PGT Exam Performance Feedback
Semester 2

COMP60012  Future Multi-Core Computing  Ian Watson
Comments:
Q1. This was largely a bookwork question and was answered quite well by all. For some, answers to sections e) & f) would have been improved by the inclusion of simple examples.

Q2 & Q3. These questions were of the same form, i.e. reading and evaluating a research paper and therefore generic comments are appropriate. In general the questions were answered quite well.
A few answers concentrated too much on the precis and too little on the analysis. Those who followed the guidelines, established during the course unit, for the evaluation of research papers tended to produce the best answers.

COMP60032  High Performance Computing in Science and Engineering  Len Freeman
Comments:
1. Two answers only; one perfect; one weak, mainly due to not answering the questions set.

2. Fifteen answers - clustered at 9.2 (out of 20) (46%). None getting everything right.
a) Hardly any diagrams - and not much solid analysis of the abstract opportunities for parallel execution and the data access patterns.
b) Variable analysis for part (b); lots of focus on relatively unimportant issues (e.g. false sharing) - hardly any comment on the effect of j on overheads.
c) generally answered better than prior parts (in terms of consistency with analysis in part (b)).

3. a) The crux of this question is to derive the volume of communication "per processor" implied by the different partitioning strategies and identify the optimum.
   (i) Need to eliminate the loop carried dependence due the statement k = k+1.
   (ii) Recognise triangular iteration space.
   (iii) Reorder loops for stride-1 access to c.

4. Parts a), b), c) were generally attempted reasonably well; for par d), focus on the specific issues of implementing a parallel Strassen algorithm.

COMP60092  Computational Finite Element Method  Milan Mihajlovic
Comments:
As I had only 4 students, there was nothing unusual in the exam. Three of the students performed quite well, with one failing to reach the required standard to pass. However, he did have similar problems with other modules and will not complete the degree.

COMP60112  System Construction Using B  Richard Banach
Comments:
q1: answered reasonably well
Q1.a Around 2/3rd of answers were OK. About 1/3rd who attempted the question did not answer this part of the question.

Q1.b As Q1b to a large extent. Weaker answers only considered one aspect or failed to consider the similarities and differences between infrastructure devices and mobile/PDA device operating systems.

Q1.c Many students did not mention 'delay' or latency which is a major difference between the two networks. Answers often not well thought out, and rather rambling.

Q1.d Not too bad a response, but again some answers were 'rambling' and unfocussed.

Q2. Many attempts showed little understanding of this material but clearly student's thought they knew enough to answer this question rather than others.

Q2.a Nobody knew/remembered that the lowest data rate in 802.11a is 6Mbps whereas in 802.11bg it is 1Mbps. All control frames and packet headers are sent at the lowest supported speed. 6Mbps requires a much higher SNR to be understood and therefore has a much smaller coverage area. The coverage area for 1Mbps is (for fixed transmit power) the same as the area where anybody transmitting when the node is receiving would cause a frame to be dropped due to errors caused by having too low a SNR.

Q2.b There were 1 or 2 good answers to this but most answers showed problems with understanding how RTS/CTS works. This is a basic mechanism and is part of ALL the 802.11 standards (several students said that 802.11bg only uses CSMA/CA which it does for ALL transmissions but all the 802.11 standards also mandate the possible additional use of RTS/CTS alongside CSMA/CA).

Q2.c This was the part I think is the most difficult to understand. Around 50% of answers showed that the idea if not the details have been understood.

Q2.d There is no power adaptation in 802.11! Some answers had sensible ideas for how it might be implemented.

Q3. There were some good attempts at this.

Q3.a Was looking for a description of what WiFi does well and badly plus how these characteristics interact with the imagined needs of a wireless sensor network.

Q3.b This should have resulted in a description of what a wireless network node does from being switched on to find neighbours, establish connectivity etc. Most answers discussed neighbour detection (NDP) and DHCP. Few considered addressing needed for protocols such as NDP and DHCP to operate. Most discussed routing to find gateways.

Q3.c Most answers provided synchronization messages of one type or another. Quite a few answers skipped the issue of limited power and how to react in a network to node failure.

Q4. Quite well done on the whole. Reasonable average. In part (a) we are looking for insight that cannot simply be gleaned from the diagram. Part (b) was perhaps a little easier than intended, and this worrysome students. But the CRC check is indeed 000, which it can be in real life but not often on exam papers. To get full marks, you have to show the algorithm correctly - if you do not append zeros (or multiply by x4) you still get the same answer, but you lose marks. For part (c) the difference between block & convolution codes was badly understood (its often the seemingly easiest part of a question that throws the most people). More than half the class got this numerically correct - orlogically correct - but the mistakes were embarrassing - e.g. conversion from octal to binary and drawing the convolutional coder. I readily forgive those who got the encoded bit-stream wrong and lost a mark. But overall I find that MSc students, especially this year, like numerical/logical questions better than descriptive ones.

Q5. There are people in this class who really do understand the physical layer stuff and well done to them. Those who didn't but tackled this question still showed some rudimentary
idea and all of them got the Shannon-Hartley question (part c) right. Good old Shannon
(anybody know who Hartley was?). The vector modulation part (b) was not really well
answered by most people, and in part (a) the fundamental reason for the existence of a
maximum achievable bandwidth efficiency
(binary and without ISI) has not generally been grasped in spite of all the lecturer's effort.
Failed yet again. However, the lecturer was pleasantly surprised at the general level of
knowledge about multi-carrier signalling and OFDM in part (d).

COMP60372 Semi-structured Data and the Web
Uli Sattler

In general, most students did well in the exam.

Question 1 was answered without too much trouble by most students:

some students had difficulties with 1.1d (because they didn't understand that a validating
XML parser always checks a document against a schema, i.e., tests whether the document
satisfies all the structural, datatype, and other constraints expressed in the schema, and
might also generate a PSVI)

some students had difficulties with 1.2 because they couldn't remember/express the 2
concepts of "structure" of the document (which elements are allowed where) and "type" of
elements (what kind of content can an element have)

some students struggled with 1.3: tree grammars are used as an abstract for/to represent
(and compare) the structural aspects of XML schema languages, and single-type is relevant
to ensure uniqueness of PSVIs...

some students struggled with 1.8 since they were unable to describe a validation process and
an inference process, and sometimes even got their input-output behaviour wrong.

some students, in response to 2.1, confused "general" uses of a schema (as discussed esp.
on the first 2 days, e.g., for human documentation, for autocompletion, query/parsing
aid/optimization, sanity checking, data augmentation) with specific things you can do "in" a
schema (e.g., define complex/simple/derived types, say which attributes go with which
elements);

the only (syntactically legal) way to make the example in 2.3 super confusing was to define a
binding for b

for 2.5, the only language which "in principle" cannot do this validation is DTD which has "no"
facilities for element text content typing (and, of course, it doesn't type integer content); all the
other languages do

for 2.6, although some of the departures from DTD syntax were rather extreme, we generally
didn't take off for that; instead we were looking for the correct typing of things (attributes vs.
elements), the association of attributes with elements, and somewhat reasonable content
models (e.g., any of these were acceptable content models for arguers:

```xml
<!ELEMENT arguers (person)+ >
<!ELEMENT arguers (person)* >
<!ELEMENT arguers (person, person) >
```

but

```xml
<!ELEMENT arguers (person) >
```

was clearly wrong. (I.e., the example document would not be valid by this). Similarly

```xml
<!ELEMENT arguers ANY >
```

while describing the document as valid, radically under-describes it (e.g., allows nested
arguers).
For feedback please see Aphrodite Galata.
Question 1

1.1 Answers ok in general, although explicit/implicit not discussed in much depth.

1.2 Reasonable answers here

1.3 Poorly answered overall. No one really attempted to discuss any details of possible implementations. Identification of features/packages was patchy.

Question 2

2.1 Marked fairly leniently. Most answers had the "spirit" right, but weren't particularly well expressed.

2.2 Bookwork. Well answered

2.3 Well answered overall, although illustrative examples could have been better

2.4a Nearly all answers correct

2.4b Nearly all answers correct

2.4c The tableaux descriptions were done well. The use of the drawing tool didn't appear to cause any issues with the presentation of the answers

Question 3

3.1 Not answered particularly well. Very few students made reference to definitions only and acyclicity

5.1 The number of connectives is not a measure of logical expressivity, since many connectives can be defined in terms of others (all of predicate logic can be expressed using just two connectives: the sheffer stroke and one quantifier.

5.2 Increases expressivity can *both* raise and lower the cognitive complexity (in different dimensions). On the one hand, with more expressivity you can *say* more things in a direct and (hopefully) natural manner. However, there will also be *more ways* to say (roughly) the same thing and analysis can be harder. Similarly, since expressivity (by and large) increases computational complexity, it can damage the overall cognitive complexity by slowing down tools or making them impossible.

6.1 No mere adjustment of resources will make an intractable problem tractable. Dedicability is useful even when the language is intractable since it means that we can focus on optimization rather than whole sale proof procedure alteration.

6.3-6.4 The key is always that there is not *too much* unsoundness (resp. incompleteness) and we need *some* answer fast (resp. all answers even if there's some false positives). In both cases, one hopes to get much better performance.

6.4 Garbage in-garbage out. Just because your reasoner is good doesn't mean the inputs are.

8.1 The most obvious useful thing to return is whether the subsumption is asserted or inferred and (perhaps) the reasoners for it being so.

3.2 Reasonable, although some students seemed to have misinterpreted the question and produced Tboxes explicitly containing cycles.

Question 4

4.1 Overall, good answers, with reference to the underlying semantics provided by OWL (and thus the ability to use reasoning).
4.2 Reasonable answers (reuse of standard infrastructure, labelling as extra-logical)

4.3 A spread of answers here. In general, although valid points were made, there was a lack of real argumentation or justification for the positions being adopted.

**COMP67032 Building Web Applications Thierry Scheurer**

This course was generally well received by the students. All items of coursework, eight in all, were carried out successfully. Also, overall the examination results were good. However there were causes of disappointment with two questions of the paper.

a) Part of Question 2 (on JSP etc.) was often not well answered. This was the part where students had to answer on the basis of their analysis of software provided for exercises in addition to theory provided. They often did little more than reproduce the code given in the question without saying much by way of explanation beyond paraphrasing the code.

b) Question 4 was different from the others. Its topic was Java ServerFaces (JSF), which was covered mainly by exercises in the lectures. Consequently, in order to prepare for this question, students had to do their own research on the topic. This was compensated by the fact that in my guidance note for revision, I pointed out that there would be some question on JSF and I indicated the issues that this question would address very precisely. Most of these could be addressed fairly easily from the students's experience in doing the JSF-based exercises and their analysis of the code involved. This of course required some significant preparatory work on their part, of an 'enquiry-based learning' nature rather than learning textual material. It appears that this point was generally not understood. Only 3 candidates answered the question, and only one satisfactorily.

Returning to Question 2, the part which caused most difficulties was also of an 'enquiry-based learning' nature, as for Question 4. So the conclusion seems to be that students were not well-prepared for this type of question, even though they had been warned of the importance of this type of preparation both in lectures in in my guidance note. This aspect will have to be further emphasised in the future.

**COMP67052 Patterns for eBusiness Applications Liping Zhao**

1. Performance:
62 students out of 64 attended the exam and overall, the performance is within my expectation, with most students achieved good grades. The stats for choosing optional questions are: 45/62 chose B3; 12/62 chose B2 and 4/62 chose B3.

2. Common mistakes:
Some students did not read the questions carefully; some students attempted to provide more information than asked.

3. Lack of Understanding:
A small number of students failed to provide an objective assessment of the benefits and limitations of patterns for e-business.

4. Omission:
About 15 students forgot to answer part of the question in A3, which I think is due to not reading the question carefully.