Ex 9

Properties

Task 1

1. Because we need to prioritize. Some tasks are more important than others and some need to respond quickly to fool the user into believing that the system responds immediately. Especially crucial for RTS-games.
2. It must be analytical so that we can predict what it’ll do with a given set of tasks.

Inversion and inheritance

Task 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| **a** |  |  |  |  | E |  |  |  |  |  |  | Q | V | E |  |
| **b** |  |  | E | V |  | V | E | E | E |  |  |  |  |  |  |
| **c** | E | Q |  |  |  |  |  |  |  | Q | Q |  |  |  | E |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| **a** |  |  |  |  | E |  |  | Q |  | V | E |  |  |  |  |
| **b** |  |  | E | V |  |  |  |  | V |  |  | E | E | E |  |
| **c** | E | Q |  |  |  | Q | Q |  |  |  |  |  |  |  | E |

Task 3

1. A task with higher priority waits for a task with lower priority to release its grip on a resource.   
   Unboundedness happens if other tasks block the lower priority task from running indefinitely.
2. No. Two tasks can each lock a resource the other needs and thus stay locked.

Utilization and response time

Task 4

* 1. Fixed set of tasks (fine)
  2. Periodic tasks with known periods (Not really)
  3. Tasks are independent (Not for complex systems)
  4. Can ignore switching times
  5. Deadline is the same as period
  6. Fixed worst case execution time (Can always set an arbitrary long time)
  7. Rate-Monotonic Priority ordering

1. U = 0.3 + 1/3 + ¼ =0.8833 !<= 0.7797 Cannot know if it is schedulable.
2. Assume priority c > b > a
   * 1. =10
     2. 15
   1. All response times *R* are lower or equal to the period *T* thus the task set I schedulable.   
      The answer is different because this is a sufficient and necessary condition, but the Utilization test is only sufficient.