COMP 5222
Software Testing and Quality Assurance
Solution 1
(2012/2013, Term 1)

Question 1

(a)

- Software system supports many types of input
- Order of inputs can be arranged into an infinite number of combinations
- Many sequences of execution
- Not able to simulate all user behavior

(3 marks)

(b) (5 marks)

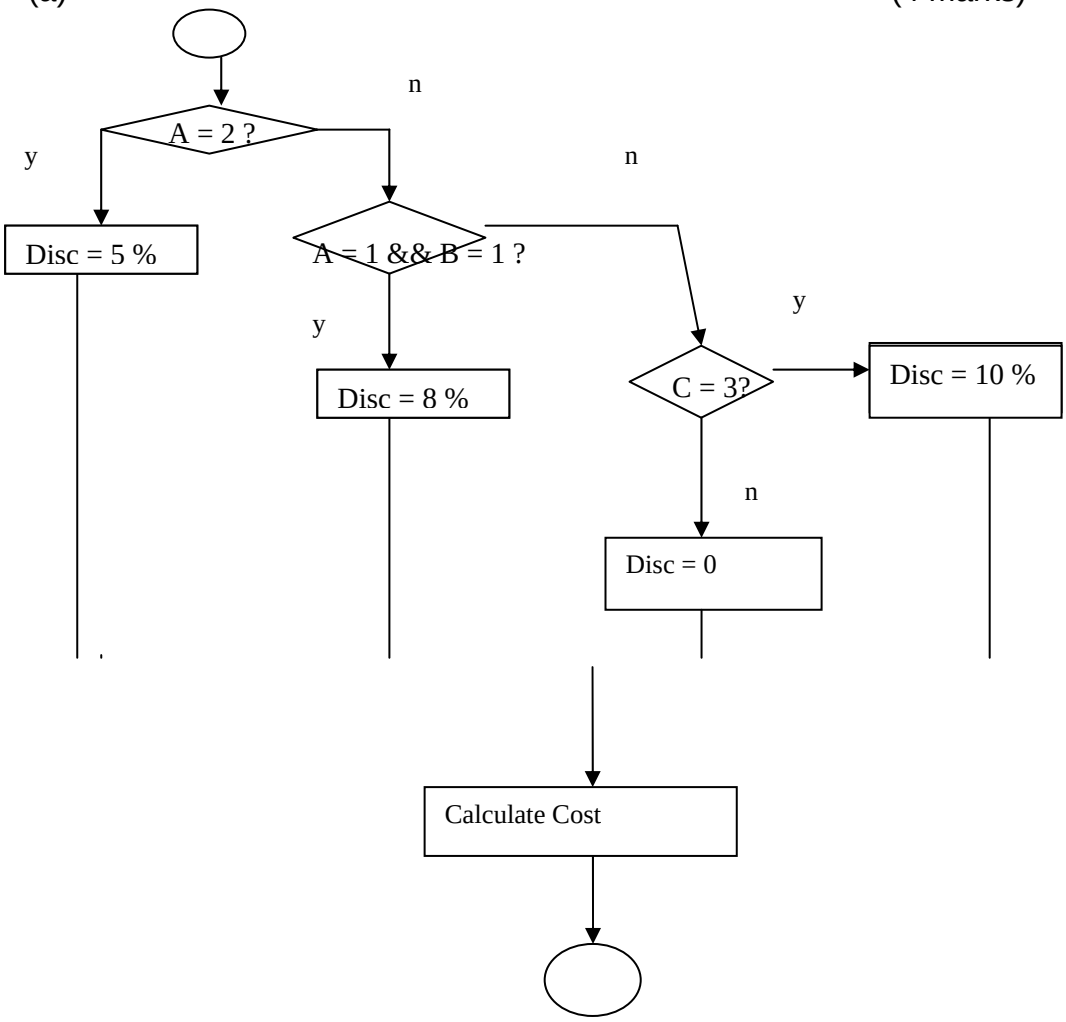
1. more powerful – more likely to expose a defect
2. more significant – detect a significant problem
3. more credible – realistic test
4. likely test – simulate likely events encountered by users
5. more informative – we learn something from the test, such as running a new test vs running the same test before
6. easier to evaluate – tester can easily determine whether the test pass or fail.

(c) **Process** factors: (5 marks)

- the extent to which testing activities integrated into the project
- clearly defined hand-offs between testing and the rest of the organization (independent test group)
- well-managed change control processes for project and test plans, product requirements, design, implementation, and testing
- the chosen system development or maintenance lifecycle, including the maturity of testing and project processes within that lifecycle
- timely and reliable bug fixes
- realistic and actionable project and testing schedules and budgets
- timely arrival of high-quality test deliverables
- use of test tools

Question 2

(a) (4 marks)



Remarks : Control Flow Graph is acceptable.

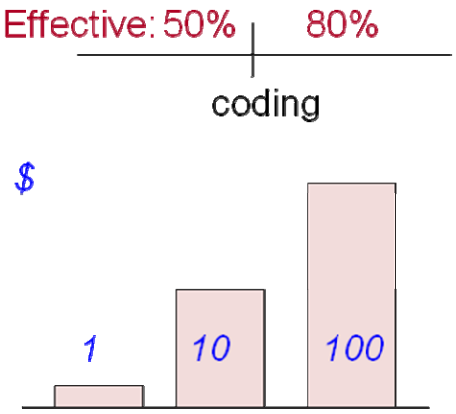
(b) cyclomatic complexity V(G) = 4. (2 marks)

(c) Design test cases to force execution down each independent path. (5 marks)

Input sequence	Result	
2, 0, 0	cost_to_customer = 106	(5% discount)
1, 1, 0	cost_to_customer = 126	(8% discount)
0, 0, 3	cost_to_customer = 255	(10% discount)
0, 0, 0	cost_to_customer = 0	(no discount)

Question 3

(a) 1680 (4 marks)
(b) 582 (8 marks)



Test after Code			Early V & V	
Accumulated Test Cost	Accumulated Errors/1,000 Lines Code		Accumulated Errors/1,000 Lines Code	Accumulated Test Cost
0	20	Requirements (+20 Errors)	10	10
		Cost to detect = 1		
0	40	Design (+20 Errors)	15	25
		Cost to detect = 1		
0	60	Code (+20 Errors)	18	42
		Cost to detect = 10		
480	12	Test 80% Effective	4	182
		Cost to detect = 100		
1,680	0	Production	0	582

Saving of 2/3!

Question 4 (8 marks)

The following are the proposed answers. (Any 8 key functions below)

1. Advanced Search Capabilities
2. Email Notifications Controlled By User Preferences
3. Bug Lists in Multiple Formats
4. Scheduled Reports (Daily, Weekly, Hourly, etc.)
5. Reports and Charts
6. Automatic Duplicate Bug Detection
7. File / Modify Bugs By Email
8. Time Tracking
9. Request System
10. Private Attachments and Comments
11. Automatic Username Completion or Drop-Down User Lists
12. Patch Viewer
13. "Watch" Other Users
14. Move Bugs Between Installations
15. Save and Share Searches

For detailed description, please refer to the following link.

Link : http://www.bugzilla.org/features

Question 5 (16 marks)

Sample TOC:

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- **Common mistakes:** missing coverage page, missing TOC, missing some sections, lack risk analysis, no document approval

Class performance:

Min: 35/60

Average: 44/60 (74%)

Max: 59/60