



Felix
10.9

Round-Robin

- pre-emptive
- non-priority
- may not rely on burst time (Hence it's still simple)
- starvation-free
- context switching overhead
- quantum
 - too big: long waiting time, may degrade to FCFS
 - too small: rapid but more switching overhead in throughput

Rule of thumb: Context switching overhead $\leq 1\%$

RR:

Sample
temples

quantum = 4

3ms
5ms

13ms



Task	Start	Burst	Time	Time	Remain 1	Remain 2	Remain 3	Re4
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T₁ 0 10

T₂ 3 4

T₃ 3 1

T₄ 3 15

T₅ 3 4

T₆ 5 3

T₇ 13 2

RR:

quantum = 4



Task	Start Time	Burst	Time	Time	Remain 1	Remain 2	Remain 3	Re4
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T₁ 0 10

T₂ 3 4

T₃ 3 1

T₄ 3 15

T₅ 3 4

T₆ 5 3

T₇ 13 2

T₅
T₄
T₃
T₂
T₁

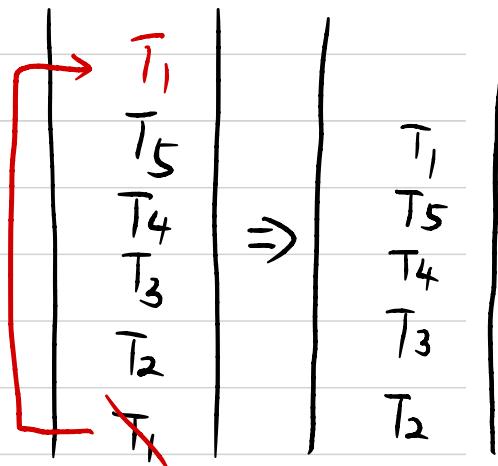
~~T₁~~

RR:

quantum = 4

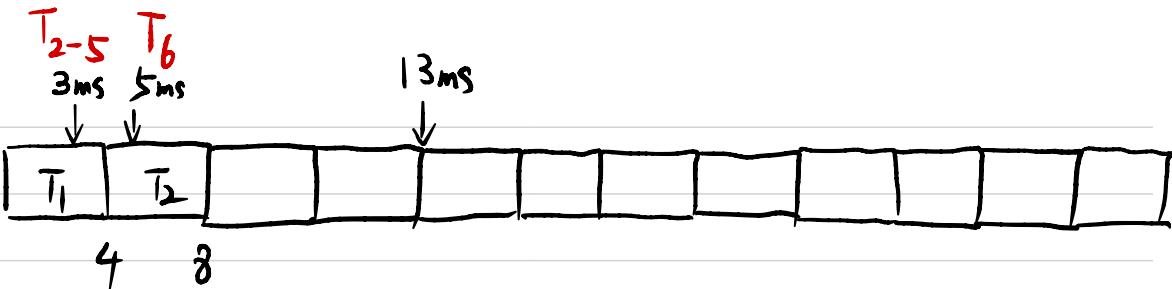


Task	Start	Burst	Time	Time	Remain 1	Remain 2	Remain 3	Re4
T ₁	0	10	-	4 = 6				
T ₂	3	4						
T ₃	3	1						
T ₄	3	15						
T ₅	3	4						
T ₆	5	3						
T ₇	13	2						



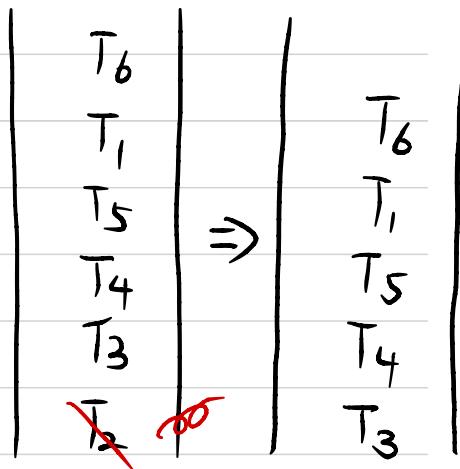
RR:

quantum = 4



Task Start Burst

Task	Start	Burst
T ₁	0	10 - 4 = 6
T ₂	3	4 - 4 = 0
T ₃	3	1
T ₄	3	15
T ₅	3	4
T ₆	5	3
T ₇	13	2



RR:

quantum = 4

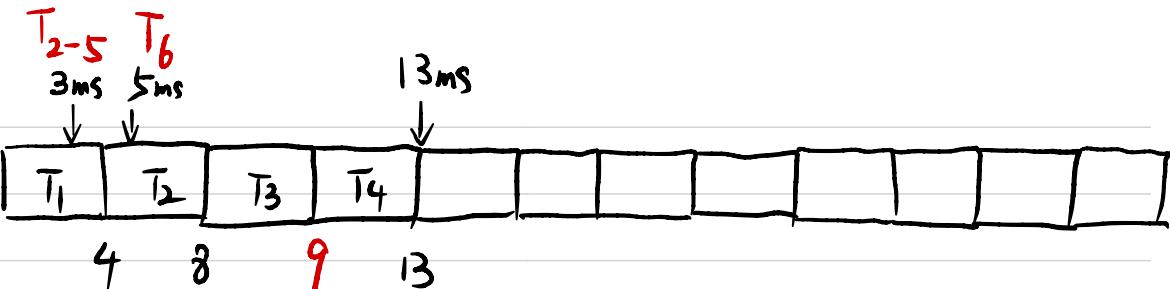


Task	Start	Burst	Time	Time	Remain 1	Remain 2	Remain 3	Re4
T ₁	0	10	-4=6					
T ₂	3	4	-4=0					
T ₃	3	1	-1=0					
T ₄	3	15						
T ₅	3	4						
T ₆	5	3						
T ₇	13	2						

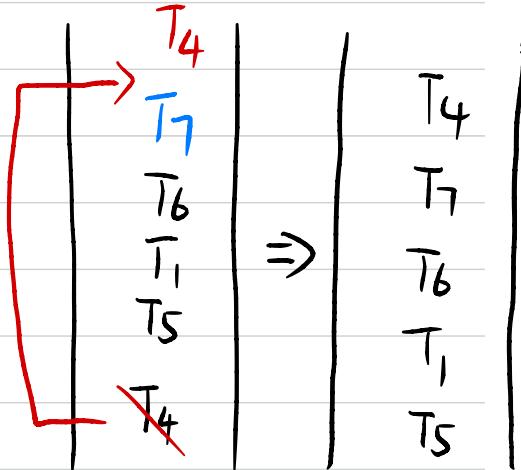


RR:

quantum = 4

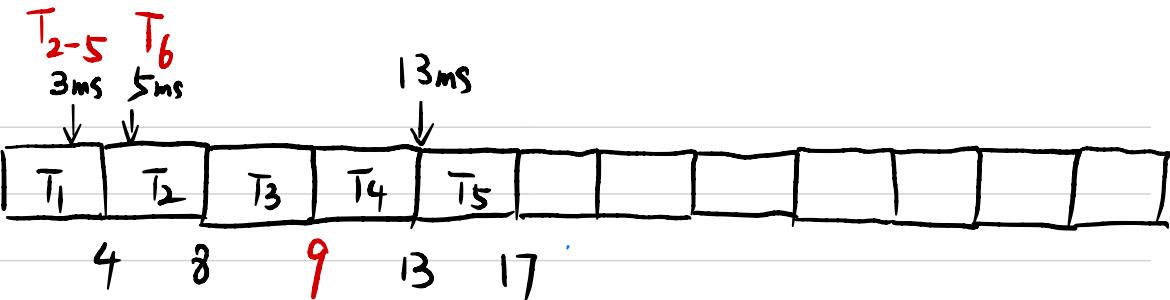


Task	Start	Burst	Time	Time	Remain 1	Remain 2	Remain 3	Re4
T_1	0	10	$-4 = 6$					
T_2	3	4	$-4 = 0$					
T_3	3	1	$-1 = 0$					
T_4	3	15	$-4 = 11$					
T_5	3	4						
T_6	5	3						
T_7	13	2						



RR:

quantum = 4



Task	Start	Burst	1	12 (X)	1	1	1	1
	Time	Time						

$$T_1 \quad 0 \quad 10 - 4 = 6 \Rightarrow$$

$$T_2 \quad 3 \quad 4 - 4 = 0$$

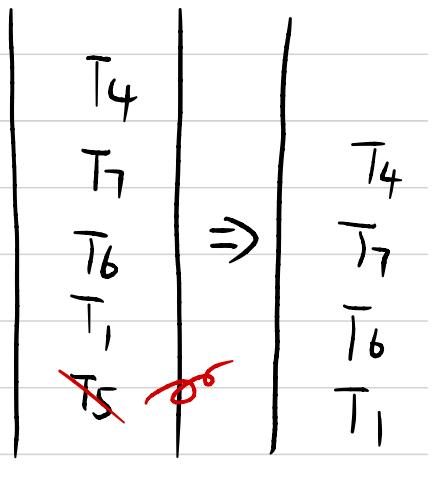
$$T_3 \quad 3 \quad 1 - 1 = 0$$

$$T_4 \quad 3 \quad 15 - 4 = 11$$

$$T_5 \quad 3 \quad 4 - 4 = 0$$

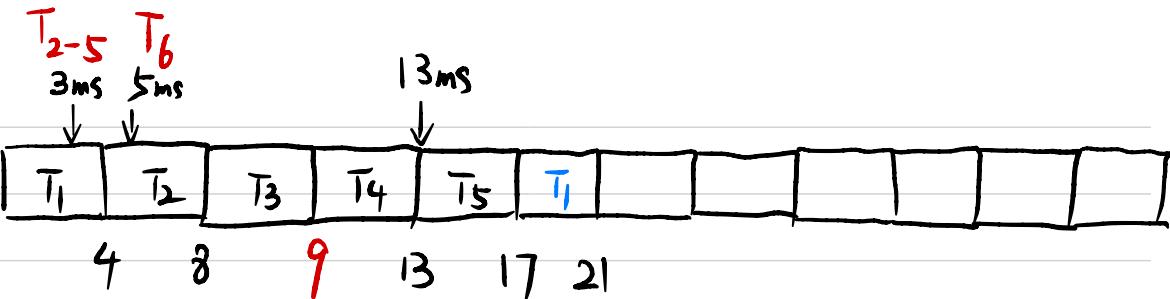
$$T_6 \quad 5 \quad 3$$

$$T_7 \quad 13 \quad 2$$



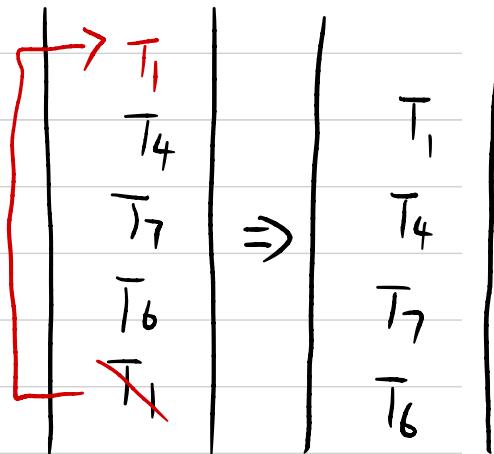
RR:

quantum = 4



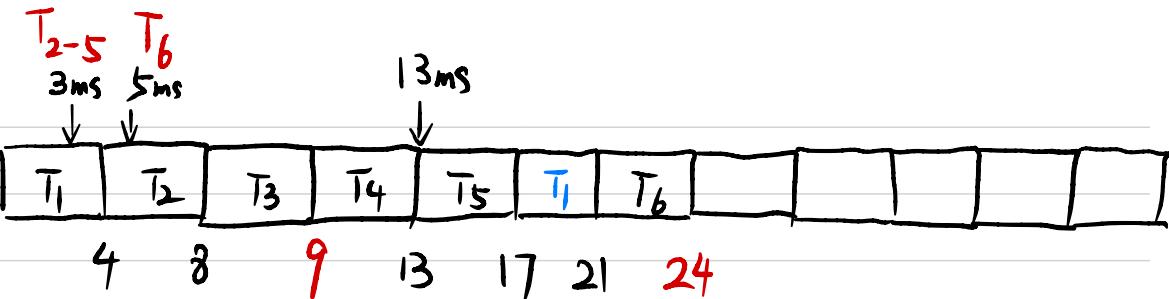
Task	Start	Burst	1	12 (X)	1	1	1	1	1	1	1	1
	Time	Time										

T_1	0	10	$-4 = 6$	1	$6 - 4 = 2$	1	1	1	1	1	1	1
T_2	3	4	$-4 = 0$	1		1	1	1	1	1	1	1
T_3	3	1	$-1 = 0$	1		1	1	1	1	1	1	1
T_4	3	15	$-4 = 11$	1		1	1	1	1	1	1	1
T_5	3	4	$-4 = 0$	1		1	1	1	1	1	1	1
T_6	5	3		1		1	1	1	1	1	1	1
T_7	13	2		1		1	1	1	1	1	1	1



RR:

quantum = 4

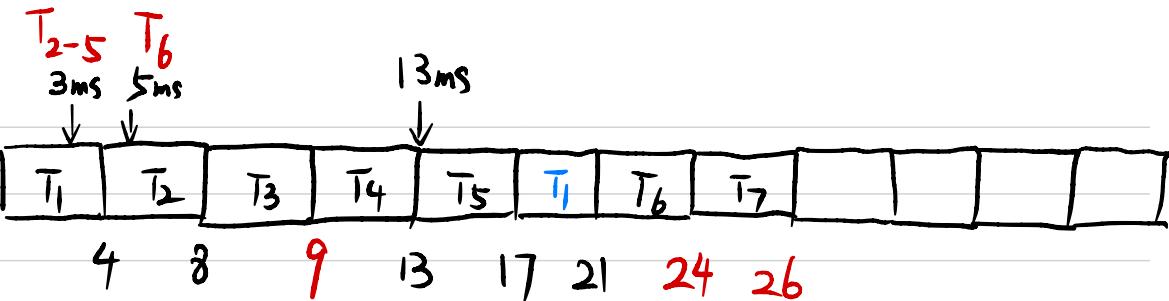


Task	Start	Burst	1	12 (X)	13	17	21	24
	Time	Time	Remain 1	Remain 2	Remain 3	Re4		

T_1	0	10	$10 - 4 = 6$	$6 - 4 = 2$				
T_2	3	4	$4 - 4 = 0$					
T_3	3	1	$1 - 1 = 0$					
T_4	3	15	$15 - 4 = 11$					
T_5	3	4	$4 - 4 = 0$					
T_6	5	3		$3 - 3 = 0$				
T_7	13	2						

RR:

quantum = 4



Task	Start	Burst	1	12 (X)	1	1	1	1	1	1	1
	Time	Time									

T_1 0 10 $-4=6$ | $6-4=2$

T_2 3 4 $-4=0$

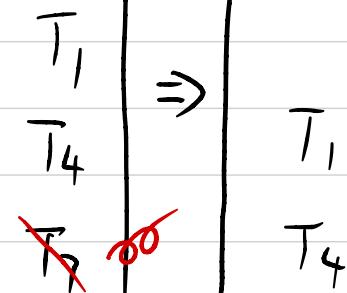
T_3 3 1 $-1=0$

T_4 3 15 $-4=11$

T_5 3 4 $-4=0$

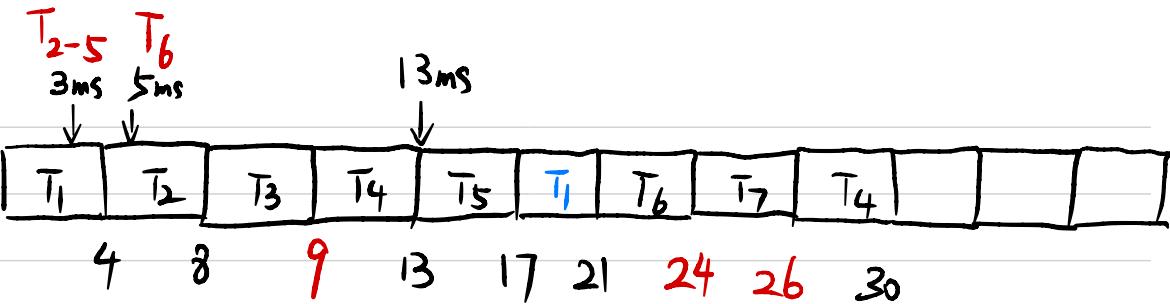
T_6 5 3 $3-3=0$

T_7 13 2 $2-2=0$



RR:

quantum = 4



Task	Start	Burst	Remain 1	Remain 2	Remain 3	Re4
	Time	Time				

$T_1 \quad 0 \quad 10 - 4 = 6 \quad | \quad 6 - 4 = 2 \Rightarrow$

$T_2 \quad 3 \quad 4 - 4 = 0 \quad |$

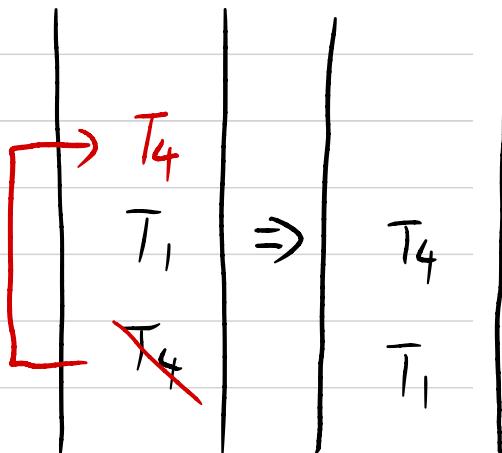
$T_3 \quad 3 \quad 1 - 1 = 0 \quad |$

$T_4 \quad 3 \quad 15 - 4 = 11 \quad | \quad 11 - 4 = 7 \quad |$

$T_5 \quad 3 \quad 4 - 4 = 0 \quad |$

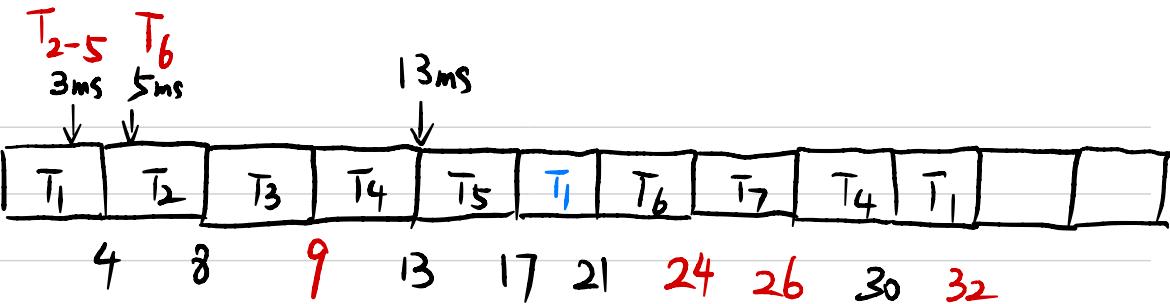
$T_6 \quad 5 \quad 3 \quad | \quad 3 - 3 = 0 \quad |$

$T_7 \quad 13 \quad 2 \quad | \quad 2 - 2 = 0 \quad |$



RR:

quantum = 4



Task	Start	Burst	1	12 (X)	1	1	1	1	1	1	1
	Time	Time									

$$T_1 \quad 0 \quad 10 - 4 = 6 \quad | \quad 6 - 4 = 2 \Rightarrow 2 - 2 = 0$$

$$T_2 \quad 3 \quad 4 - 4 = 0 \quad | \quad |$$

$$T_3 \quad 3 \quad 1 - 1 = 0 \quad | \quad |$$

$$T_4 \quad 3 \quad 15 - 4 = 11 \quad | \quad 11 - 4 = 7 \quad |$$

$$T_5 \quad 3 \quad 4 - 4 = 0 \quad | \quad |$$

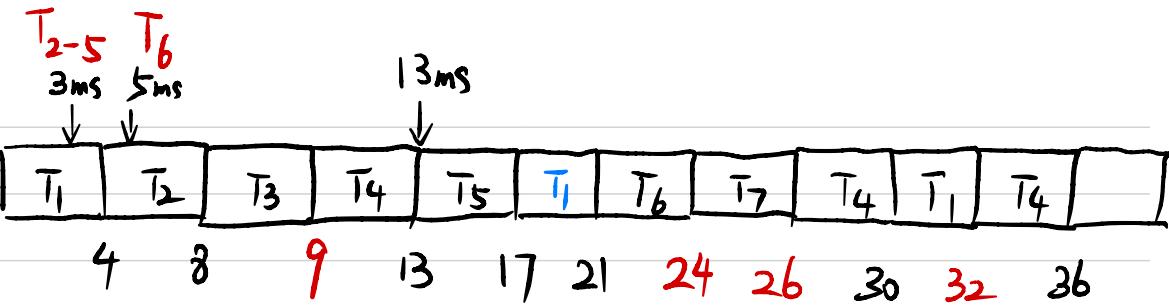
$$T_6 \quad 5 \quad 3 \quad | \quad 3 - 3 = 0 \quad |$$

$$T_7 \quad 13 \quad 2 \quad | \quad 2 - 2 = 0 \quad |$$

T₄ \Rightarrow
T₁ ~~00~~ T₄

RR:

quantum = 4



Task	Start	Burst	1	12 (X)	1	1	1	1	1
	Time	Time	Remain 1	Remain 2	Remain 3	Re4			

T₁ 0 10 - 4 = 6 | 6 - 4 = 2 | 2 - 2 = 0

T₂ 3 4 - 4 = 0 |

T₃ 3 1 - 1 = 0 |

T₄ 3 15 - 4 = 11 | 11 - 4 = 7 \Rightarrow 7 - 4 = 3

T₅ 3 4 - 4 = 0 |

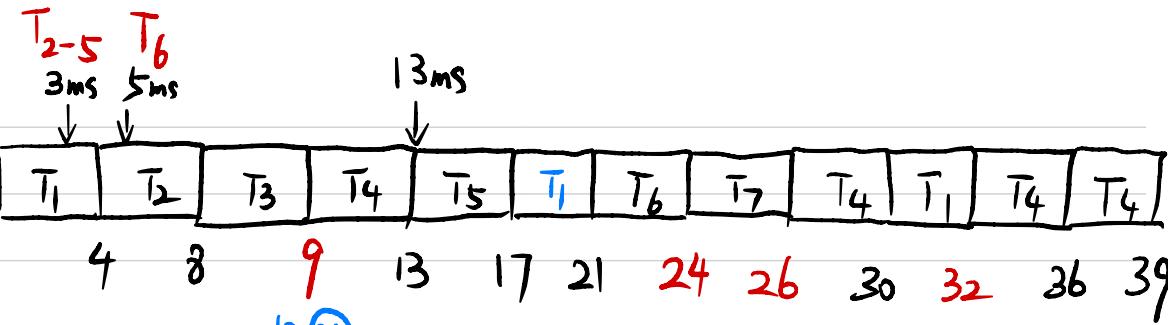
T₆ 5 3 3 - 3 = 0 |

T₇ 13 2 2 - 2 = 0 |

~~T₄~~ ~~00~~

RR:

quantum = 4



Task	Start	Burst	Time	Time	Remain 1	Remain 2	Remain 3	Re4
	1	9						
T ₁	0	10 - 4 = 6			6 - 4 = 2	2 - 2 = 0		
T ₂	3	4 - 4 = 0						
T ₃	3	1 - 1 = 0						
T ₄	3	15 - 4 = 11			11 - 4 = 7 \Rightarrow 7 - 4 = 3 \Rightarrow 3 - 3 = 0			
T ₅	3	4 - 4 = 0						
T ₆	5	3			3 - 3 = 0			
T ₇	13	2			2 - 2 = 0			

~~T₄~~ ~~00~~