

Rapport TP2

Second Labs on Real-Time Scheduling

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Exercice 1 :

1 - T1 missed its deadline, so the task set is not schedulable without a specific protocol for resource allocation.

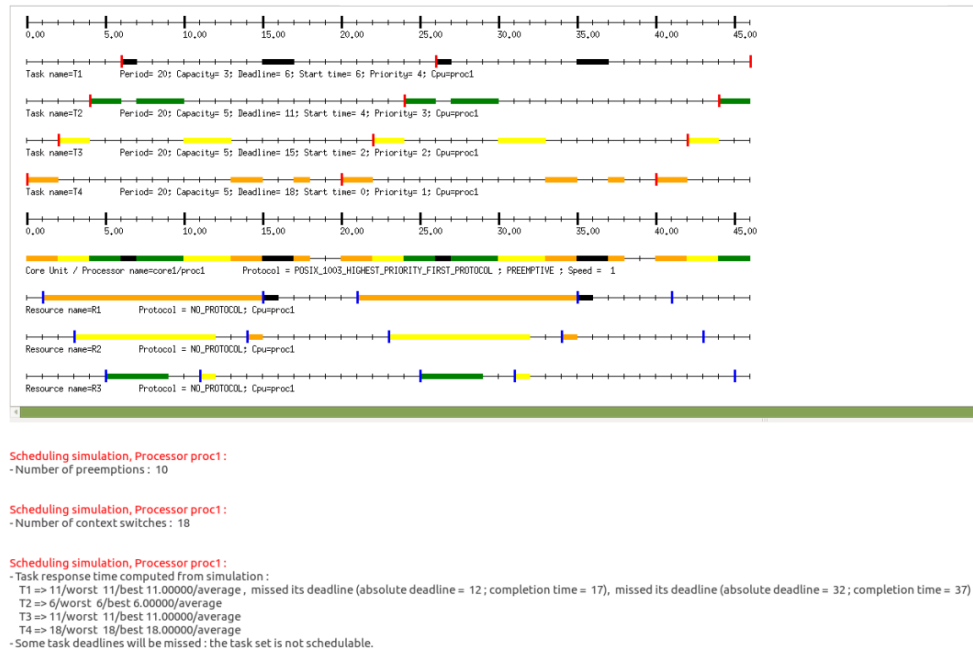


FIGURE 1 – Simulation of the tasks without a specific protocol for resource allocation.

2 - T1 & T2 missed their deadlines, so the task set is not schedulable with the Priority Inheritance protocol.

3 - The task set is schedulable on the feasibility interval with the Stack-based Protocol (Immediate Ceiling Inheritance Protocol).

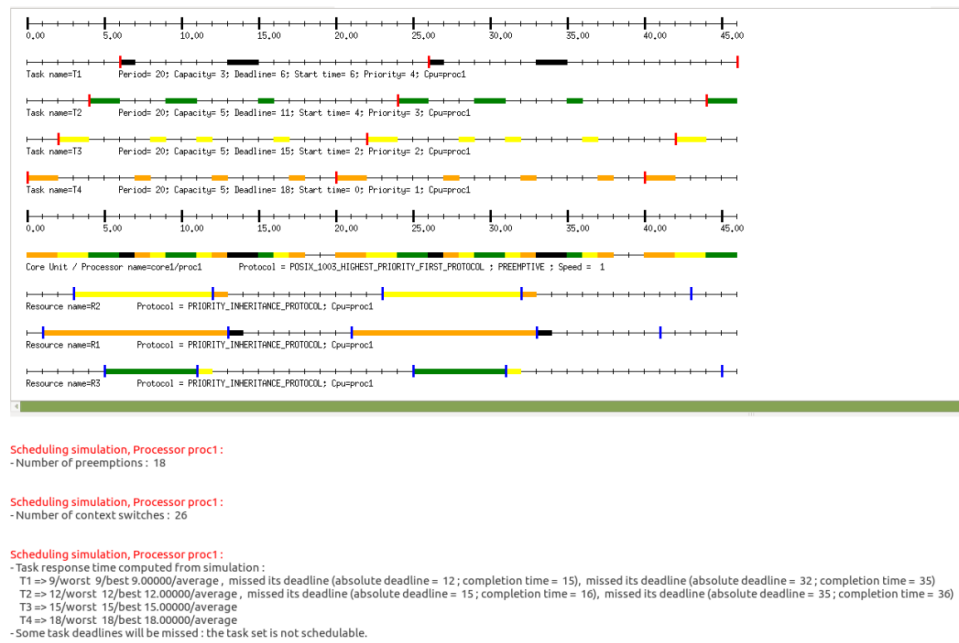


FIGURE 2 – Simulation of the tasks with the Priority Inheritance protocol.

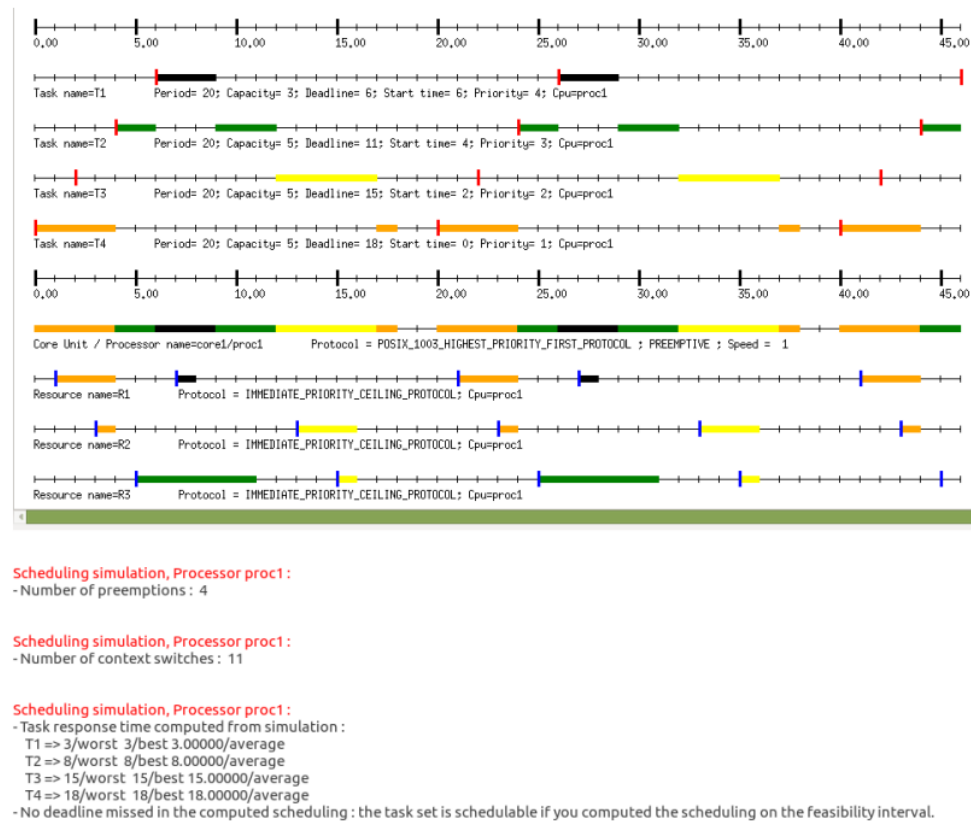


FIGURE 3 – Simulation of the tasks with the Stack-based Protocol (Immediate Ceiling Inheritance Protocol)

Exercice 2 :

3 - If two tasks have the same periods and are synchronized, the third task cannot fit on two cores, despite the reduced payload of T1 compared to the first simulation.

Exercise 4 :

The worst response time (4) is not observed at time 0 (3), meaning the worst-case scenario does not occur when all tasks wake up at time 0. This anomaly can be explained similarly to the previous exercise. The synchronization of free time results in wasted computation time, which increases the response time.

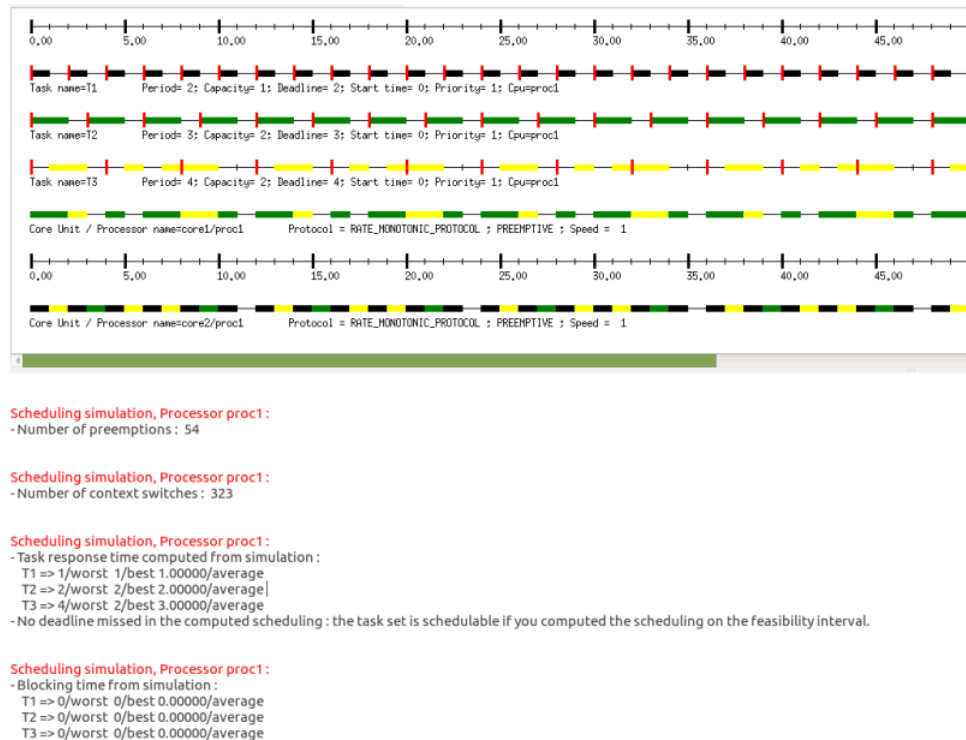


FIGURE 6 – Simulation of the tasks

We then conclude that if two tasks finish simultaneously, you cannot split T3 across both cores to utilize the available free time.

Exercice 5 :