Report No	TENTA_TDDD04
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Last Modified	25 May 2011
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Tentamen TDDD04 (Programvarutestning)
Examination TDDD04 (Software Testing)

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pelab

Tentamen: TDDD04 – Programvarutestning (2011-05-30)

Examinator: Peter Bunus

Information

Poängavdrag kommer att göras om punkterna nedan inte åtföljs!

1) Använd endast framsidan (delfrågor kan vara på samma sida).
2) Sortera inlämnade svar med avseende på uppgiftsnummer i stigande ordning.
3) Svaren får vara på svenska eller engelska.
4) Dina svar skall tydligt visa lösningsmetod. Enbart rätt svar kommer inte att ge poäng. I det fall du är osäker på frågeställning, skriv ner din tolkning och lös uppgiften utifrån din tolkning.

Betygsgränser

[0..55)	poäng	Betyg U
[55..70)	poäng	Betyg 3
[70..85)	poäng	Betyg 4
[85..100]	poäng	Betyg 5

Lycka till!

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Please also observe the following; otherwise it might lead to subtraction of points:

1) Use only the front side of the sheets.
2) Sort the solution sheets according to the task number.
3) Answers may be in English or Swedish.
4) Your answers should clearly show solution methods, reasons, and arguments. Short answers should be briefly motivated. If you have to a make an assumption about a question, write down the assumptions you make.

Grading

To pass the exam you have to do at least 55 points from 100 possible.

[0..55)	points	Grade Fx
[55..70)	points	Grade C
[70..85)	points	Grade B
[85..100]	points	Grade A

Good Luck!

Bonne chance!

Viel Glück!

Sėkmės!

祝你好運

祝福

1. Associate to each one of the concepts from the first column the correct corresponding definitions from the left column: (5p)

1. Debugging	a. Checking whether the software performs correctly
2. Regression Testing	b. Checking that a previously reported defect has been corrected.
3. Testing	c. Identifying the cause of a defect, repairing the code and checking the fix is correct.
4. Retesting	d. Checking that no unintended consequences have occurred as a result of a fix.

2. Which pair of definitions is correct? (5p)

a. Regression testing is checking that the reported defect has been fixed; retesting is testing that there are no additional problems in previously tested software.
b. Regression testing is checking there are no additional problems in previously tested software; retesting enables developers to isolate the problem.
c. Regression testing involves running all tests that have been run before; retesting runs new tests.
d. Regression testing is checking that there are no additional problems in previously tested software, retesting is demonstrating that the reported defect has been fixed.

3. When is testing complete? (5p)

a. When time and budget are exhausted.
b. When there is enough information for sponsors to make an informed decision about release.
c. When there are no remaining high priority defects outstanding.
d. When every data combination has been exercised successfully.

4. Which of the following is in the correct order (typically)? (5p)

a. Unit testing, system testing, acceptance testing, maintenance testing.
b. System testing, unit testing, acceptance testing, maintenance testing.
c. Acceptance testing, system testing, maintenance testing, unit testing.
d. Unit testing, maintenance testing, system testing, acceptance testing.

5. Which of the following are examples of iterative development models? (5p)

(i) V-model
(ii) Scrum
(iii)Waterfall model
(iv) Agile development model

a. (i) and (ii)
b. (ii) and (iii)
c. (ii) and (iv)
d. (iii) and (iv)

6. Which of the following statements are true? (5p)

(i) Defects are likely to be found earlier in the development process by using reviews rather than static analysis.
(ii) Walkthroughs require code but static analysis does not require code.
(iii) Informal reviews can be performed on code and specifications.
(iv) Dynamic techniques are generally used before static techniques.
(v) Dynamic techniques can only be used after code is ready to be executed.

a. (i), (ii), (vi).
b. (ii), (iii), (v).
c. (i), (iv), (v).
d. (i), (iii), (v).

7. A system is designed to accept values of examination marks as follows: (5p)

Fail 0–39 inclusive
Pass 40–59 inclusive
Merit 60–79 inclusive
Distinction 80–100 inclusive

In which of the following sets of values are all values in different equivalence partitions?
a. 25, 40, 60, 75
b. 0, 45, 79, 87
c. 35, 40, 59, 69
d. 25, 39, 60, 81

8. Consider the following pseudo code:

```
1 Begin
2     Read Time
3     If Time < 12 Then
4           Print(Time, "am")
5     Endif
6     If Time > 12 Then
7           Print(Time -12, "pm")
8     Endif
9     If Time = 12 Then
10    Print (Time, "noon")
11    Endif
12 End
```

How many test cases are needed to achieve 100 per cent decision coverage? (5p). Motivate your answer.
a. 1
b. 2
c. 3
d. 4

9. Which of the following is a structure-based (white-box) technique? (5p)

a. Decision table testing
b. State transition testing
c. Statement testing
d. Boundary value analysis

10. A software component has the code shown below:

```
Program Biggest
      A, Biggest: Integer
      Begin
            Read A
            Biggest = 10
            While A > 0
            Do
                  If A > Biggest
                  Then Biggest = A
                  Endif
                  Read A
            Enddo
End
```

The component has exit criteria for component testing that include 100% statement coverage. Which of the following test cases will satisfy this criterion? (5p)
(a) 0
(b) 10, 0
(c) 10, 5, 0
(d) 10, 11, 0

11. Consider the following pseudo code: (10p)

```
1 Begin
2     Read Time
3     If Time < 12 Then
4           Print(Time, "am")
5     Endif
6     If Time > 12 Then
7           Print(Time -12, "pm")
8     Endif
9     If Time = 12 Then
10          Print (Time, "noon")
11    Endif
12 End
```

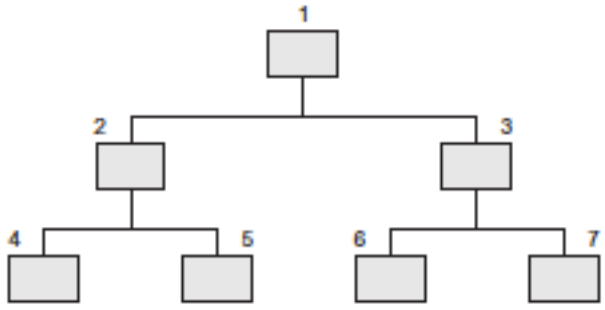
If the test cases Time = 11 and Time = 15 were input, what level of decision coverage would be achieved?
a. 100% or 6/6
b. 50% or 3/6
c. 67% or 4/6
d. 83% or 5/6
Please also give a short explanation of your answer.

12. Let us consider the following code:

```
1       Program OddandEven
2
3       A, B: Real;
4       Odd: Integer;
5
6       Begin
7             Read A
8             Read B
9             C = A + B
10            D = A – B
11            Odd = 0
12
13            If A/2 DIV 2 <> 0 (DIV gives the remainder after division)
14            Then Odd = Odd + 1
15            Endif
16
17            If B/2 DIV 2 <> 0
18            Then Odd = Odd + 1
19            Endif
20
21            If Odd = 1
22            Then
23                  Print ("C is odd")
24                  Print ("D is odd")
25            Else
26                  Print ("C is even")
27                  Print ("D is even")
28            Endif
29 End
```

a) Draw a flow chart and a control flow graph (5p) to represent the following code: (5p)
b) Calculate the cyclomatic complexity of the control graph (5p)
c) Write down input values for test cases that satisfy McCabe's base path coverage (5p)

13. The following figure illustrates the component hierarchy in a software system.



a. Describe the sequence of tests for integration of the components using a bottom-up approach(5p) and a top-down approach. (5p)

b. How many stubs are needed for top-down integration? Don't forget to explain how you calculated the result, since there are different conventions of how to calculate this.(5p)

c. How many drivers are needed for bottom-up integration? Motivate clearly.(5p)