

Module: Software testing and quality analysis

Final Exam

Exercise 01: Check the correct answer: **(10 points)** (+1: correct answer; 0: incorrect answer)

Q1: Which of the following statements best describes one of the seven key principles of software testing?

- With sufficient effort and tool support, exhaustive testing is achievable for all software.
- **It is generally impossible to test all input/output combinations for software.**
- The goal of testing is to demonstrate the absence of defects.

Q2: Consider the following scenario: you tested some software and found 100 defects distributed across six equally sized modules. Fifty percent of these defects are in the user interface, and the remainder is evenly distributed among the other five modules. Which principle is identifiable here?

- Testing shows the presence of defects.
- **Defect clustering.**
- Testing is context-dependent.
- Testing early.

Q3: Which of the following options lists techniques classified as black-box testing techniques?

- Equivalence class partitioning, statement coverage, cause-effect graphing.
- **Equivalence class partitioning, boundary testing, cause-effect graphing.**
- Statement coverage testing, decision coverage testing, boundary testing.

Q4: Which statement is correct?

- Testing requires curiosity, which is why it is better to entrust it to inexperienced individuals.
- **Testing requires curiosity but also demands experience.**
- Testing only requires good communication skills.

Q5: Detecting defects :

- Is ultimately only effective at the end of the project.
- Is very costly at the start of the project because it mobilizes too many people for inspections.
- **It is more effective to detect defects as early as possible.**

Q6: Which of the following is a white-box testing technique?

- Boundary Value Analysis
- **Decision Coverage**
- Equivalence Partitioning
- Cause-Effect Graphing

Q7: Tests based on finite state machines:

- Consist of dividing the testing team into groups of equivalent size and experience.
- Consist of identifying areas where the software behaves consistently.
- **Consist of verifying the compliance of the implementation with the reference specification.**

Q8: The transition tours method can detect:

- **Output errors.**
- Transition errors.
- Both output and transition errors.

Q9: What is the primary purpose of Quality Control (QC)?

- Defining standards and processes for quality.
- Monitoring the entire software development process.
- **Finding and fixing defects in the software product.**
- Planning for quality improvements in future releases.

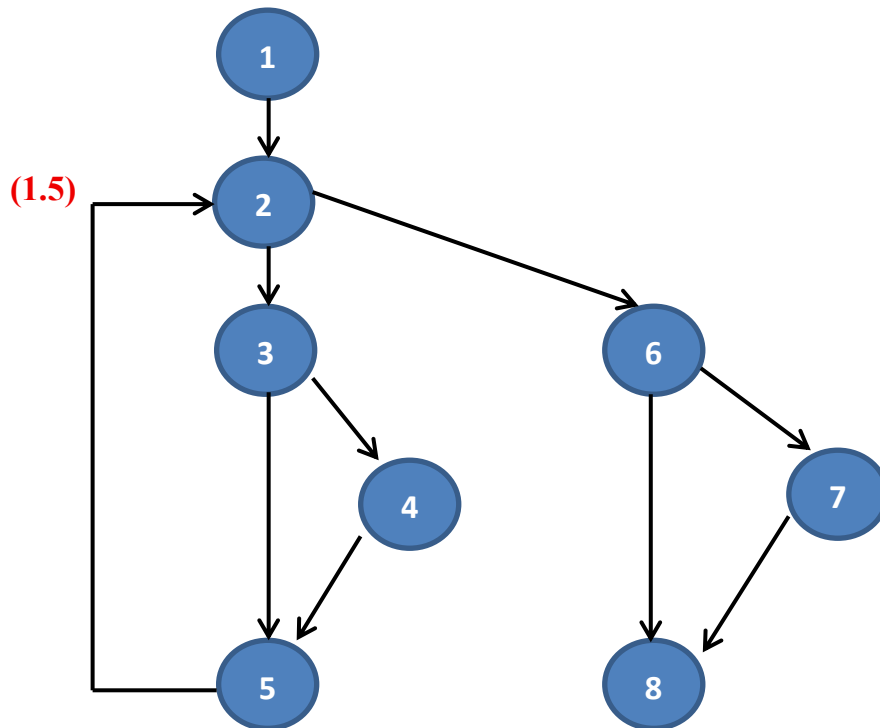
Q10: What is the primary purpose of a test closure report?

- To execute test cases
- To document the testing process
- **To provide a summary of completed testing activities and the current status of the project**

Exercise 02 :

Correction :

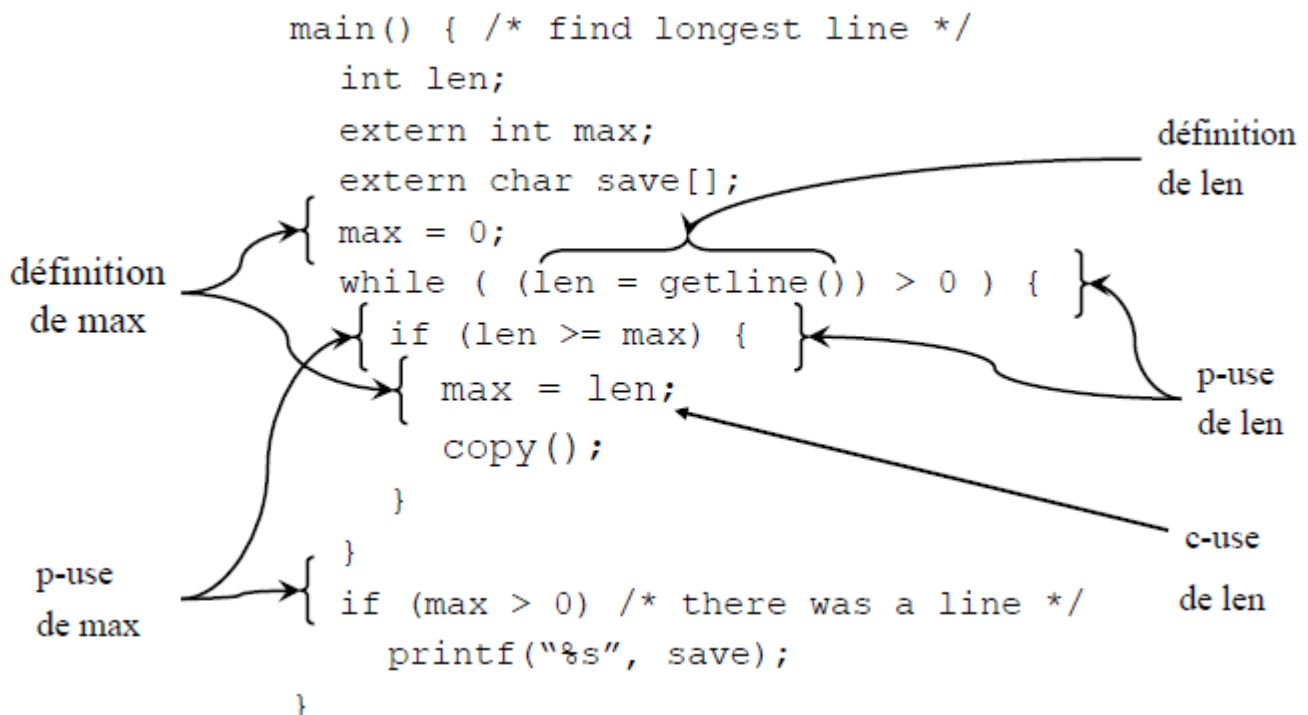
1- Control flow graph:



2-Number of independent paths : 4 (1)

- 1) 1-2-6-7-8. 2) 1-2-6-8 (1)
3) 1-2-3-5-2-6-8. 4) 1-2-3-4-5-2-6--7-8

3- (1.5)



Exercise 03: (05 points)

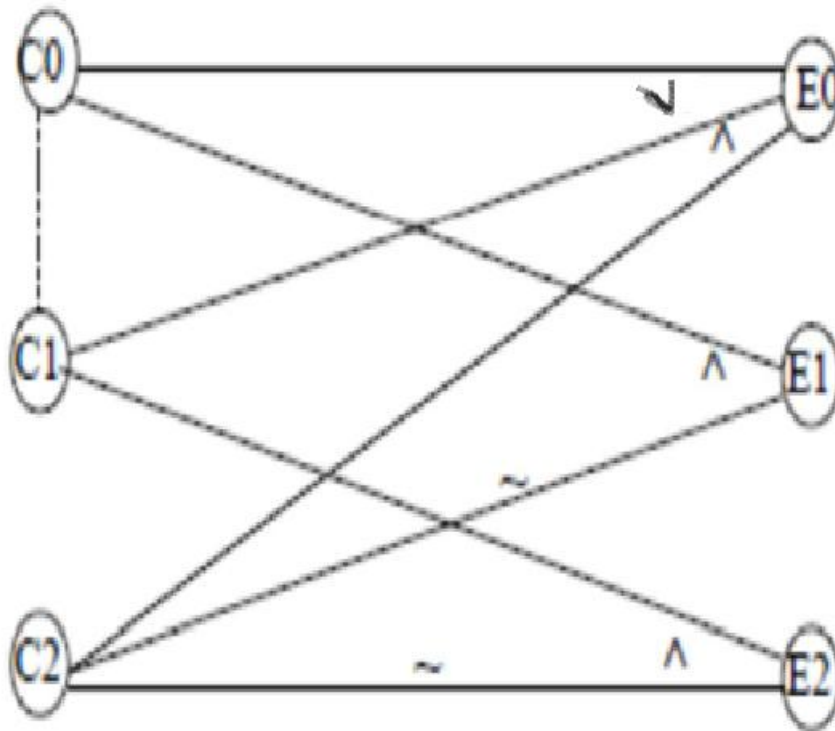
1) Without alarm : (1)

Causes: (1)

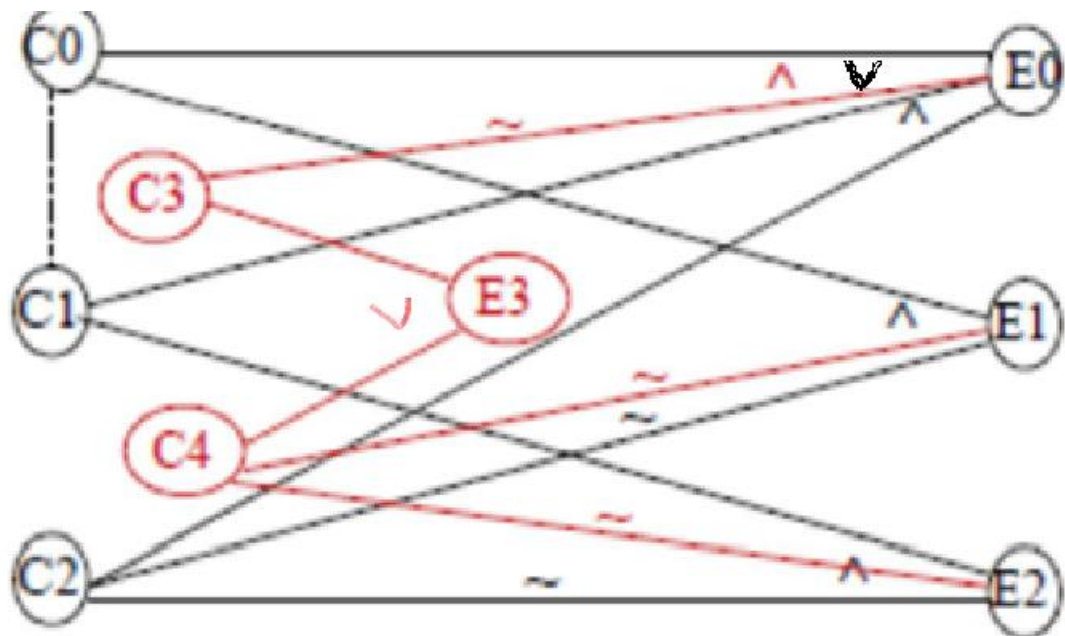
- C0 Press button t1
- C1 Press button t2
- C2 Press the glass against the trigger
- C3 No drink left in the reservoir**
- C4 Collection container is full**

Effects: (1)

- E0 The requested drink flows
- E1 Button t1 light turns off
- E2 Button t2 light turns off
- E3 Alarm is activated**



With Alarm : (1)



2) Decision Matrix (0.5)

Cause- effet	C0	C1	C2	C3	C4	E0	E1	E2	E3
CT 1	0	0	0	0	0	0	0	0	0
CT 2	0	0	0	0	1	0	0	0	1
CT 3	0	1	1	1	0	0	0	0	1
CT 4	1	0	1	0	0	1	0	0	0
CT 5	1	0	0	0	0	0	1	0	0
...									

Test cases: (0.5)

Caus e- effect	C0	C1	C2	C3	C4	E0	E1	E2	E3
CT1	0	0	0	0	0	0	0	0	0
CT2	0	0	0	0	1	0	0	0	1
CT3	0	1	1	1	0	0	0	0	1
CT4	1	0	1	0	0	1	0	0	0
CT5	1	0	0	0	0	0	1	0	0
....									

**Collection container is full--->
Alarm is activated**

**Press button t1 with Pressing the glass against
the trigger---> The requested drink flows**