

1 Pensum (Exam Reading)

All lecture notes, slides, and exercises. Including the essential reading material linked from the notes, whenever indicated as necessary reading.

2 Exam Format

1. The exam is individual. There is no common presentation.
2. Exam takes 20 minutes including grading and communicating the grade.
3. You enter the room and you have 3 minutes to explain the main objectives of your project, its results and your role in the project.
4. You are allowed to bring in **printed** copies of maximum two slides to support your presentation.
5. After that we ask questions related to the project and to the course (see examples below) for about 10 minutes.
6. During the exam, examiners take notes (of what correct and what incorrect things you say).
7. After the entire group has been examined, we give a few minutes feedback for the group about the report.

Because we are a large group, please remember to bring your ID or student card to the exam — just in case we wanted to see it.

3 Example Exam Questions

The following are example questions that have been used in the exam after the 2011 edition of the course. They are real – I extracted them from my exam notes. Your questions will be similar, but not necessarily the same. Your project report has significant influence on the content of the discussion that follows.

We do not take the questions only from this list. We formulate the questions based on the curriculum of the lectures and based on your report. The list is provided to give you an impression of the exam contents. You are expected to be able to execute a knowledgeable scientific discussion about your project.

1. What is the most important finding of your project/paper?

2. What are the main limitations of your findings/conclusions/results?
3. There is an unresolved reference in your report. What should it point to? Tell me about this paper.
4. The paper [15] by Geiss is about improvements of the Varro Benchmark. Can you summarize the improvements they suggest? Why did not you use the improved work but an earlier one?
5. Explain the differences between direct manipulation approaches and graph transformation approaches to model transformation.
6. Explain which of the approaches (direct manipulation or graph transformation-based) is offering a higher level of abstraction? Which do you believe should be faster and why? [the report was about benchmarking model transformations]
7. Explain in detail Figure XX (sentence YY) from your report.
8. Summarize the methodology you assumed in your project.
9. Enumerate model transformation languages that you know, classify and characterize them.
10. What is meta-modeling? What meta-modeling language(s) do you know?
11. Summarize differences between Model-2-Model and Model-2-text transformations.
12. What are applications of model transformation tools? What are the applications of M2T? What are the applications of M2M?
13. You put forward a hypothesis that high level tools might be slower than low level. So why people would use the high level tools? Does your finding imply that high-level tools are useless?
14. Are the instances used for evaluation/benchmarking representative? How strong is your conclusion for the general usage scenario? [applies to many projects]
15. Why you do not use your ecore model in your Xtend program? [A very bad sign, that something is seriously broken. Report specific]
16. What is ecore? What is the relation to MOF? What is its relation with UML? (or what is the relation of MOF and UML)
17. What is OCL?
18. Can you explain the metamodeling hierarchy?
19. What does M3 mean?
20. Explain the metamodel presented in your report.
21. Write a simple OCL constraint formalizing this sentence in the report (say every trip has at least two drivers). [small syntactic deviations are permitted]

22. Explain to me the following OCL constraint. [often taken from the report]
23. How this constraint written in Java/Xtend would look in OCL? [often taken from the report/code]
24. What is a DSL?
25. What is the difference between using DSLs and using feature models?
26. Is the language you propose in your report a DSL? What is the domain it targets?
27. What is an internal (embedded) DSL? What is an external DSL? What implementation techniques you know for implementing external/internal DSLs?
28. Explain differences and similarities between Xtend and declarative ATL.
29. What does it mean for a model to conform to a meta-model? To what meta-model the model of Fig. XX conforms? To what the meta-model of this model conforms?
30. What is the key rationale for this work? [despite this being a mandatory project, you must be able to explain why taking up this project makes sense — not being able to do this normally indicates that you have a shallow attitude to the subject matter]
31. On page 2 you recall constructivist theory of learning. Why do you report it as related? In what way do you exploit it? [if you use some body of knowledge in your project, you are expected to account for it]
32. What languages/tools can you indicate that can be used for implementing internal/embedded DSLs? What are the advantages of implementing a DSL as an internal DSL?
33. You write that the documentation is scarce for DSL tools. Did you manage to access the book about this project? [you will be made accountable for using easily available literature on your subject — in this case the book was available in the library, but the group did not care to get it]
34. What is the difference between the Xpand and Xtend language ?
35. How would you design an evaluation experiment for your project if you had a possibility (and time) to use human subjects ? [assuming that this made sense for the particular project — not always using humans in evaluation makes sense]
36. Can you give examples of successful domain specific languages?
37. What is a general purpose language (GPL)? How it differs from a DSL?
38. What is a product line architecture?
39. What is the most common application scenario for Model Driven Development?
40. What is Xtext? Its use case?
41. Describe the process of implementing a DSL using Xtext.

42. What is the main purpose of CVL/Clafer/Ecdar/BIM/Entity-Relationship models? [the question is about the main modeling method/language used in your project]
43. What is the purpose of variability modeling? What variability modeling language do you use?
44. What similar approaches to the same problem can you point out in the literature? [this is a question about your related work section]
45. How paper [XX] helps/could help your project? [XX was cited in the report]
46. What tasks are left to complete your project ? [The project has not been completed]
47. Please draw on the whiteboard classes representing the core (2-3) concepts in your model, and the relations between them.
48. Is the transformation you implemented reversible?
49. Have you used automated testing in your project? How could you have used it?
50. What is the difference between a conformance relation and inheritance relation in class models?
51. What is aggregation (composition)?
52. What is abstract syntax? Concrete syntax? How do we specify abstract syntax of a language? How do we specify concrete syntax?
53. What is Eclipse Modeling Framework? What it can offer to a software developer? How did you use EMF in your project?
54. What is a left-recursive grammar? Did you have a problem with it in your project? What is left-factorization of the grammar?

4 Example Assessment of The Report

Each report is assessed before the oral examination and this assessment influences the grade. In most typical cases, the oral exam can confirm, or lower/increase by a step the grade suggested by the report. We have had however cases of people failing with very good reports, and people achieving good grades with average report. In the former case it was clear that the student knows little about the work, in the latter case it was clear that the student knows the subject matter very well, but the report has been influenced by the generally lower level of the group.

Here is an example of my assessment notes for some report (to show you an example of what kinds of things are taken into account):

- A lot of operational statements in the report. [operational means low level reporting of what we did, step-by-step, instead of concise synthesized description, focused on crucial points, overall process, findings and conclusions. Operational reporting usually characterizes authors who do not understand what they do, so they simply report the steps they perform.]
- Threats to validity were quite good.
- The report is thin on the whole purpose of this endeavor. What are the conclusions they can make from it? [so the motivation was weak, and the conclusions were very narrow]
- Broken citations, quite bad, chatty, even spoken language used. Not up to the point, not focusing on the main value of the paper. [bad language, bad typesetting, bad figures are often also very good indicators of bad work]
- Examples are not used to explain the main differences between the benchmarked approaches.
- Background is mixed with methodology.
- Hypothesis is hidden in background.
- Often unrelated paragraphs tacked together [there is no reasoning flow from paragraph to paragraph]
- The report has figures (Fig .1) not referred from the text, and not explained in the text.
- References to individual methods in Java code, instead of high level description of concepts and computations that they realize.
- The project has essentially failed as F is shown to be faster than xtend (this in itself would be a very strong conclusion, if the methodology was trustworthy) [such a conclusion was very implausible, and was rather an indicator that the implementation in xtend was very lousy, not that F was faster]
- The report is not clear about the benchmark not being representative.
- I asses the report as being below average. [below average means below 7]

An example of an OK, albeit not perfect, report is *Model Driven Development: Co-Evolution of text-processor model and plain-text model* by Kim, Madsen, Izaka, Christensen, Larsen, Grøn and Aljarrah. Find it in the project base at: https://mit.itu.dk/ucs/pb/project.sml?project_id=1182864. The above assessment points are for a different report.