Examination Feedback for EEE412 – System Architectures
Autumn Semester 2011-12

Feedback for EEE412 Session: 2011-2012

Feedback: Please write simple statements about how well students addressed the exam paper in general and each individual question in particular including common problems/mistakes and areas of concern in the boxes provided below. Increase row height if necessary.

General Comments:

Generally, the paper was well answered. However, the perennial entreaty to read the question needs to be made again. Many students gave excellent and lucid answers to questions which did not actually appear in the examination paper...

Question 1:

(a) Many people forgot to mention the obvious hardware interrupt! In the description of the system call, many omitted any mention of how parameters are passed to a system call.
(b) This produced some eccentric answers to do with "testing the process" and the like. Many forgot to state that the test-&set instruction is used for process synchronisation.
(c) The question asked for a description of the signal implementation – many answers stated that a signal was a low level IPC mechanism which was not (explicitly) sought.

Question 2:

(a) Many failed to identify that priority inversion is connected i) with the locking of a resource by a low priority process, and ii) the effect of an intermediate priority process. A erroneously few thought that the intermediate-priority process had to request the resource locked by the low priority process for inversion to happen.
(b) Livelocks were frequently confused with deadlocks – they are fundamentally different.
(c) This produced some very confused answers. Typically, students failed to grasp that each of the multiple-level queues had the same priority, and that the objective of the scheduler is to empty the highest priority occupied queue. There were all sorts of strange accounts of highest priority job in each queue being relegated if it didn't finish in one timeslice...
(d) Many answers described semaphores and how they could be used for synchronisation... which was not what the question asked for.

Question 3:

(b) This received a lot of answers about pipes and mailslots. The question asked about inter-process communication using *shared memory* which is a fundamentally different IPC mechanism.
(c) A variable set of answers ranging from the clear and concise to the rambling and incoherent. Several thought the processes were trying to read/write data from the lock file – in fact, its only purpose is to act as an object on which there is mutually-exclusive access.
(d) Many mentioned deadlock, either the single process deadlocking or the two processes deadlocking deadlock is not relevant to this question. There were also a number of vague answers about data security which again is not relevant.

Question 4:

(a) Most identified that the buddy system reduces fragmentation (although some thought this eliminated internal fragmentation – it does not as the block of memory allocated to a process is typically larger than needed). Few identified the other advantages.
(b) Many though this question was about "virtual machines" or "file systems" - read the question!
(c) Most correctly identified the advantages of journalling file systems and described their operation. The disadvantages and what to do about them was much less well answered.