Task Definitions

Standard Definitions

Representation of periodic tasks:

ϕ_i = release time of the tasks (when it starts)
P_i = period of the task, the time interval between two consecutive jobs$
e_i = the execution time of the task D_i = relative deadline of the task

(ϕ_i, P_i, e_i, D_i)
$(0, P_i, e_i, D_i)$
$(0, P_i, e_i, P_i)$

utilization $u_i = \frac{e_i}{p_i}$
$U = \sum_{i=1}^{n} u_i$

Hyperperiod

$N = \sum_{n=1}^{n} \frac{H}{p_i}$
p_i is the period of each task

Frame Size Constaints

$H = lcm(e_i)$
C1: A job must fit into a frame
$f \geq max\ e_i$ for all tasks

C2: H must be evenly divided by F, the hyperperiod has an integer number of frames (only factors work)
C3: $2f - gcd(P_i, f) \leq D_i$ for each task i (gcd is greatest common divisor)

CE Scheduling

Two conditions:
If a job arrives before or at the starting time of frame k
If job i has an absolute deadline which is smaller than or equal to the ending time of frame k

Rate Monotonic Scheduling

Lowest period = high priority

Deadline Monotonic Scheduling

Lowest deadline = highest priority

Dynamic Priority Scheduling

Earliest deadline first = arrival + relative deadline = high priority