Operating System 2021

Quiz #6

* A system with a single processor is using the FCFS scheduling strategy. Five processes 𝑝1,…,𝑝5 have arrived in the order 𝑝1≺𝑝2≺𝑝3≺𝑝4≺𝑝5. The compute times are 𝑐1=2,𝑐2=1,𝑐3=3,𝑐4=1,𝑐5=2 time units. Which of the following statements are correct?
  + The correct answers are: The average waiting time is 𝑤¯=185.
  + The processes may finish in the order 𝑝1≺𝑝2≺𝑝3≺𝑝4≺𝑝5.
* For real-time systems and real-time scheduling
  + Real-time systems give priority to time critical tasks in order to meet deadlines., Hard real-time systems require that all system services have known worst-case time boundaries., The earliest-deadline-first scheduling strategy guarantees that deadlines are met if sufficient resources are available for the admitted tasks and all system functions have known worst-case time boundaries., Hard real-time systems will only admit tasks with known resource requirements and if the resources available are sufficient to complete the task in time.
* A system with a single processor is using the SPTF scheduling strategy. Five processes 𝑝1,…,𝑝5 have arrived in the order 𝑝1≺𝑝2≺𝑝3≺𝑝4≺𝑝5. The compute times are 𝑐1=2,𝑐2=1,𝑐3=3,𝑐4=1,𝑐5=2 time units. Which of the following statements are correct?
  + The average waiting time is 𝑤¯=135.
  + The processes may finish in the order 𝑝2≺𝑝4≺𝑝1≺𝑝5≺𝑝3.
* A system with a single processor is using the RR scheduling strategy. Five processes 𝑝1,…,𝑝5 have arrived in the order 𝑝1≺𝑝2≺𝑝3≺𝑝4≺𝑝5. The compute times are 𝑐1=2,𝑐2=1,𝑐3=3,𝑐4=1,𝑐5=2 time units. Which of the following statements are correct?
  + The average waiting time is 𝑤¯=205.
  + The processes may finish in the order 𝑝2≺𝑝4≺𝑝1≺𝑝5≺𝑝3.
  + The processes 𝑝1 and 𝑝5 will be prempted once, process 𝑝3 will be preempted twice.
* What distinguishes a fair-share scheduler from a regular scheduler?
  + A fair-share scheduler aims at assigning resources fairly to all users of a system., A fair-share scheduler makes it difficult for users to “game the system” in order to obtain an unfair share of resources.
* What are typical goals of a scheduler?
  + Provide fairness, Minimize overhead, Minimize response time, Maximize resource usage
* Scheduling strategies are preemptive
  + Round-robin, Shortest-remaining-time-first
* A system with a single processor is using the LPTF scheduling strategy. Five processes 𝑝1,…,𝑝5 have arrived in the order 𝑝1≺𝑝2≺𝑝3≺𝑝4≺𝑝5. The compute times are 𝑐1=2,𝑐2=1,𝑐3=3,𝑐4=1,𝑐5=2 time units. Which of the following statements are correct?
  + The average waiting time is 𝑤¯=235.
  + The processes may finish in the order 𝑝3≺𝑝1≺𝑝5≺𝑝2≺𝑝4.
* For round-robin variations
  + Multilevel queue scheduling separates processes with different priorities by assigning them to different queues., Multilevel feedback queue scheduling provides different priority queues but allows processes to move between queues.