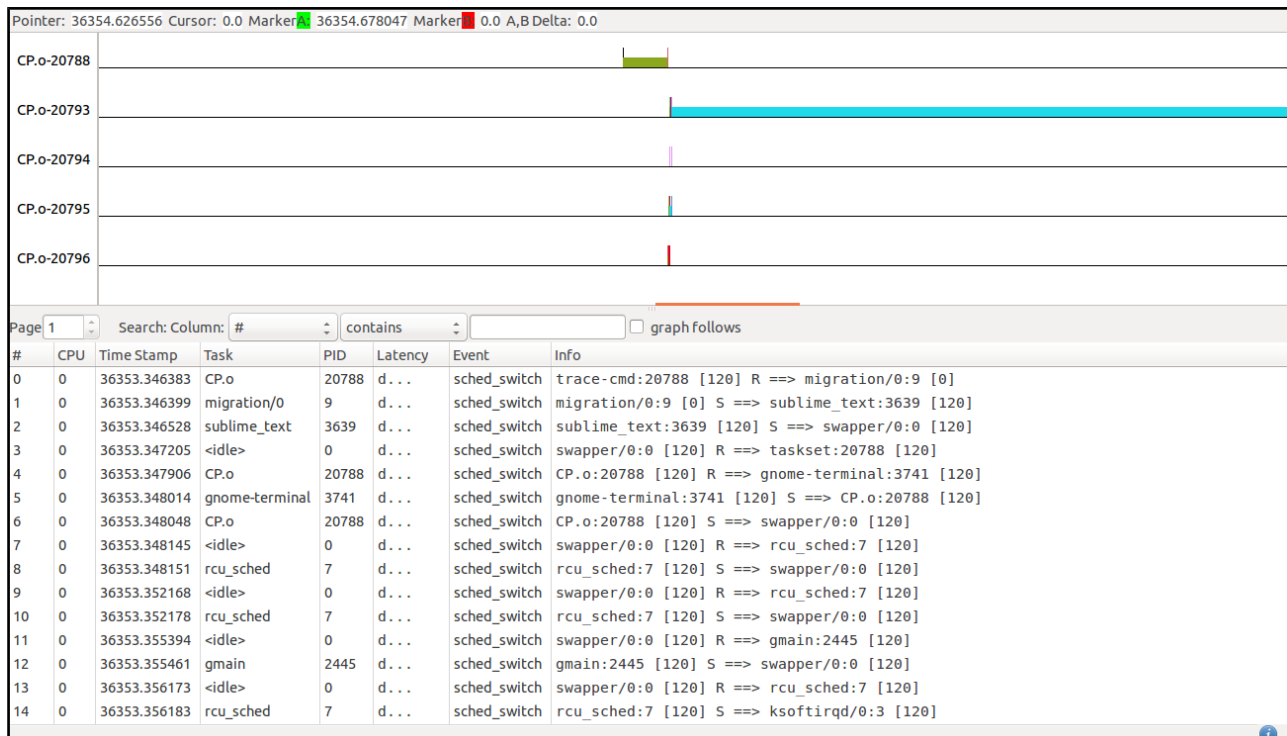


CSE 522 RTES ASSIGNMENT – 01

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OBJECTIVES

1. All Threads start execution at the same time



2. For Aperiodic Task, Execute Body Loop once a button is clicked. Successful termination of all threads can be observed also as required. The threads only terminate after their current ongoing execution.

For this input, we can see successful execution

3 10000

A 10 1 100

A 10 0 500

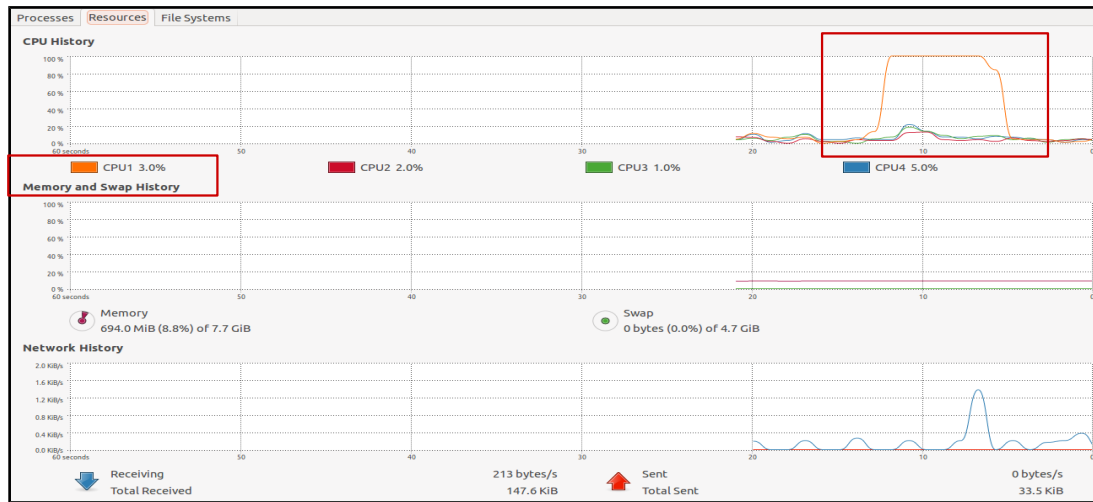
P 20 500 200 L3 300 U3 400

For each successful execution for Aperiodic task it will print Busy Loop following Left Click

[illegible]

3. CPU Affinity

We bound our threads to CPU1 during execution on host but this can be changed by find and replace CPU_SET(1 to CPU_SET(x value where x is CPU of your choice.



4. PI Enabled and Not Enabled cases

Can be found on line 430 to 450 of code where the user makes the choice

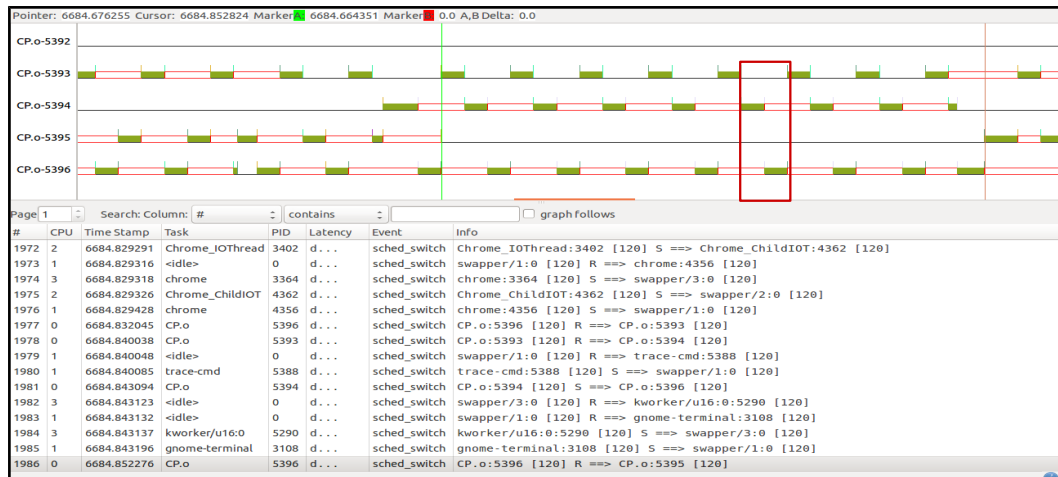
Spotting PI Inversion using the following specification

3 10000

P 20 1200 200 L3 300000000 U3 500

P 10 400 200 L3 300000000 U3 500

P 15 200 200 L2 100000000 U2 500



We note that the First two while the Periodic task with priority 20 is holding mutex3 and if Periodic task with priority 15 were to interfere then Priority inversion may take place as can be seen in the above image.

5393 -> Mouse monitoring

5394 -> Periodic with priority 20

5395 -> Periodic with priority 10

5396 -> Periodic with priority 15

In the boxed duration, The 5394 task (priority: 20)(Low priority) has acquired mutex3 over 5395 task (priority: 10)(High priority). In this period the mouse thread (5393) is not being processed only the 5394 task was being processed. Midway, task 5396 (priority: 15) is able to overwrite the low priority task and the Highest priority task is still waiting on Mutex3. This is priority inversion occuring.

5. Setting the Real time policy SCHED_FIFO. This has been done on line 462 and 546. Basically modifies the attributes of the threads.

6. It says that the tasks should only be terminated once the current iteration has been completed and the thread is in waiting mode. Please see this in the image below. 6895 and 6897 are the periodic tasks and the specifications are as follows.

2 7000

P 20 1200 200 L3 30000 U3 500

P 15 200 200 L2 100000000 U2 500

