

Q1a) (a) Compute the processor utilization and the major cycle of the task set (a major cycle is defined as the time duration

[0, least common multiple or LCM of the periods of all the tasks]).

Ans: Processor utilization is $1, 2/5+2/4+1/10=1$, Processor utilization= $\frac{\text{Execution}}{\text{time Period}}+\frac{\text{Execution}}{\text{time Period}}+\frac{\text{Execution}}{\text{time Period}}$

LCM of 5,4,10 is 20.

So, the major cycle is of 20.

Q2a) (a) Compute the processor utilization of the task set τ' and the major cycle of the task set?

Ans: Processor utilization is $1, 1/4+2/6+2/8+1/6=1$, Processor utilization= $\frac{\text{Execution}}{\text{time Period}}+\frac{\text{Execution}}{\text{time Period}}+\frac{\text{Execution}}{\text{time Period}}+\frac{\text{Execution}}{\text{time Period}}$

LCM of 4, 6, 8, 6 is 24.

So, the major cycle is of 24.

Q3a) compute the processor utilization U of this task set?

ANS: $4/20+4/20+4/20+2/20+4/20=0.9$

Q6b) What is the number of concurrently running cores required to schedule using the ASAP algorithm?

ANS The total cores for the function of ASAP (As much as possible) are 5

Q6c) What is the number of concurrently running cores required to schedule using the ALAP algorithm?

ANS The total cores for the function of ALAP (As Late as possible) are 5.

Q6d)

Ans: The As much as possible and as late as possible requires 46 cycles to execute all the given task. But, the mobility approach requires more cycles than ASAP and ALAP.