Coursework commentary 2018–2019

CO2226 Software engineering, algorithm design and analysis

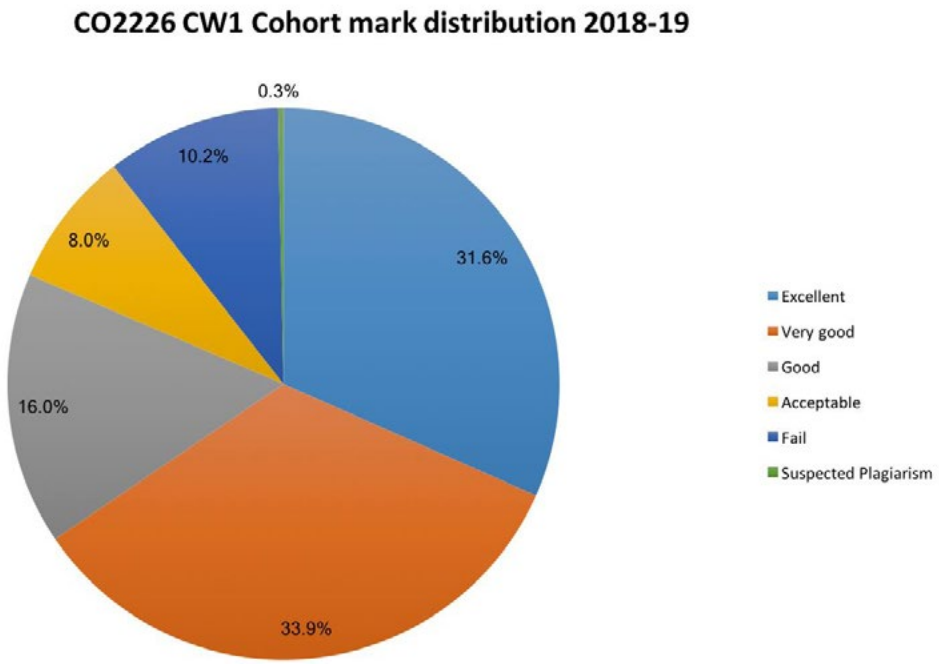
Coursework assignment 1

General remarks

This report provides a general commentary on the questions and the performance of students for the first CO2226 coursework assignment for the academic year 2018–2019. A comment on the answer expected in generic terms will be provided, as well as comments on the students' performance and mistakes.

The overall performance was very good, with over 65 per cent of students achieving a very good or excellent mark. Most students lost marks in Question 3, where descriptive rather than critical answers were provided regarding how Data Mining can benefit the project and what the risks associated with it would be.

See cohort mark distribution for 2018–2019 below:



This coursework assignment was based on a business case scenario (BooksWeLove), which described the requirements as well as the different levels of access for the application users. Students were asked to identify the stakeholders in this application as well as how they are related, and to draw up a set of test cases for the main functionalities of BooksWeLove (the ones with critical business importance). The coursework also had a part asking students to **research** the use of Data Mining and its applicability (or not) for the BooksWeLove project.

Comments on specific questions

Question 1

This question was answered well, in general, although in many cases the relationship between the different stakeholders could have been made clearer by expanding on the brief description. Some students used a number of UML tools (e.g. use cases) to identify stakeholders; although this has some validity and will give you a good insight into the stakeholder' identities and relationships, it was not part of the question and the use-case model focuses on the functional requirements. A good place to look for potential stakeholders is 'soft' requirements (for example, business politics), which the UML completely ignores (by design). Finally, a number of students identified systems used for specific functionality, e.g. Paypal or Visa for payments, as stakeholders; this depends on how 'close' the relationship with the project is, and this would have to be justified. For example: are they merely used as tools, or is there a specific solution build for the project based on importance and value? If they are considered stakeholders by default, then Microsoft should be a stakeholder in pretty much every company/organisation.

Question 2

In answering this question, a lot of students provided too many tests; this was not requested, nor needed, and shows difficulties in identifying the key and critical areas. Once the tests are chosen, we have to understand that they need a detailed execution plan and they need to be data-centric, with pre-conditions, an execution plan, and post-conditions. There should be no ambiguity, and no difference in the outcomes if two different testers run the same test, otherwise the data we get is not meaningful as it depends on what each tester thought to try. Some students described test cases with instructions to simply open a page and type some data – this is not an adequate specification. If the required information cannot be found, how would we know if this is because the information did not exist in the database, or because our program has a bug? How would we expect someone who knows nothing about the system to carry out the steps unless they have been provided with explicit details? How would we measure whether the test is successful or not if we do not know what kind of data to expect as the result?

A test case should always have:

- a clear rationale
- specific pre-conditions as to what data exists on the system before the test is run
- a strict execution plan with exact details as to what the tester is expected to type in
- a measurable outcome.

This is where most marks were lost. Many students only considered the functional requirements of the system, but business critical systems have non-functional requirements as well; what use is a correct system if it is too slow or insecure? The definitions of slowness or security will, once again, have to be quantified – we run a test and get measurable outcomes, and we need to compare them against a pre-set benchmark of what the organisation considers a 'good enough' speed or level of security for the system.

Question 3

The main element that the examiners were looking for in students' answers to this question was critical analysis and application of the theory to the specific business case. Many submissions only had a list of tools and their marketing description from the Internet, a few without references. What the examiners are looking for here is, first, a brief background on Data Mining, tools and techniques, and for most of the content for your answer to this question to be about how BooksWeLove can use Data Mining concepts and technologies. What benefits would it bring? What tools/techniques/software would be the most appropriate and why? What does its adoption mean for resources (human, technical, etc.)? Are there potential benefits which the cost model makes it impossible to implement? Would it make sense to bring it in at a later stage once we have some data? Would it require any further integrations/changes to the way we communicate with the other business partners? Would we have to change our business processes to accommodate for data gathering, its analysis and use? What extra barriers would GDPR impose, how can they be overcome and at what cost (human resources, technical costs, etc.)? For many submissions, the critical analysis was missing and all that was written was yes, BooksWeLove will benefit, with no (or very little) justification. Many students only saw a positive side to Data Mining; is there nothing that can go wrong when you apply it? Is Data Mining better suited for some requirements than others? What are the pitfalls that the company should watch out for, and why?

Conclusion

In general, most students answered the questions well and without problems. The questions were straightforward and easy to understand, and the scenario was detailed enough, providing the necessary information for the process. All students had to do was to start from the definition of what they were asked to analyse and then look at the scenario.

The three main areas that the examiners were looking to identify in the submissions were:

- looking beyond functional requirements to identify stakeholders (but not necessarily on software and services used as tools)
- the heavily data-centred nature of test cases
- critical analysis in arguing about whether Data Mining was a good idea for this application or not.

These were identified, raised and answered in a satisfactory way, but in many cases a more critical and in-depth view was required.