## PGT Exam Performance Feedback
### Semester 2

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lecturer</th>
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<tr>
<td>COMP 60092</td>
<td>Computational Finite Element Methods</td>
<td>Milan Mihajlovic</td>
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<tr>
<td><strong>Comments:</strong></td>
<td>The overall performance was good. All students, except one, comfortably exceeded 50% mark (with one case achieving 100%). Most of the students choose Q1 and Q2, with some Q4. No attempt was made to answer Q3 (the students have to choose 2 out of 4 questions).</td>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>COMP 60432</td>
<td>Building Web Applications</td>
<td>Thierry Scheurer</td>
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<tr>
<td><strong>Comments:</strong></td>
<td>The paper went down well. The average mark was 68%. The range was less satisfactory, with 8 out of 58 getting less than 50. The reason is not very clear, but the fact that 7 students out of those 8 were overseas suggest that lack of English proficiency was an important factor. This is also apparent from the answers in these cases. Otherwise, the questions proved very satisfactory, particularly Questions 3 and 4 on JSF. Those who scored well clearly showed an excellent grasp of the material covered.</td>
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<tr>
<td>COMP 60632</td>
<td>Future Multi-Core Computing</td>
<td>Ian Watson</td>
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<td></td>
<td>Mikel Lujan</td>
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<td><strong>Comments:</strong></td>
<td>In general the answers given to one of the two selected papers (Non Uniform Cache Structure &amp; StreamIt) were of a high standard. In both the 'problem' and 'solution' sections, it was necessary to demonstrate insight rather than just precis the paper in order to get high marks. However all candidates were able to demonstrate a good understanding of the paper chosen. In assessing the 'assumptions' it was necessary both to list the explicit assumptions being made, but also to question some of the premises on which the proposals were based. When considering the 'evaluation', one important issue which was overlooked in a number of answers was the issue of repeatability. It is always important to assess whether the author has given sufficient detail to enable the experiments to be repeated. Several 'overall' assessments of the paper were very brief. In this section, it is necessary to draw overall conclusions rather than simply repeat the problem and solution etc..</td>
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In general, the exam was taken well. The overall average was 62.5% with a standard deviation of 17.6. So, most students did quite well.

Broadly speaking, too many students still fail to pay enough attention to the question and find themselves giving irrelevant answers. This lack of attention is also manifested in answers that range over much much more than what has been asked simply because students are trying to replicate something in the lecture notes, whereas the question may be asking something narrower. This lack of attention is risky because it could lead to damaging waste of time.

Question 1 yielded an average mark of 60%. It seems that no major systematic misunderstandings were revealed.

Some minor comments are:

1. In Part (a), item (i), most couldn’t recall the notation for group by aggregation in extended relational algebra. This seems to have led many to think a projection at the root was necessary. It also led others to seek to answer the question as a map-reduce engine would, which was a bad mistake.

2. In Part (a), item (ii), too many students thought that replacing Cartesian product by join answered the question, but this is the default situation, and the question was asking for “what else” could be done, and a simple additional action is to insert projections as parents of leaf nodes.

3. In Part (a), item (iv), most students failed to recall that when it comes to pushing selection and projections upstream, one normally pushes projections further upstream than selections as they can be done blindly.

4. In Part (b), item (i), many students thought the question was asking for one, rather than all, stages.

5. In Part (b), item (ii), most students failed to spot that reaching a canonical form in rewriting reduces the search space for plan selection.

6. In Part (c), many students mixed the notions of optimization time and execution time and thought they overlap. The question hinged on an understanding that in classical query processing the optimization time is paid once, in total, per query, whereas it's amortized in the case of continuous queries, the more so the longer the query runs for.

Question 2 yielded an average mark of 65%.

One major systematic misunderstandings was revealed, viz., in Part (e), when using flooding to compute a routing tree, most students missed the fact that the algorithm leaks information as to which edges are in contention. Thus, if an edge x-y is formed, the edge y-x is discarded from any further consideration. This has the effect that when it comes to decision as to which of may possible parent nodes are chosen, some edges that have stronger signal are “not” in contention anymore, as they have been discarded.
Students did well on the examination as a whole.

The mean mark was 64.5% and the SD was 11%. The highest mark was 83%. The poorest mark was 47%.

Q.1 (Complexity). All students did this question. Students did well on knowing the definition of NP and related concepts. Most students were fooled by the (true) fact that an NP-hard problem may have easy instances, however (part (b)). Part (c) on pseudo-polynomial time needed greater care for some students - needed to point out that instance size is \(O(N \cdot \log C)\) in knapsack. Question (d) on p-approximation was answered ok, but some lacked detail for full marks.

2. (Graphs) Few students selected this question. The question was answered well, except for providing the exhaustive search for MS2C (part d) and calculating the number of solutions it generates.

3. Over half the students chose this question on dynamic programming and branch and bound. It was answered fairly well - there were no particular issues with it.

4. (EAs). This was the other very popular question, together with question 1. Some marks tended to be lost on the first part (6 marks for a description of an EA) for lack of essential detail. Other parts were answered well.

5. Multiobjective optimization. About half the students took the question. It was answered well. Some more detail was needed in describing the hypervolume measure and the related proof. A better explanation why there is a curse of dimensionality and related ideas for circumventing this, would have resulted in more marks for most students.
In general, this is a small cohort, split in one with half $>= \frac{44}{60} = 73\%$ and a second half with $\leq \frac{31.5}{60}=52.5\%$ and $>= \frac{24.5}{60}=40\%$. I also believe that some students ran out of time, which could explain lower marks for Question 3.

Question 1
**********
(avg 15.5/20 = 77.5%)

a) Answers generally good; full marks only for answers without mistakes/imprecisions
   Common mistake: to answer all subquestions; your were supposed to answer only 3

b) Answers generally good; I expected you to also argue why the algorithm terminates

c) Common mistake: to not use the semantic tableau method as defined in class; marks were deducted for that.
   E.g. transformation to NNF is not necessary.

Question 2
**********

a) (avg 5.83/10 = 58.3%)
   i) no problems
   ii) no problems; marks deducted for not giving the correct quantifier of the top-level variable x.
   iii) most challenging question
       common mistake: to apply rule when the side-conditions are violated; overlooking the sign switching rule.

b) (avg 5.33/10 = 53.3%)
   i) some students didn't know difference or relation between coherency & consistency, but mostly good.
   ii) most students had a (sometimes rough) idea of reduction
   iii) very mixed answers
   iv) mostly good
   v) mostly good

Question 3
**********
(avg 10.58/20 = 52.9%)

a) mostly well answered, but some confused about difference or relation between coherency & consistency

b) some students gave an axiom not in ALC or one that does not enforce birds to have two wings.

c) common mistake: confusing "some h.(A and B)" with "some h.A and some h.B" or confusing conjunction and disjunction

d) answered mostly correctly, but with two weak an axiom to enforce disjointness

e) mostly well done, some forgot universal quantifier outside
f) mostly answered well, but some wrongly read a subsumption as an equivalence

g) partly answered well

Q 1.a
This was not attempted by many students. Answers were weak from those who did it.

Q2
There were was a mixture of reasonably good answers and some weak answers. It appears that the life cycle of Android applications was not learned. Some answers showed a good understanding of reflection and why this is not implemented in J2ME but several answers showed little understanding of this.

Q3
Most answers were OK.

a. Few answers considered the full range of applications that might be active on a device: voice calls, internet using TCP and UDP
b. Almost all answers were correct.
c. The was supposed to be more challenging. Most answers dealt with the drop in data rate giving before and well after handover descriptions of the network behaviours. Few attempted to work out what would happen at the point of handover. All of a sudden the flow will drop. Lots of packets will be on-route and delayed as there is now a bottleneck. TCP will then have to adjust as a few ACKs arrive but possibly lots of ACKs are either lost or very delayed. The better answers did mention that after the handover, TCP slow start would probably happen along with adjustments in window sizes as TCP adjusts to the new end-to-end data rate.

Q4. All students did this question and the average was pretty good.
Parts d and e were not well answered. See model answer to part d – it is a very important concept. Packet loss concealment is worth knowing about also.

Q5. Just over half the class attempted question 5. The average was 50% pulled down by about three pretty poor answers. Understanding these concepts (relationship of bit-rate and bandwidth and signal to noise ratio) was greatly emphasised in the lectures and, thankfully, the majority have got the message. This is some of the nicest theory in the course with profound implications for computer scientists. There was only one really good answer, however.
1. General comments

This was the first time that COMP61632 ran. The following statistics refer to unconfirmed marks. 11 candidates took the examination, thus inferences drawn from this small sample may be unsound. The average mark was ~68%, however, despite the foregoing statement, a high average might reasonably be expected given a) increased opportunity for interaction with a small class; b) involvement of topic-specific experts in course delivery to provide high-quality teaching; c) intensive practical sessions equalling lecture hours in numbers and closely tied to lecture topics; and d) an in the main highly motivated group of students who engaged well with the course. The highest mark awarded was ~86%, the lowest ~60%. Question 1 averaged ~73% (all candidates answered), Question 2 ~86% (3), Question 3 ~67% (9), Question 4 58% (8) and Question 5 ~68% (2). It is to be further noted that the course unit covered a wide variety of topics, given the nature of text mining, occasioning what the examiners judged to be a relatively challenging examination, especially as marks were inevitably somewhat thinly distributed. This judgement was reflected in some scripts where candidates did not answer some question parts (it is to their credit that they were able to make up lost marks via good answers to other parts).

1. Question detail

Question 1

1a-e) on IR aspects were well answered, demonstrating most candidates had a firm understanding of the main issues, particularly regarding evaluation measures that are also standardly used in text mining.

1f) was mainly answered well although some candidates had some difficulty in distinguishing some of the types of ambiguity.

1g) was also answered well for the most part.

1h) proved a good distinguisher, as only 2 candidates correctly identified the linguistic notion at play. Others argued from a semantic standpoint, however the question emphasized syntactic interpretation.

Question 2

The three candidates who attempted this question all achieved high scores.

2a-e and j) A certain amount of latitude was allowed in the expression of sequences and equations, with credit being given for near-perfect answers especially where accompanying text revealed understanding. In general, good knowledge of machine learning algorithms was shown.

2f-g) were again well answered on the whole, with appropriate justification being given for ordering decisions (there being no single correct answer).

2h-i) on annotation were also well answered.

Question 3

3ai) was well answered.

3aii) was strictly less well answered, however the examiners accepted that ‘application’ had a wider interpretation among candidates than they had intended.

3bi) showed good capability in applying structural analysis.

3bi) was less well answered as some labelled arcs proposed were not possible from the given starting points.
3c) was underdeveloped by some candidates.

3d) was well answered.

3ei) was well answered.

3eii) was less well answered by some, particularly regarding how probabilities are derived.

3f) was less well answered by some, who discussed the role of semantic knowledge rather than the required syntactic knowledge.

3g) was well answered, showing good understanding of selectional restrictions.

4a i-v) were in the main answered well, and examiners gave due credit for solutions that were close to the model answer. They also gave partial credit for solutions that were not close but were derailed by either apparent slips or failure to carry out a step that had been specified by a candidate in a statement of a formula, especially where later steps in calculation were correctly applied, modulo such slips or omissions. Some candidates found 4a iv (expected values contingency table) more of a problem than others.

4b-d) were answered less well by some, generally due to underdevelopment of an answer or lack of detail.

5a-c) on UIMA/U-Compare showed that candidates were aware of the main concepts and issues, were able to explain requisite steps and were able to argue for adoption of appropriate solutions.

5d) was well tackled and answers showed candidates were aware of likely future developments and of trends in the field.

3. Conclusion

Performance was very satisfactory on the whole, for what the examiners considered to be a challenging paper. The small number of candidates choosing question 5 is likely due to UIMA/U-Compare being the topic of the last day’s teaching of semester 2, thus just before the start of the examination period.
Comments:

General: the standard of English on many papers was atrocious and very difficult to mark. It seemed that some students were guessing at the meaning of the questions and their own answers. One student turned 'metrics' into 'matrix'!

a) Give 5 definitions of IT Governance. (1 mark each)

Seemed straight forward for most although why students expected reward for 'IT governance is the governance of IT' I don't know. Some good work linking it to corporate governance.

b) Why is good governance a prerequisite for security? (4 marks)

Students either got to grips with the risk management aspect (good) or stepped through a 'logical' process where governance popped out at the end (bad). Good solutions included the leadership aspect.

c) The IT department of a bank has the technical know-how and the budget to implement encryption technologies to protect the transmission of a customer's transactions between a PC and the bank's systems.

Who needs to be involved to make this security technology an enabler not a hindrance? (5 marks)

Some good, wide inclusion of likely stakeholders but too often missing the involvement of user representation. Some poor generic 'solutions' based on the customer-actor-owner model disconnected from the implementation.

d) How can the opinions of different stakeholders be collected and synthesised into a set of managed requirements? (6 marks)

A few students got to grips with the process of discussion, involvement and documenting that they had exercised over the five weeks of the module.

2. STRATEGY

a) List 5 risks of using public networks to transmit sensitive information. (1 mark each)

Too often the same risks used in the list. Often included risks that threaten even isolated implementations.

b) List a countermeasure that can treat each of these risks. Make it clear which countermeasure applies to which risk. (5 marks)

Many students did not make it clear.

c) Explain the importance of strategy to the governance of an information system. Focus on the achievement of an adequate level of security. (3 marks)

Some students included risk management well. Very few students covered change. Some cottoned on to the management of the link between corporate goals and IT governance.

d) ABC Corporation is changing its business model. They had previously had their own sales team but have replaced it with a network of resellers and an on-line shop for customers' self-service. What are the implications of this change on the security of its business data. Describe who is involved and sketch out in words or a labelled diagram (or both) - an architecture of a likely information system: its components, its stakeholders, and interfaces where security is most at risk. (7 marks)

Too many students didn't take advantage of being able to draw this out. Some missed information out when they did - for example, having no security measures in place either through segregation or security appliances.
3. ARCHITECTURE/STRATEGY AND ACQUISITION

a) How can cloud computing improve security? (4 marks)

Some students seemed to miss the term ‘cloud’ and ramble on about the benefits of computers totally missing the risks they bring anyway!

B) Explain how security may be managed through the supply chain. (4 marks)

Only a few students appreciated information flow and connections between organisations/stakeholders.

C) Redfriars school has 300 pupils and 50 staff including administration, building maintenance, a school nurse, and (of course) teachers. Some of the teachers also provide careers advice and social counselling to the pupils. The school is managed by a panel comprising 3 governors, (including a parent governor), a bursar (managing the accounts) and the headmaster. Information needs kept on each pupil including attendance records, special needs including dietary requirements, parent or guardian contact details, marks from school work and examinations, and membership of extra curricular clubs, behavioural and disciplinary records. Over the years, the information system has been built up piecemeal and comprises half a dozen PCs networked across the school with a central server in the head teacher’s office. A benefactor from their local computer dealer ‘the Universe of IT Emportum’ (UNITE) has offered to replace at UNITE’s expense the current kit with wireless network laptops for each teacher, workstations for each pupil and administrative staff, and offer database programming expertise. After six months Redfriars will pay for any additional services or new kit. Outline the architecture of the school information system to ensure that information is available on a need to know basis and that this is protected by the school governance structure. Use labelled diagrams and tables if you want to. (12 marks)

It is a shame that few students tackled a question which provided so much raw material that its arrangement should have made for some easy marks.

4. PERFORMANCE

a) The cells in the table below are scrambled. Match each status with its relevant maturity score and explain the meaning of each.

<table>
<thead>
<tr>
<th>Scores</th>
<th>Status</th>
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<tbody>
<tr>
<td>0</td>
<td>Optimizing</td>
</tr>
<tr>
<td>1</td>
<td>Quantitatively Managed</td>
</tr>
<tr>
<td>2</td>
<td>Incomplete</td>
</tr>
<tr>
<td>3</td>
<td>Managed</td>
</tr>
<tr>
<td>4</td>
<td>Performed</td>
</tr>
<tr>
<td>5</td>
<td>Defined</td>
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(5 marks)

Some confused answers… some using ‘exam technique’ to obfuscate the answers in the hope of quantity resulting in marks. Students who lost the opportunity to retrieve marks where the order was wrong by failing to include the meanings as requested.

B) What is the difference between leading and lagging metrics? (2 marks)

Most students got half marks for getting some truth in the two parts of their answers.

C) How can leading and lagging metrics be turned into a real-time tool? What decisions could the tool support? (5 marks)

Some good realisation of a dashboard idea.

D) Company B handles sensitive, personal medical data and has decided to outsource the provision of its IT to Company Z. Company Z has proposed a service comprising:

* Data back-up,
*Remote desktop support,  
*On-site backup,  
*Antivirus, and  
*Annual review and recommendations for improvement.

How can the performance of these proposed elements be monitored?  
(3 marks)

Some students attempted answers that had no hint of monitoring. Some described ‘why’ but not ‘how’.

What other elements need to be specified to assure the security of Company B’s data?  
(5 marks)

Students who did not do well in the first part of this question picked up in this subsection.

**Comments:**

John Sargeant:

See attached pdf.

Liping Zhao:

A1-A2
In general the level of English was poor, spelling and grammar was a problem in most cases. Some answers made no sense at all. For A1, the overall performance for the students was impressive. Most students have demonstrated their knowledge and understanding of the P4eb approach. However, there seems to be confusion between how students understood the terms business interactions and business patterns. Some students have used the two terms interchangeably while others did not. In A2 there was a major disparity in students’ performances. About 60% have performed exceptionally well, while the rest performed poorly. A number of students have failed to answer the question, and gave unnecessary information instead. Most students understood the fundamental assumptions of the P4eb approach and had the at least an idea of the steps in this approach, but very few attempted the last part of the question for associating the steps with their target architectural layers.

B1-B2
Students seemed to be remembering/imagining actors and use cases instead of analyzing the given scenario. This could be explained in two ways: 1) either by the fact that the exam is not suitable for online assessment or 2) the software tool is not suitable for the design type of exam. In general students’ answers seemed to be characterised by at least one of the following attributes: unfocused, unorganized, short and lacking detail. None of the students managed to offer a complete and correct description of their model. None of the students produced any convincing arguments in favour of their solution. The lack of graphical representation is a major issue for this particular exam, as it forces the student to detail the solution using natural language. As a consequence most of the time answers were shallow, inaccurate and difficult to read/understand due to a poor command of written English language.
Q1)
a) Most students attempted this part, and it was mostly well done. But one frequent mistake was either not stating explicitly what the median was, or mistaking it for the mode.

b) When it came to zero-crossing, a common error was the sub-pixel accuracy of location via interpolation. Some people gave reasons why a first-order detector might be preferred, since it gave edge direction, but this was not the question actually asked!

c) Of those who did this, most remembered the rank bit. But in the second part, the trade-off part was not so well done.

d) The link that was missed here was between skeletons via thresholding and erosion, and the medial axis mentioned in shape representation, which gave an explicit example of how a small shape change meant a large change to the medial axis. There was however at least one imaginative answer which explained the point.

e) Mostly good answers to this part.

f) Most seemed to remember the relevant diagram from the lectures, with varying standards of explanation.

Q2)

b) & c) Some people thought I was being trickier here than I had intended, and pointed out that it might be a good idea to have an edge strength image first! Unfortunately, a common error was not making it totally clear that they understood that the lines detected would be STRAIGHT lines. Disappointing lack of diagrammatic explanations.

d) As a straightforward piece of bookwork, many of the answers to this were rather disappointing. What the results would be, I think everyone got that right!

Where people fell down was in terms of not being precise enough about the methods. And many people failed to mention the importance of profiles in an ASM.

Q3) Very few attempts at this question, and no one actually did anything much for part c). Seems the translation job on the objective function was beyond them, despite specific and detailed examples having been given in the lectures. Parts a) and b) tended to have better answers

Aphro Galata:

Please see the Lecturer for feedback.