



Software Engineering (5DV003)

2nd exam, fall 2007

Writing time: 9:00–13:00 (4 hours)
Aids: None (inga hjälpmedel)
Exercises: 8
Points: 35

Instructions:

- You can answer in English or in Swedish
- Write your name and the question number in the upper right of every page
- Motivate your answers and explain all assumptions
- Please do the following to speed up correction time:
 - Start a new page for every question
 - Write only on one side of the paper
 - Order your papers by question number
 - Mark all questions you have answered
 - Leave a margin for comments

Thanks and good luck, lycka till, viel Glück!

Question 1 (1+2+2p)

During the course we have discussed many different software development processes that can be roughly grouped into two types; agile development processes and traditional development processes.

- (a) Give at least two concrete examples of each type of process.
- (b) Describe the main differences between agile and traditional development processes.
- (c) What are the four values of the Agile Manifesto?

Question 2 (2+2p)

What is COCOMO?

- (a) Describe COCOMO's basic principles.
- (b) What are cost drivers? Why are they needed and how are they used?

Question 3 (3+2p)

- (a) Name and describe at least two graphical notations for requirements documentation.
- (b) Give a small example for each of them.

Question 4 (2+1+1p)

- (a) Explain the usage of polar graphs in analyzing/comparing project options.
- (b) What are the main problems with using polar graphs?
- (c) Name a few other methods for analyzing/comparing project options.

Question 5 (2p)

In the lecture, we have repeatedly discussed fundamental design principles (there were six of them). Name and briefly explain at least four of them.

Question 6 (2+2p)

- (a) Explain why and how the (absolute) number of faults in a software package can be a misleading measure for software quality.
- (b) Propose at least two different measures of software quality.

Question 7 (1+2+5p)

White-box and black-box testing are the two most common test methods for software.

- (a) What are the main differences between white-box and black-box testing?
- (b) Explain the main idea behind coverage-based testing to develop test cases.
- (c) Apply white-box testing to the following example:

```
function gcd( x, y: integer): integer;  
(* Precondition: x,y > 0 *)  
begin  
    while x <> y do begin  
        if x > y then  
            x := x-y  
        else  
            y := y-x  
        end;  
    gcd := x  
end;
```

Question 8 (3p)

What are formal inspections? Please explain in detail.