

Software Testing

Lesson 5 – Dynamic Testing I
Quiz

Uwe Gühl
Winter 2015 / 2016





1. Dynamic Testing I

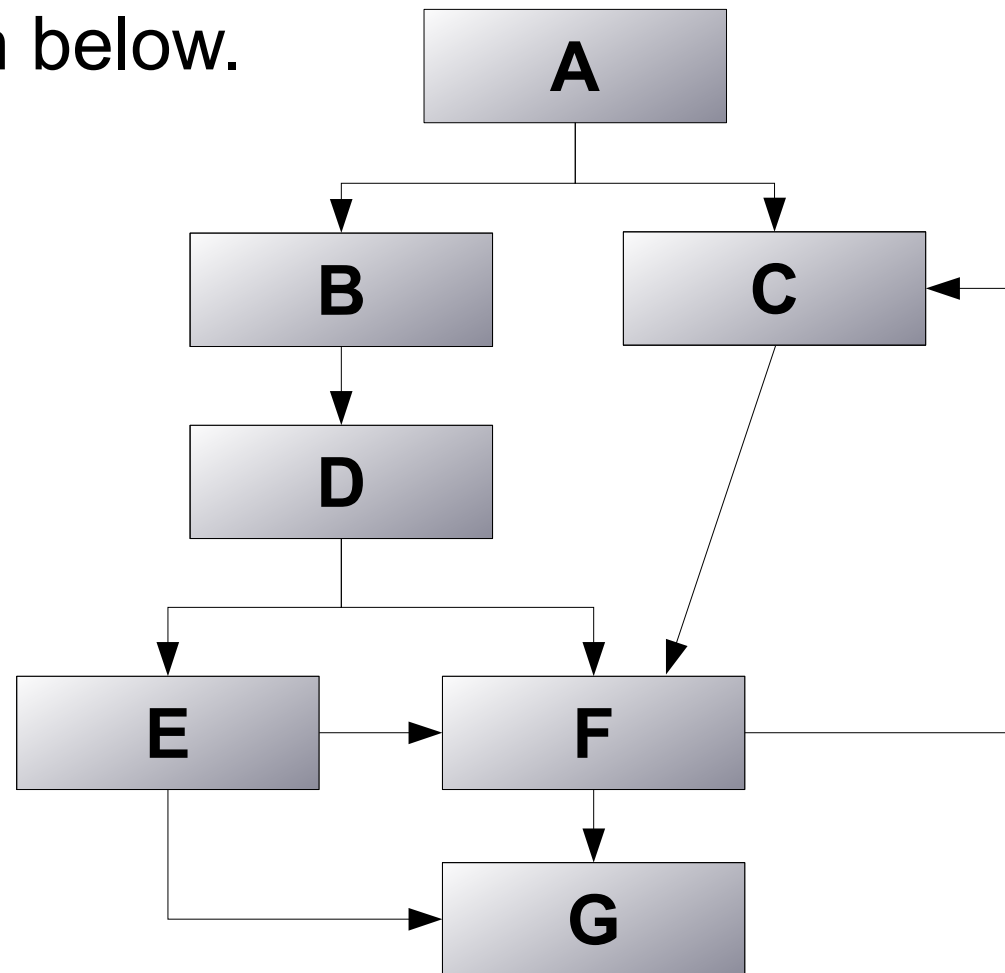
Decision Coverage (1/2)

Test goal is to have 100% decision coverage.
Following three tests have been executed for the control flow graph shown below.

Test A covers path:
A, B, D, E, G.

Test B covers path:
A, B, D, E, F, G.

Test C covers path:
A, C, F, C, F, C, F, G.



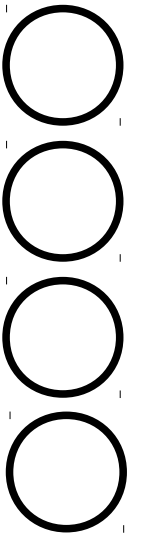
1. Dynamic Testing I

Decision Coverage (2/2)



Which of the following statements related to the decision coverage goal is correct?

- a) Decision D has not been tested completely.
- b) 100% decision coverage has been achieved.
- c) Decision E has not been tested completely.
- d) Decision F has not been tested completely.



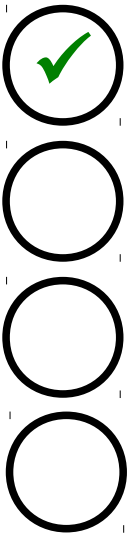


1. Dynamic Testing I

Decision Coverage

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- b) 100% decision coverage has been achieved.
- c) Decision E has not been tested completely.
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2. Dynamic Testing I

Types of Testing (1/2)

A defect was found during testing.

When the network got disconnected while receiving data from a server, the system crashed.

The defect was fixed by correcting the code that checked the network availability during data transfer.

The existing test cases covered 100% of all statements of the corresponding module.

To verify the fix and ensure more extensive coverage, some new tests were designed and added to the test suite.

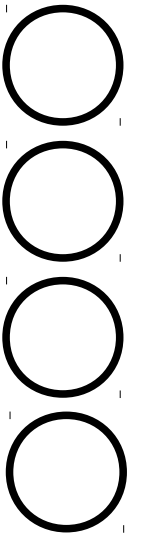
2. Dynamic Testing I

Types of Testing (2/2)



What types of testing are **NOT** mentioned in the previous page?

- a) Functional testing.
- b) Performance testing.
- c) Re-testing.
- d) Structural testing.



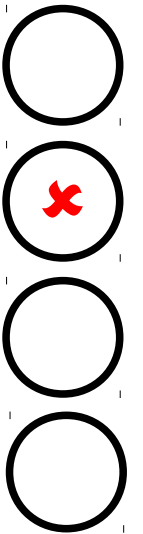
2. Dynamic Testing I

Types of Testing



What types of testing are **NOT** mentioned in the previous page?

- a) Functional testing.
- b) Performance testing.
- c) Re-testing.
- d) Structural testing.





3. Dynamic Testing I

Experience-based Techniques

Which of the below would be the best basis for fault attack testing?

- a) Experience, defect and failure data, knowledge about software failures. ☐
- b) Risk analysis performed at the beginning of the project. ☐
- c) Use Cases derived from the business flows by domain experts. ☐
- d) Expected results from comparison with an existing system. ☐

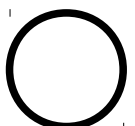
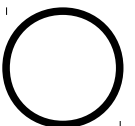
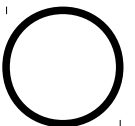


3. Dynamic Testing I

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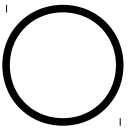
4. Dynamic Testing I

White-box Techniques

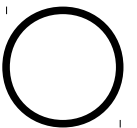


Which one of the following techniques is structure-based?

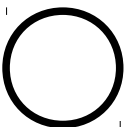
a) Boundary value analysis.



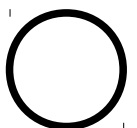
b) Decision testing.



c) Equivalence partitioning.



d) State transition testing.



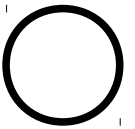
4. Dynamic Testing I

White-box Techniques



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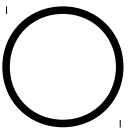
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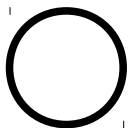
b) Decision testing.



c) Equivalence partitioning.



d) State transition testing.



5. Dynamic Testing I

Decision Coverage



Given the following fragment of code, how many tests are required for 100% decision coverage?

```
if (width > length) {  
    biggest_dimension = width;  
  
    if (height > width)  
        biggest_dimension = height;  
}  
else {  
    biggest_dimension = length;  
  
    if (height > length)  
        biggest_dimension = height;  
}
```

- a) 1 ☐
- b) 2 ☐
- c) 3 ☐
- d) 4 ☐



5. Dynamic Testing I

Decision Coverage

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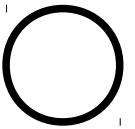
6. Dynamic Testing I

White-box Techniques

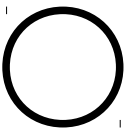


Which of the following techniques is **NOT** a White-box technique?

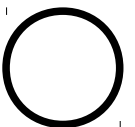
a) Statement Testing and coverage



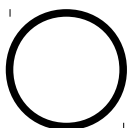
b) Decision Testing and coverage



c) Boundary value analysis



d) Condition Coverage



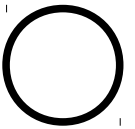
6. Dynamic Testing I

White-box Techniques

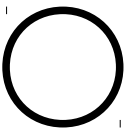


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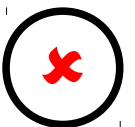
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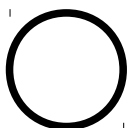
b) Decision Testing and coverage



c) Boundary value analysis



d) Condition Coverage



7. Dynamic Testing I

Decision Coverage



How many decisions should be tested in this code in order to achieve 100% decision coverage?

```
WHILE (condition A) DO B  
END WHILE
```

a) 1

☐

b) 2

☐

c) 4

☐

d) Indefinite

☐

7. Dynamic Testing I

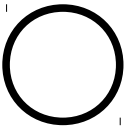
Decision Coverage



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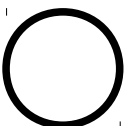
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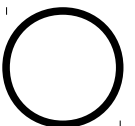
b) 2



c) 4



d) Indefinite

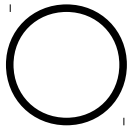
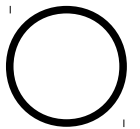
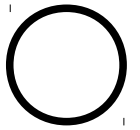
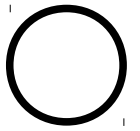


8. Dynamic Testing I Coverage



Which of the following statements is WRONG?

- a) 100% statement coverage guarantees 100% decision coverage.
- b) 100% decision coverage guarantees 100% statement coverage.
- c) 100% branch coverage guarantees 100% decision coverage.
- d) 100% decision coverage guarantees 100% branch coverage.

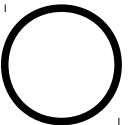
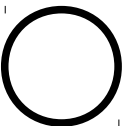
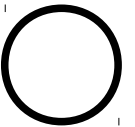
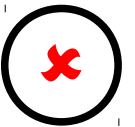


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9. Dynamic Testing I

Cyclomatic Complexity

If L = the number of edges/links in a graph

N = the number of nodes in a graph

P = the number of disconnected parts of the graph (e.g. a called graph or subroutine)

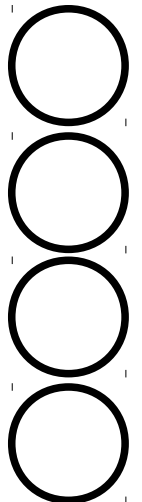
Then how is the cyclomatic complexity M defined?

a) $M = L + N - P$

b) $M = L - N + 2P$

c) $M = L - N - P$

d) $M = L + N + 2P$





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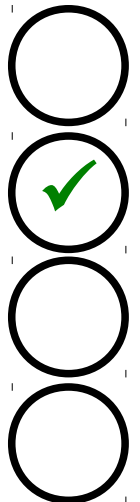
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10. Dynamic Testing I

Cyclomatic Complexity

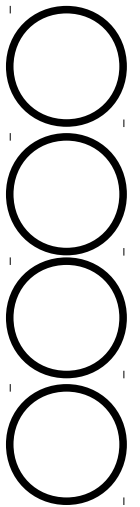


Given the following program

```
IF X != Z  
THEN Statement 2;  
END
```

McCabe's Cyclomatic Complexity M is:

- a) 2
- b) 3
- c) 4
- d) 5



10. Dynamic Testing I

Cyclomatic Complexity



Given the following program

```
IF X != Z  
THEN Statement 2;  
END
```

If P (=number of connected components) is 1,
then $M = b + 1$, where b is
number of binary conditions

McCabe's Cyclomatic Complexity M is:

- a) 2
- b) 3
- c) 4
- d) 5

