Software Engineering (Programvaruteknik)
Exam, 2002-05-17

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Duration 14:00 - 19:00.

- Start by reading all the questions to see if anything is unclear. I will come by between 15 and 16 o'clock to clarify questions.
- You will be provided with a form which **must** be used as the front page for your answer sheets.
- Answers may be written in Swedish or English, or any reasonable mixture of those.
- Don't use a red pen!
- Leave a margin on each sheet for comments. It is best if you use answer sheets with preprinted margins.
- Swedish-English (or your-native-language-English) dictionaries may be used.
- **Important instructions about how to answer. Failure to comply with these items may cause delayed grading, or a points deduction, or both**.
  - Don't put the answer to more than one question on each sheet!
  - You should not need more than one page for the answer to each question (given a normal size handwriting). You must not use more than two pages.
  - The handwriting should be easy to read and the answers easy to understand.
- A checklist of common mistakes that cost points:
  - Read the question again after you have written the answer. Verify that you have actually answered the question. Verify that you answered *all* parts.
  - In particular, don't forget to give an example if that is requested, and make it a concrete one.
  - Avoid unclear or missing argumentation; risky words are "of course", "self-evident", "better", "wrong", ...
  - When a question asks you to compare two things A and B, make sure to highlight the contrasts: their differences. I do *not* want a full description of A and a full description of B, leaving it to me to find the differences.
- The maximum number of grade points you can get from the exam is 40.
- 25 points are required for a 3 (pass) grade, while 35 points are required for the 4 grade and 42 points for a 5 grade. For students with G/VG grades, 38 points are required for the VG grade. *(These limits are estimates which could be changed.)* This includes participation credits, so students with maximum credit (10) need only 15 points on the exam to pass the course. There are no predetermined limits for ECTS grades, the quality of the assignments will also be taken into account when determining the ECTS grade.

Good luck!

Lars-Henrik

1. (4p.) Describe the "V" model for validation and verification. You must briefly explain the various parts of the model – simply making a drawing with labels is not sufficient.

2. (5p.) Who are the expected readers of a requirements specification and what properties do they want the specification to have? (Give at least four distinct categories of readers.)

3. (5p.)
   a) How can prototyping be used in the requirements elicitation process?
   b) What other uses of prototyping are there? (Give at least 2.)

4. (5p.)
   a) What is a software architechure design?
   b) Name and describe two models for the structure of the architecture design.

5. (4p.) Give four examples of program constructions that should be avoided when programming highly dependable software. Explain for each one the reason why it should be avoided.

6. (6p.)
   a) What is "defect testing"?
   b) What is the other main kind of testing called and how does it differ from defect testing?
   c) Name one kind of non-functional requirement for which defect testing is an appropriate verification technique and one kind for which it is not appropriate. Motivate your answer!

7. (6p.) What is the Cleanroom model. Describe it!

8. (5p.) What are the principal functions of a quality management system?