Scheduling...

V 1.0

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Overview

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).

Goals

- Calculate the Urm.
- Calculate the time-demand analysis.
- Model the task set using Simso.

Deliverables

Urm

Given three tasks T1 {P: 5, E: 2.5, D: 5}, T2 {P: 15, E: 4.5, D:15) and T3 (P: 20, E: 3.5, D: 20).

- U = (2.5/5) + (4.5/15) + (3.5/20) = 0.975
- Urm = 3 * (2^(1/3) -1) = 0.779
- U > Urm

Therefore System needs more tests

Time demand analysis

Given three tasks T1 {P: 5, E: 2.5, D: 5}, T2 {P: 15, E: 4.5, D:15) and T3 (P: 20, E: 3.5, D: 20).

Hyperperiod/Critical instant at ***60ms***

T1 (Highest priority) Calculations assuming no tasks are scheduled with a deadline of ***5ms.***

- ***W(5) = 2.5 + 0 = 2.5***
- ***Since Tn < Tp Therefore T1 is Schedulable.***

T2 (taking into consideration already scheduled tasks) with a deadline of ***15ms.***

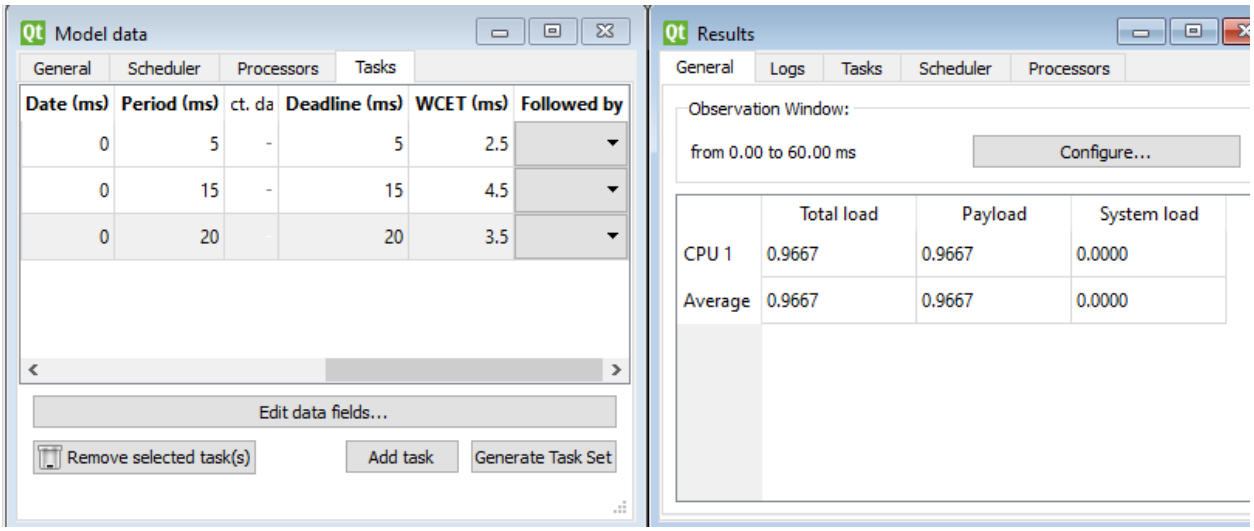
- ***W(15) = 4.5 + (15/5)*2.5 = 12***
- ***Since Tn < Tp Therefore T2 is Schedulable.***

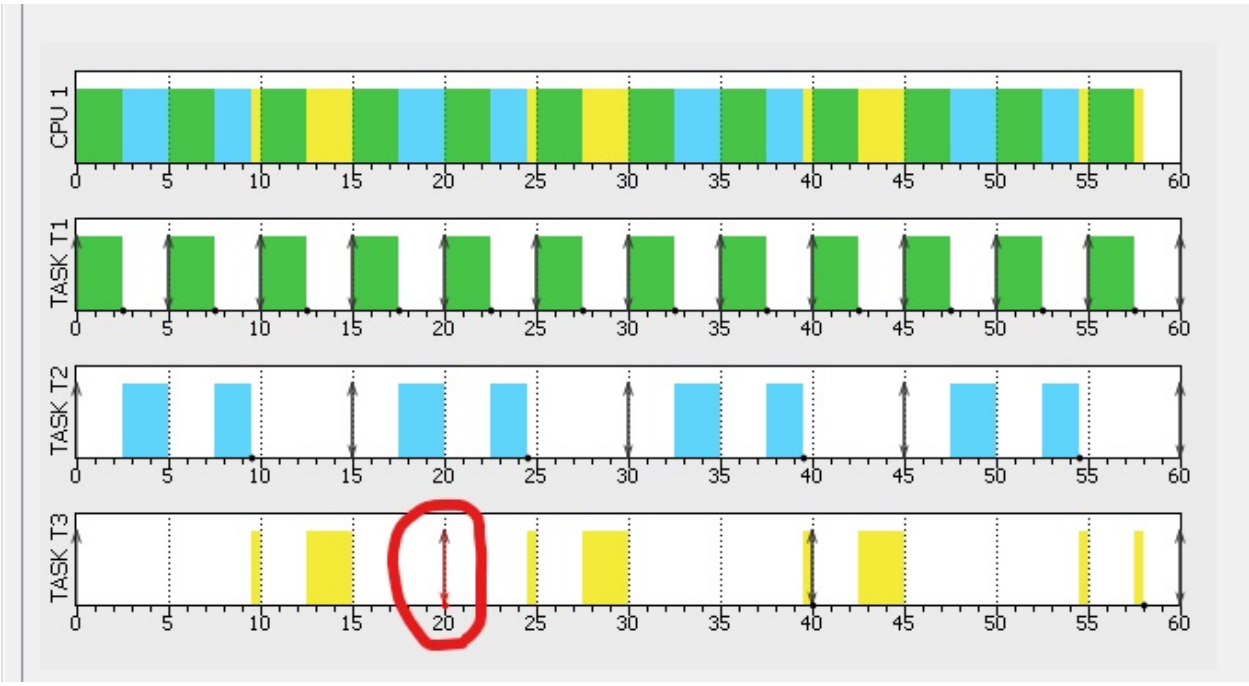
T3(taking into consideration already scheduled tasks) with a deadline of ***20ms.***

- ***W(20) = 3.5 + (20/15)*4.5 + (20/5)*2.5 = 3.5 + 9 + 10 = 22.5ms***
- ***Since Tn > Tp Therefore T3 is not Schedulable.***

Since T3 is not Schedulable Therefore System is not Schedulable.

Simso Output





T3 Missed Deadline so the task is not Schedulable.

Conclusion

- ***According to Urm System needs more tests.***
- ***According to "simso" and Time Demand Analysis***

  The System can not reach schedulability.