

1)

a) All tasks are schedulable using utilization bound test: $(11/60) + (26/155) + (41/210) < U(3)$

b)

Using C_a as 26 we get the following result using exact test:

Using exact test:

done task 2 is schedulable.

totalcold: 38

totalc: 38

done task 3 is schedulable.

totalcold: 102

totalc: 102

done task 4 is schedulable.

totalcold: 118

totalc: 118

But when we use C_a as 27 we get the following:

Using exact test:

done task 2 is schedulable.

totalcold: 39

totalc: 39

done task 3 is schedulable.

totalcold: 104

totalc: 104

done task 4 is not schedulable.

totalcold: 185

totalc: 224

So $C_a = 26$ is the largest computation time for all tasks to be schedulable.

2) (What this is, do it how??!?!?!)

3) Since adding a sporadic server is same as adding a periodic task, we can just check using exact test and use GMRS for priority:

Using $C = 3$:

Using exact test:

done task 2 is schedulable.

totalcold: 4

totalc: 4

done task 3 is not schedulable.

totalcold: 7

totalc: 11

done task 4 is not schedulable.

totalcold: 19

totalc: 27

Using $C = 2$:

Using exact test:

done task 2 is schedulable.

totalcold: 3

totalc: 3

done task 3 is schedulable.

totalcold: 10

totalc: 10

done task 4 is not schedulable.

totalcold: 20

totalc: 23

Using $C = 1$:

Using exact test:

done task 2 is schedulable.

totalcold: 2

totalc: 2

done task 3 is schedulable.

totalcold: 6

totalc: 6

done task 4 is schedulable.

totalcold: 18

totalc: 18

So $C = 1$ is the highest budget that we can use.

4) (honetly don't know how to do this)

a) Since you look at max blocking times and priority inheritance, t4 can affect t1 even though they do not share the same semaphore.

$$B1 = 8+9+10 = 27$$

$$B2 = 9+10 = 19$$

$$B3 = 10$$

$$B4 = 0$$

b)

$$B1 \text{ worst time} = 6$$

$$B2 \text{ worst time} = 10$$

$$B3 \text{ worst time} = 10$$

$$B4 \text{ worst time} = 0$$