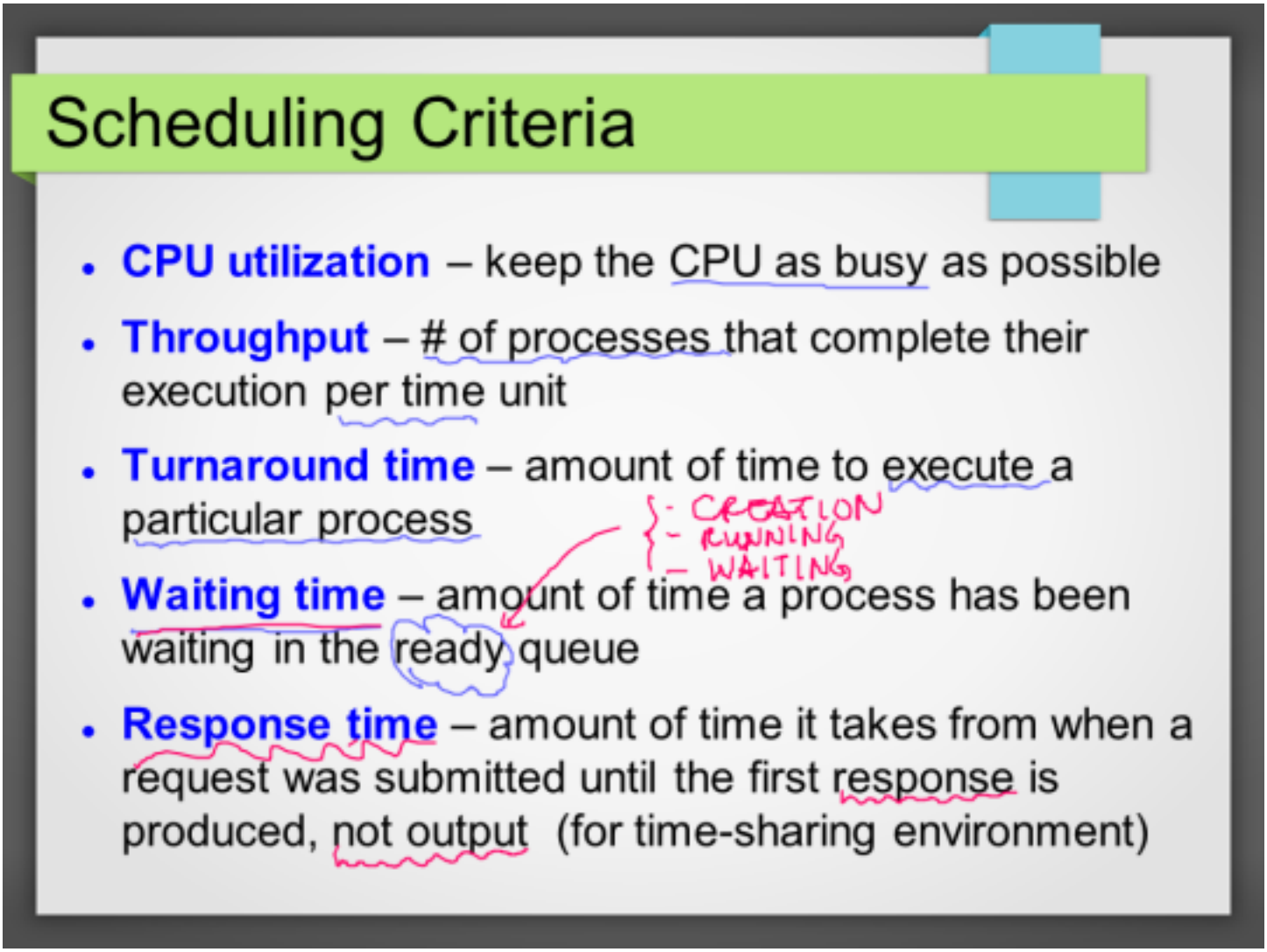


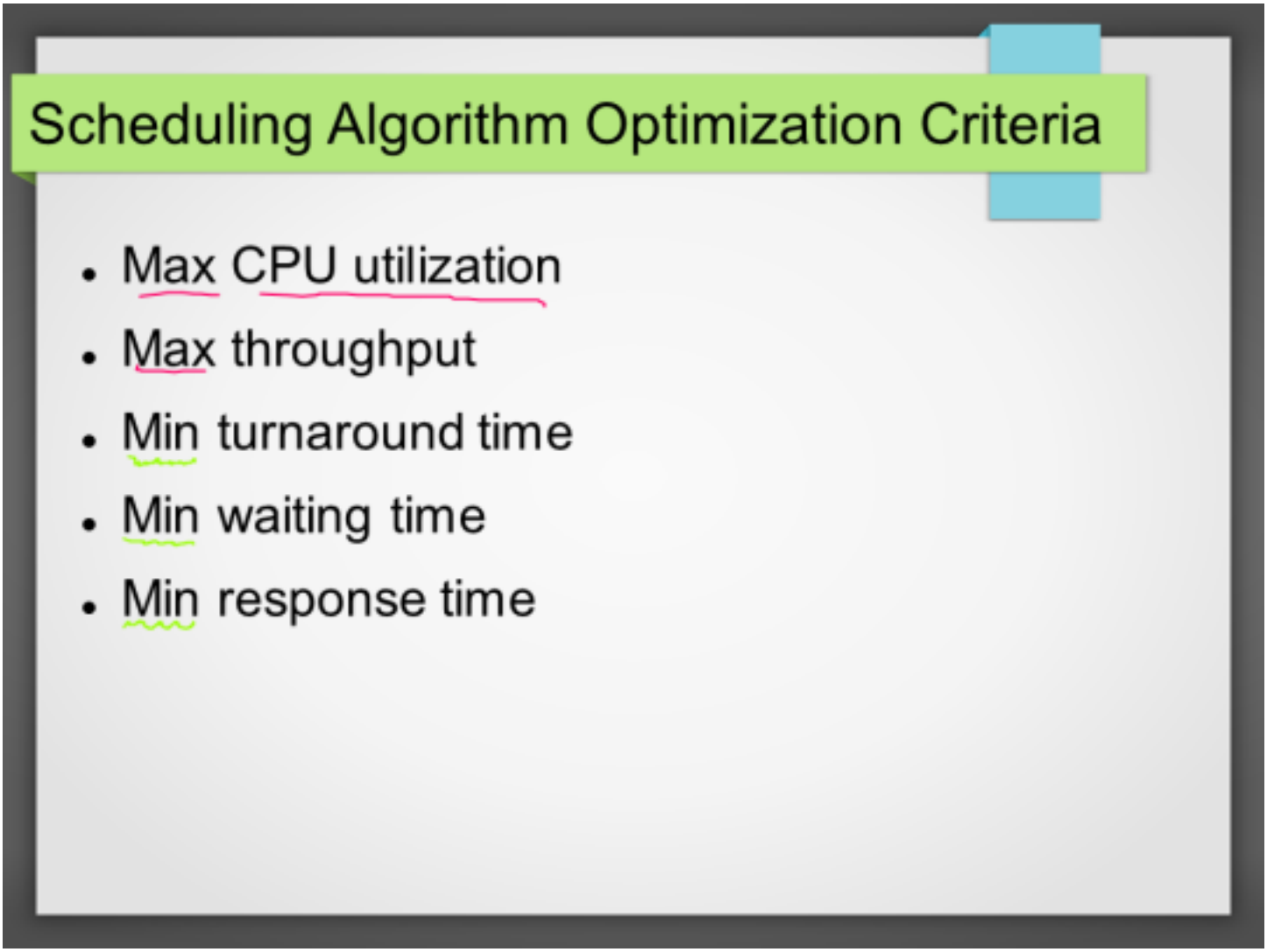
Scheduler Dispatcher



Scheduling Criteria



Scheduling Algorithm Optimization Criteria



Scheduling Algorithms