



School of Innovation,
Design and Engineering

3. Reading Assignment on Advanced Test Design

This document provides the instructions for the reading assignment on Model-based testing theory. The objective of this assignment is (i) for the course participants to get acquainted with model-based testing theory and mutation testing, (ii) to get experience of what is the state of research on modeling and to get experience with research on advanced test design.

Assignment 1 – Reading Seminal Scientific Papers

In this first assignment, we shall work with some seminal scientific papers in model-based testing. First you need to download the papers from <http://www.promptedu.se/promptwp/wp-content/uploads/2015/01/studies.zip> . The papers are named from 1.pdf to 3.pdf. The numbering corresponds to the following papers:

1. El-Far, Ibrahim K., and James A. Whittaker. "Model-Based Software Testing." *Encyclopedia of Software Engineering* (2001).
2. Utting, Mark. "Position paper: Model-based testing." *Verified Software: Theories, Tools, Experiments. ETH Zürich, IFIP WG 2* (2005).
3. Utting, Mark, Alexander Pretschner, and Bruno Legard. "A taxonomy of model-based testing." (2006).

Read carefully all the papers.

Assignment 2 – Questions and Report

Based on the above papers, the lectures and the interview with Jeff Offutt please answer the following questions and send a report to eduard.paul.enoiu@mdh.se .

1. (Paper 1) Explain in brief the phases of the fundamental model-based testing process?
2. (Paper 1) What are the different models in software testing and explain how each of them differs in their characteristics and give examples based on their usage in practice and product characteristics? From your experience what are the models most useful in your work?
3. (Paper 2) What are the stages of model-based testing? Do you agree with this taxonomy? Is there something missing from your perspective?
4. (Paper 2) Describe the differences between model-based testing (black-box testing) and program testing (white-box testing)?
5. (Paper 3) What are the different types of test generation?
6. (Paper 3) What are the characteristics of the tools used for model based testing? Do you see a possibility of using these tools in your day to day work? If yes to what extent?

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7. Would you consider using Model-Based Testing? Can you criticize these type of techniques as not being representative to real world problems (See also the [\(Interview\) Model-Based Testing for industrial adoption – Jeff Offutt](#))?
8. Would Mutation Testing be able to help in your work? (See also the [\(Interview\) Is mutation testing able to help testers in finding real faults? – Jeff Offutt](#)) If yes, please explain how?

Assignment 3 – Presentation

Based on the report please prepare a presentation for the Campus day seminar. This presentation (maximum 15 slides) should include a brief description of your answers in Assignment 2. **All** students must join in the discussion for each presentation throughout the campus day.