SPRINTS

SCHEDULE ANALYSIS REPORT

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TASK REQUIREMENTS

- **Task:** Schedule the following task set using rate-monotonic:

  T1 {P: 5, E: 2.5, D: 5}, T2 {P: 15, E: 4.5, D: 15}, T3 {P: 20, E: 3.5, D: 20}

  - Calculate the Urm.
  - Calculate the time-demand analysis.
  - Model the task set using Simso.
  - **Provide a report with the above points using screenshots and comments on your results and analysis.**

TASKS DETAILS

Task Name	Period	WCET	Deadline	Priority
(T1)	**5**	**2.5**	**5**	3
(T2)	**15**	4.5	15	2
(T3)	20	3.5	20	1

Warning :High Priority Go To Task With Low Period Due To The Schedule Policy Called Rate Monotonic

SYSTEM CALCULATIONS

Urm:

$$U = \sum_{i=1}^{n} \frac{C_i}{P_i} \leq n(2^{\frac{1}{n}} - 1)$$

U = Total Utilization
C = Execution time
P = Periodicity
N = Number of tasks

- u = (2.5/5) + (4.5/15) + (3.5/20) = 0.975
- urm = 3 * (2^(1/3) -1) = 0.779
- u > urm -> 0.975>0.779
- Due To This System Need More Tests

Hyperperiod/ Critical Instant:

LCM(5,15,20) = 60ms

Time Demand :

$$w_i(t) = e_i + \sum_{k=1}^{i-1} \left\lceil \frac{t}{p_k} \right\rceil e_k \quad for\ 0 < t \leq p_i$$

W = Worst response time
E = Execution time
P = Periodicity
T = Time instance

- Task One With Highest Priority & Its Deadline Is 5ms
  - W(5) = 2.5 + 0 = 2.5
  - So Tn < Tp -> 2.5 < 5 -> True
  - This Mean That Task One Is Scheduled.

SYSTEM CALCULATIONS

- Task Two With Second Priority & Its Deadline Is 15ms
  - W(15) = 4.5 + (15/5)*2.5 = 12
  - So Tn < Tp -> 12 < 15 -> True
  - This Mean That Task Two Is Scheduled.

- Task Three With First Priority & Its Deadline Is 15ms
  - W(20) = 3.5 + (20/15)*4.5 + (20/5)*2.5= 22.5ms
  - So Tn < Tp -> 22.5 < 20 -> False
  - This Mean That Task Three Is Not Scheduled.

- **Conclusion** :
  - Urm & Time Demand Lead Us To The Same Result That The System Is Not Scheduled

SIMSO SIMULATION RESUALT

Model data

General | Scheduler | Processors | Tasks

id	Name	Task type	Abort on miss	Act. Date (ms)	Period (ms)	List of Act. dates (ms)	Deadline (ms)	WCET (ms)	Followed by	priority
1	TASK T1	Periodic	Yes	0	5	-	5	2.5		3
2	TASK T2	Periodic	Yes	0	15	-	15	4.5		2
3	TASK T3	Periodic	Yes	0	20	-	20	3.5		1

Edit data fields...

Remove selected task(s) | Add task | Generate Task Set

Results

General | Logs | Tasks | Scheduler | Processors

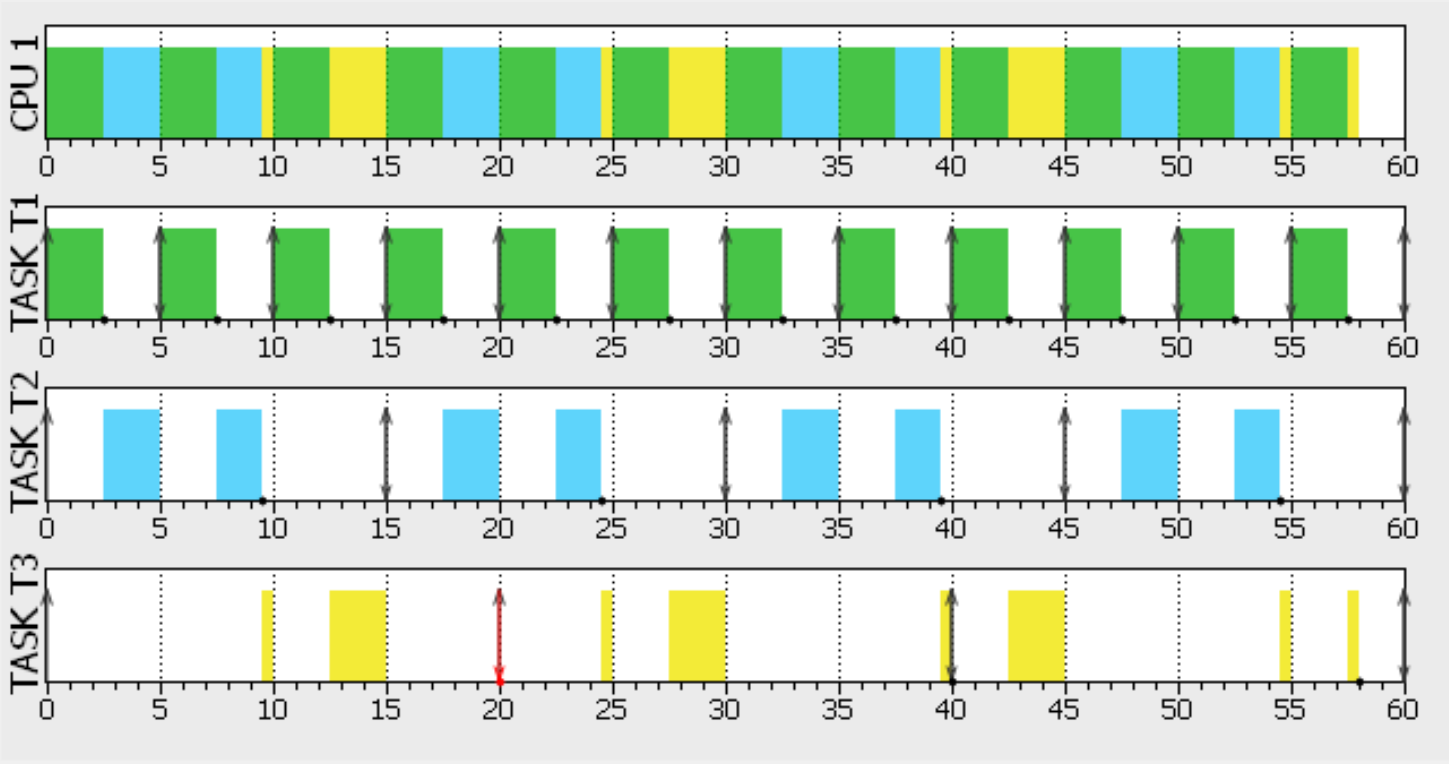
Observation Window:

from 0.00 to 60.00 ms | Configure...

	Total load	Payload	System load
CPU 1	0.9667	0.9667	0.0000
Average	0.9667	0.9667	0.0000

Schedule Analysis Report

SIMSO SIMULATION RESUALT



Schedule Analysis Report

SIMSO SIMULATION CONCLUSION

As we see from simso result it also match the result from urm & time demand that the system is not scheduled because task three is miss its deadline in time of 20ms on timeline