

長庚大學111學年度第二學期 作業系統實務 第三次小考（總分100）

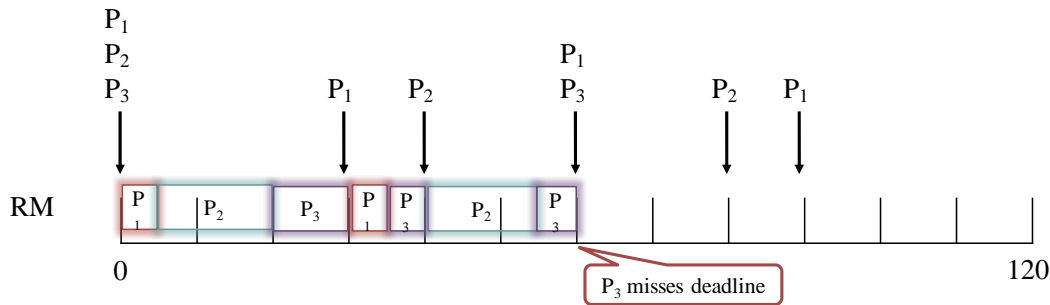
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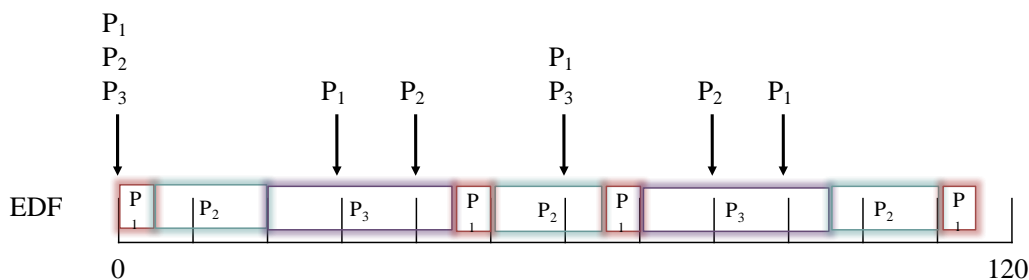
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1. (40%) There are three periodic tasks  $P_1$ ,  $P_2$  and  $P_3$ .  $P_1$  has its period 30 and execution time 5.  $P_2$  has its period 40 and execution time 15.  $P_3$  has its period 60 and execution time 25. Please draw the results of the (a) RM and (b) EDF scheduling algorithms.

Answer: (a) (20%)



(b) (20%)



2. (60%) Please briefly explain (a) the **Rate Monotonic (RM)** scheduling algorithm and (b) the **Earliest Deadline First (EDF)** scheduling algorithm for real-time task scheduling. For two periodic tasks  $P_1$  and  $P_2$ ,  $P_1$  has its period 30 and execution time 15, and  $P_2$  has its period 50 and execution time 20. Assume  $P_1$  and  $P_2$  are ready at time 0. Please draw the scheduling results from time 0 to 150 for (c) the RM scheduling and (d) the EDF scheduling.

Answer: (a) A static priority is assigned to each task based on the inverse of its period. (10%)

(b) Dynamic priorities are assigned according to deadlines. A task with the earliest deadline is assigned the highest priority. (10%)

(c) (20%) (d) (20%)

