

Round Robin Algorithm

- Suitable for time sharing environment.
- FCFS but preemptive scheduling
- The processes release the CPU based on time quantum or according to its completion.

	Process	CPU burst	Wait time	(Time quantum = 2)
t_0	<div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3 P4</div>	8 4	0	} No arrival time means all arrive at once at t_0
t_1	<div style="border: 1px solid black; padding: 2px; display: inline-block;">P4 P3 P2</div>	4 0	1	
t_2	<div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div>	7 7	2	
t_3	<div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div>	3 3	3	

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3 P4 P1 P2 P3 P4 P1 P3 P4 P1 P3 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>

Timeline
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">t_4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P1 P2 P3</div> </div>
<div style="display: flex; align-items: center;"> </div>

Lecture-7

t_0	P ₁	$T_{TRND}(P_1) = 23$	$T_W(P_1) = (8-2) + (16-10) + (21-18)$
t_1	P ₂	$T_{TRND}(P_2) = 12$	$= 6 + 6 + 3$
t_2	P ₃	$T_{TRND}(P_3) = 26$	$= 15 \rightarrow T_{TRND} - \text{CPU burst}$
t_3	P ₄	$T_{TRND}(P_4) = 21$	$T_W(P_2) = 2 + (10-4)$
t_4	P ₁		$= 8 = T_{TRND} - \text{CPU burst}$
t_5	P ₂		$T_W(P_3) = 4 + (12-6) + (18-14) + (23-20)$
	P ₃		$= 4 + 6 + 4 + 3$
	P ₄		$= 17 = T_{TRND} - \text{CPU burst}$
	P ₁		$T_W(P_4) = 6 + (14-8) + (20-16)$
	P ₂		$= 6 + 6 + 4 = 16 = T_{TRND} - \text{CPU burst}$

$$\text{Avg. } T_{TRND} = 20.5$$

$$\text{Avg. } T_W = 13.5$$

* If the time quantum is smaller, context-switching overhead increase.

* If the time quantum is larger, it becomes plain FCFS both cases doesn't improve turn around time optimally.

Non-preemptive priority scheduling

Process	CPU burst	Priority
P1	8	3
P2	4	1
P3	9	2
P4	5	4

P2	P3	P1	P4	
0	4	13	21	26

* lowest priority process is allocated to the CPU first

Priority-

- 1) ~~Static~~ ^{Static: Fixed} ~~type~~ / dynamic priority - ^{Dynamic: can change depending on diff parameters (e.g., ageing)}
- 2) Purchased - pays in terms of resources. Processes which need to run immediately
- 3) Externally/externally assigned priority
- 4) Priority set based on ageing.

If two processes have same priority, we use FCFS.

→ Aim to stagnation

← Ageing - Process ^{with lowest priority} that has waited for too long in ready list. This ^{could be} is called starvation/ indefinite blocking.

→ A counter is maintained, that keeps track of age.

Preemptive priority scheduling

Process	CPU burst	Priority	Arr. time
P1	8	6	0
P2	4	1	1
P3	9	7	3
P4	5	4	7

P1	P2	P1	P4	P1	P3		
0	1	3	5	7	12	17	26

$$T_w(P1) = 0 + (5-1) + (12-7) = 9$$

$$T_w(P2) = 1 - 1 = 0$$

$$T_w(P3) = 17 - 3 = 14$$

$$T_w(P4) = 0$$

$$T_w = (14 + 9) / 4$$

classmate

Date _____

Page _____

$$T_{\text{TRND}}(P1) = 17 - 0 = 17 \quad = \text{CPU burst} + T_w = 8 + 9$$

$$T_{\text{TRND}}(P2) = 5 - 1 = 4 \quad = 4 + 0$$

$$T_{\text{TRND}}(P3) = 26 - 3 = 23 \quad = 9 + 14$$

$$T_{\text{TRND}}(P4) = 12 - 7 = 5 \quad = 0 + 5$$

lecture-8

BDU

06/02/2018

Q1.	Process	Arrival time	CPU burst
	A	0.000	8
	B	1.001	6
	C	4.001	4