Real Time Systems
(BITS G553)

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Real Time Systems

(Approaches to Real-Time Scheduling: General overview)

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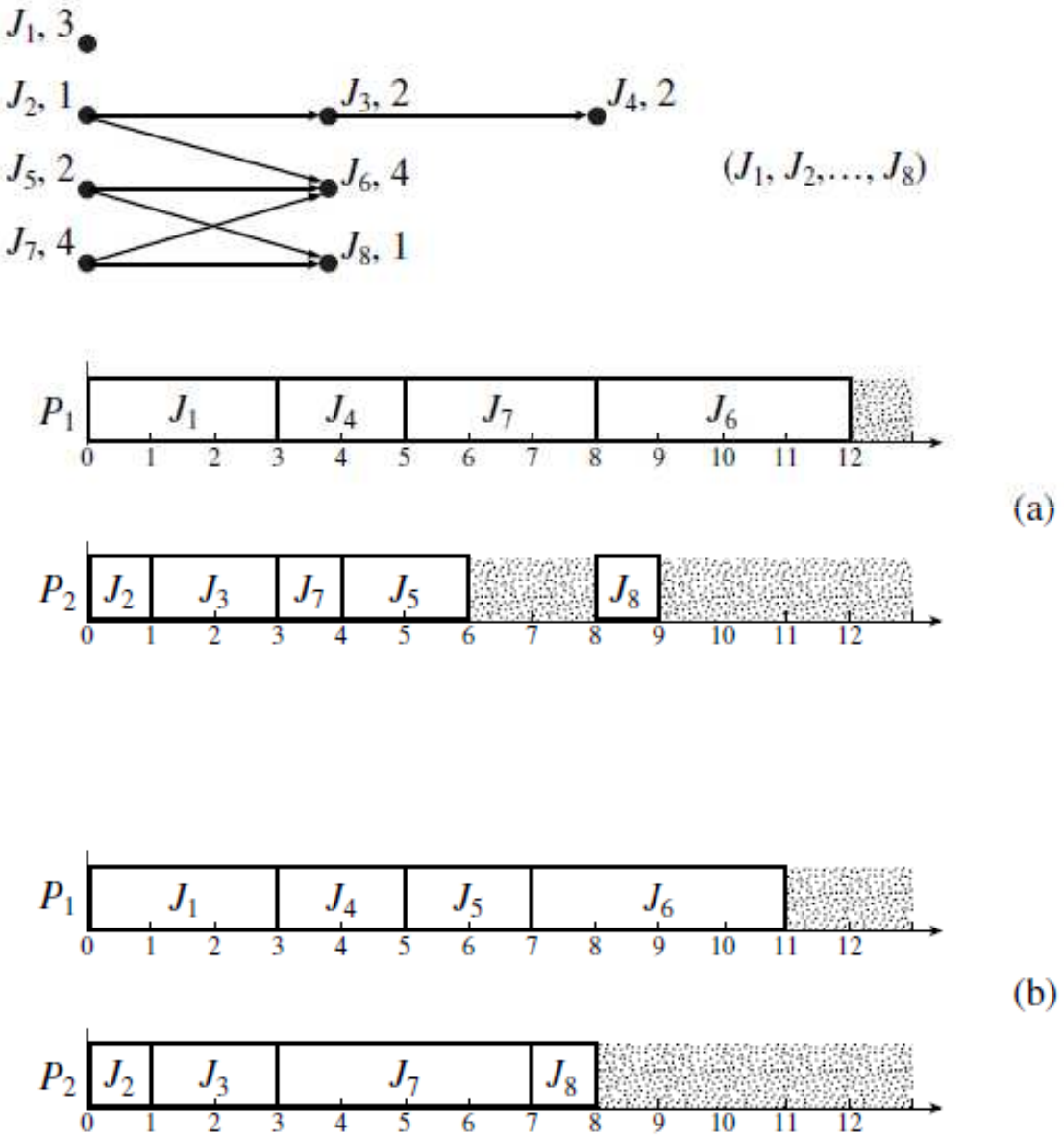
Clock-Driven Approach

Weighted Round-Robin Approach

Priority-Driven Approach

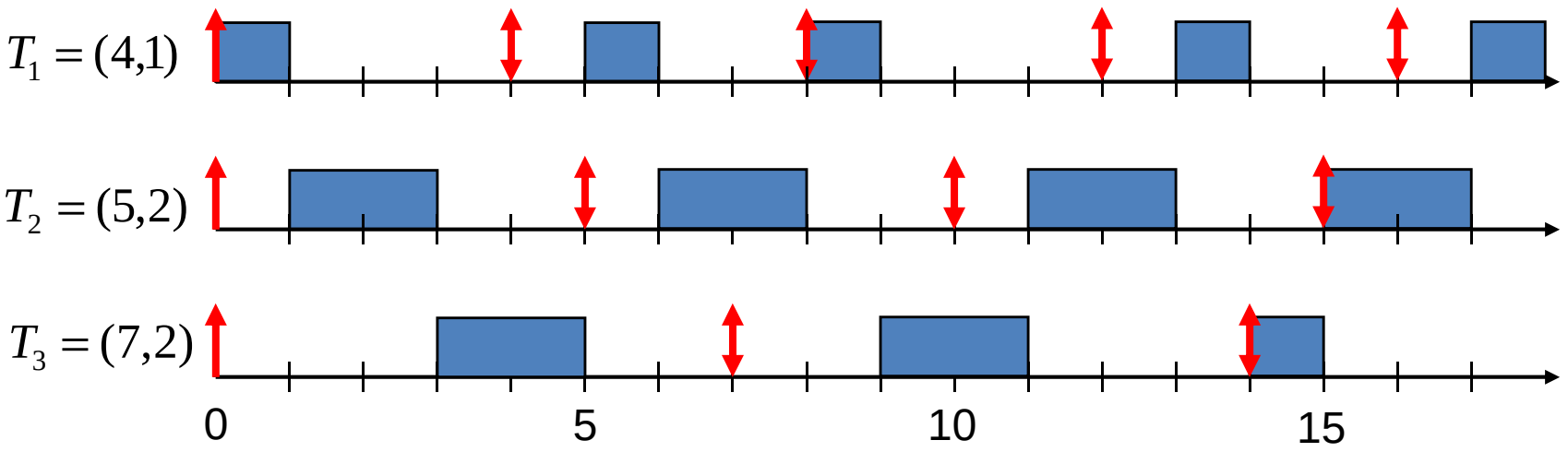
- It refers to a large class of scheduling algorithms that never leave any resource idle intentionally.
- A resource is idle only when when no job requiring the resource is ready for execution.
- Scheduling decisions are made when events such as releases and completions of jobs occur.
- Hence these are also called Event-Driven. Also called Greedy, list and work-conserving scheduling.
- When a processor or resource is available and some job can use it to make progress, such an algorithm never makes the job wait.
- Jobs ready for execution are placed in one or may more queues ordered by the priorities of the jobs.
- At the scheduling time, the jobs with the highest priorities are scheduled and executed on the available processors
- As we can dynamically change the priorities of jobs, even round robin scheduling can be thought of as priority-driven.

Priority-Driven Approach



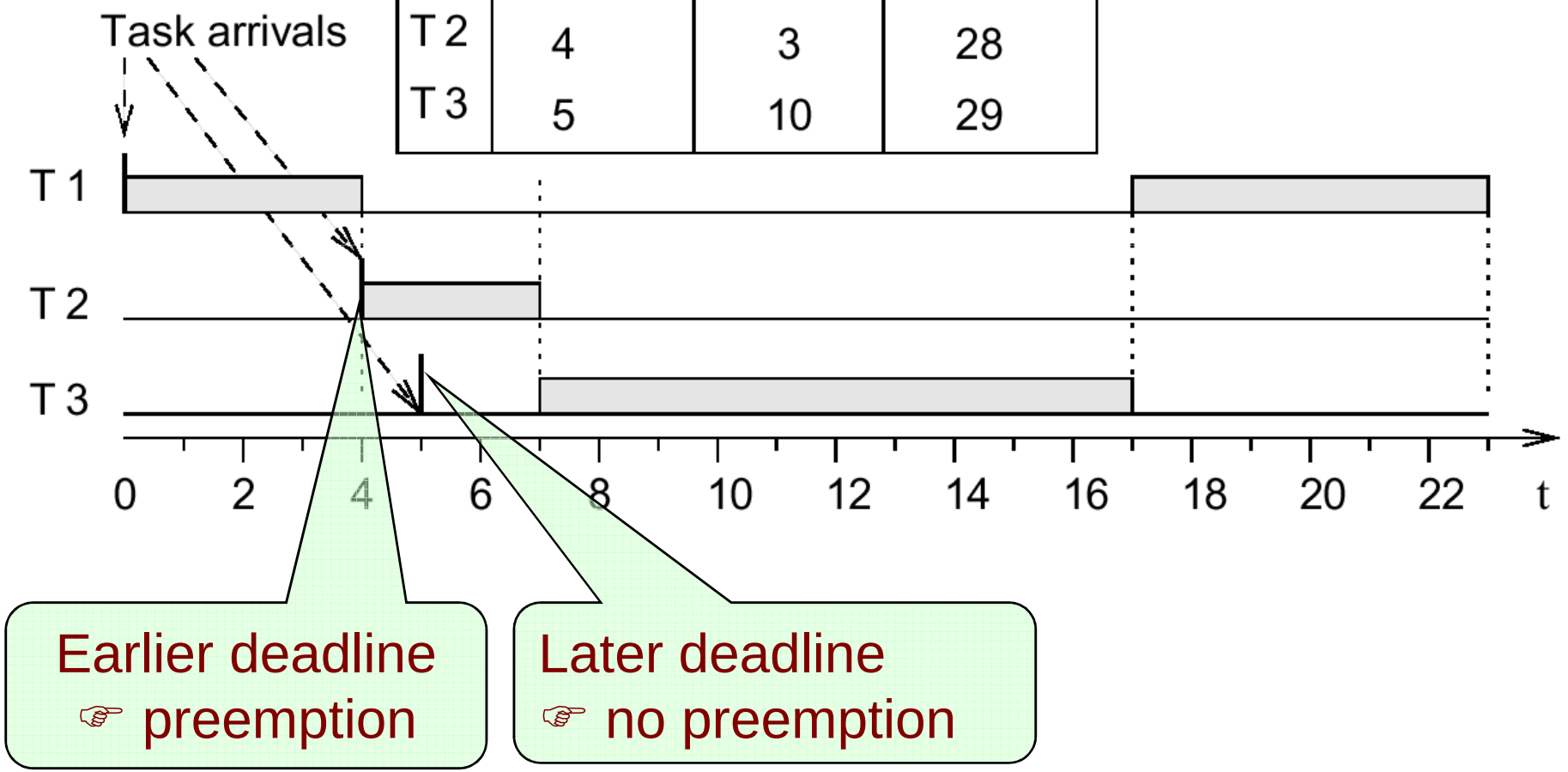
EDF Scheduling: Principle

- Preemptive priority-based dynamic scheduling
- Each task is assigned a (current) priority based on how close the absolute deadline is.
- The scheduler always schedules the active task with the closest absolute deadline.



EDF scheduling

	arrival	duration	deadline
T 1	0	10	33
T 2	4	3	28
T 3	5	10	29



Least Laxity First Example

	arrival	duration	deadline
T 1	0	10	33
T 2	4	3	28
T 3	5	10	29