

OHJ-3066 Software testing – Exam Nov 24, 2008 – Mika Katara

Write down your name, student number, and email address to your answer sheet. Start answering each question from a new page. Write down your answers clearly (using block letters if necessary). Illegible answers will be ignored. If possible, illustrate your answers with practical examples and figures. Maximum number of points is 16 (+1). To pass the course, you should get at least five points from the exam in addition to the points from the course project. Moreover, the total number of points must also be sufficient.

1. Short questions - short answers (6 points):

Describe shortly (2-4 sentences) what the following terms mean in the context of software testing.

- (a) System testing.
- (b) Exploratory testing.
- (c) Mock object.
- (d) Model-based testing.
- (e) TPI (Test Process Improvement).
- (f) xUnit.

2. Answer both questions (2 points + 3 points):

- (a) MCDC is a coverage measure commonly used in testing airborne software. MCDC stands for modified condition / decision coverage requiring that each condition is shown to independently affect the outcome of the corresponding decision. This means that for each condition, there are two test cases in which the truth values of all the other conditions are the same, and the decision evaluates to "true" for one of those test cases and "false" for the other. How is this different from decision/condition coverage? What are the benefits of MCDC?
- (b) Assuming that short-circuit evaluation is not used, design two sets of test cases for the following code so that one satisfies 100% MCDC coverage and the another 100% decision/condition coverage. Moreover, the size of the sets should be as small as possible:

```
FUNCTION FOO(A,B,X) IS
  IF ((A > 1 AND B = 0) OR X > 1) THEN
    X = X/A;
  ENDF;
END FOO;
```

3. Choose one title from the following and write an essay (1-2 pages) on that (5 points):

- (a) Unit testing in plan-driven (V-model etc.) vs. agile development.
- (b) Risk based testing.

If you write more than one essay, only the weakest one will be taken into account.

4. Bonus question:

Write down your opinion about this course (course project, material, exam etc.) How could we better serve international students with the limited resources we have? Whether positive or negative, a well justified opinion is worth a bonus of one point. If you have given feedback already earlier, you should state your opinion also now in order to get the bonus.