For K1

LDF only for sync. Tasks! Explain Modifications.
Alternative: In each time step exponential calculations to Determine schedule

C2

For RM, check if utilization $< \ln(2) \approx 0{,}69$ If yes, we know that schedulable, otherwise not sure.

If RM is deterministic, what it is for Λ it is sufficient to show how RM fails as proof.

Alternative proof for this:

Time we have to wait that Task finished

$$R_i^0 = C_i$$
$$R_i^{i+1} = C_i + \sum_{k=1}^{i-1} \left\lceil \frac{T_i}{T_k} \right\rceil C_k$$

$R_1^0 = 1 \quad R_2^0 = 1 \quad R_3^0 = 2 \quad R_4^0 = 1$

$R_1^1 = 1$ ✓

because this task will never be delayed by any other task (sum = 0)

$$R_2^1 = 1 + \left\lceil \frac{1}{2} \right\rceil \cdot 1 = 2$$
$$R_3^1 = 2 + \left\lceil \frac{2}{2} \right\rceil \cdot 1 + \left\lceil \frac{2}{5} \right\rceil \cdot 1 = 4$$
$$R_4^1 = 1 + \left\lceil \frac{1}{2} \right\rceil \cdot 1 + \left\lceil \frac{1}{5} \right\rceil \cdot 1 + \left\lceil \frac{1}{8} \right\rceil \cdot 2 = 5$$

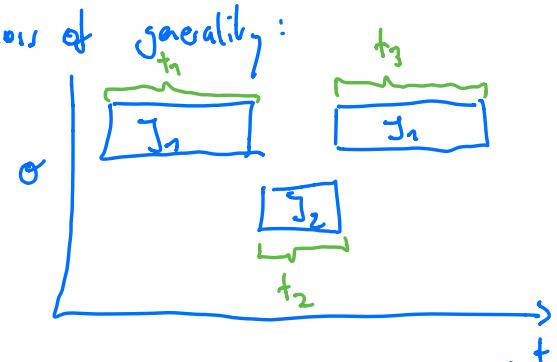
$R_2^2 = 1 + \left\lceil \frac{2}{2} \right\rceil \cdot 1 = 2$ ✓

$$R_3^2 = 2 + \left\lceil \frac{4}{2} \right\rceil \cdot 1 + \left\lceil \frac{4}{5} \right\rceil \cdot 1 = 5$$
$$R_4^2 = 1 + \left\lceil \frac{5}{2} \right\rceil \cdot 1 + \left\lceil \frac{5}{5} \right\rceil \cdot 1 + \left\lceil \frac{5}{8} \right\rceil \cdot 2 = 7$$
$$R_3^3 = 2 + \left\lceil \frac{7}{7} \right\rceil \cdot 1 + \left\lceil \frac{7}{5} \right\rceil \cdot 1 = 6$$

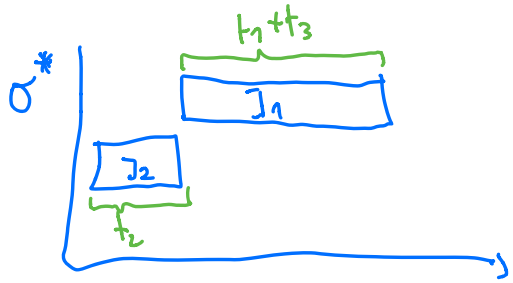
$R_4^4 = 21$ → miss deadline → can't find RM schedule!

C3 a) Assumption J_1, J_2 1 interrupt.

without loss of generality:



$$T_w((J_1, J_2), \sigma) = w_1(t_1 + t_2 + t_3) + w_2(t_1 + t_2)$$



$$T_w((J_1, J_2), \sigma^*) = w_1(t_1 + t_2 + t_3) + w_2(t_2)$$

$$\Rightarrow T_w((J_1, J_2), \sigma^*) \leq T_w((J_1, J_2), \sigma)$$

□

Assumption of 1 Interrupt: okay bc. can apply iteratively

Assumption of 2 Tasks: we can combine tasks if there are more than 2.

C3 b) Schedule task with highest Density first ($\frac{w}{c}$ or $w \cdot c$)

w	c
9	1
9	1
10	10

$T_w = 10 \cdot 10 + 11 \cdot 9 + 12 \cdot 9 > 200$

$T_w^* = 1 \cdot 9 + 2 \cdot 9 + 12 \cdot 10 = 147$

C4 see our submission!