

Quiz03: Architecture, Version Control, Quality Assurance, Code Analysis, Project Management

Due No due date **Points** 100 **Questions** 20 **Time Limit** None
Allowed Attempts Unlimited

Instructions

Instructions:

In this quiz, we will review a few important concepts we learned after Midterm. The quiz can be taken for multiple times. The highest score will be kept. There is no time limit.

A recommended process:

1. Take the quiz for the first time, without using any reference materials. See how much you have learned, and what your muddy points are (if any).
2. Read the reference materials, including slides, book chapters, library e-books, etc.
3. Take the quiz for another time.

Notes:

- The quizzes are designed to help you review the materials we have covered so far. Please try to get most out of these quizzes/assignments by thinking through the questions.

Take the Quiz Again

Attempt History

	Attempt	Time	Score
KEPT	Attempt 3	28 minutes	83 out of 100 *
LATEST	Attempt 3	28 minutes	83 out of 100 *
	Attempt 2	less than 1 minute	2 out of 100 *
	Attempt 1	27 minutes	43 out of 100 *

* Some questions not yet graded

Score for this attempt: **83** out of 100 *

Submitted May 9 at 3:47am

This attempt took 28 minutes.

Question 1

4 / 4 pts

In a Client-Server architecture, how to differentiate the server from all client(s)? (Multiple Answers)

Correct!

☒ Client(s) initiate requests

Correct!

☒ Server responds to requests

☐ All external devices are clients

☐ Just guess

Question 2

5 / 5 pts

For each architectural style, select the most appropriate description of its weakness from the drop-down list.

Correct!

Layered Architecture

Inefficient communication ▼

Correct!

Pipe-Filter

Forces lowest-common-denominator ▼

Correct!

Client-Server

"Single" point of failure ▼

Correct!

Event-Driven

Difficult to synchronize ▼

Correct!

Model-View-Controller

Frequent updates may degrade performance ▼

Question 3

5 / 5 pts

For each architectural style, select the most appropriate description of its strength from the drop-down list.

Correct!

Layered Architecture

Specialized expertise

Correct!

Pipe-Filter

Easy to extend

Correct!

Client-Server

Centralized control

Correct!

Event-Driven

Easy to modify & promote

Correct!

Model-View-Controller

Easy to change the user ir

Question 4

12 / 12 pts

For each tool, select the most appropriate description of it from the drop-down list.

Correct!

Java Swing

A library

Correct!

GitLab

A version control system

Correct!

Flyingdonut

A project management tool

Correct!

JUnit

Correct!

A test framework ▼

EclEmma

A code coverage tool ▼

Correct!

Eclipse

An integrated developer ▼

Other Incorrect Match Options:

- A style checker
- A programming language
- A debugger
- A donut that can fly
- A static analysis tool
- A tool that can merge different versions of document automatically

Question 5

4 / 4 pts

Which of the following statements is incorrect?

☐ Validation usually involves stakeholders.

☐ Verification is the process of determining if a product satisfies requirements properly.

☐ In validation activities, we need to check if we are building the right product.

Correct!

☒ Verification activities are all product-specific.

Question 6

4 / 4 pts

Please read the following sub program:

```

1 // This method should return the number of
2 // occurrences of 0 in arr
3 public static int numZero(int[] arr) {
4     int count = 0; // S1
5     int i = 0; // S2
6
7     if (arr.length != 0 && arr != null) // S3
8     {
9         while (i < arr.length) // S4
10        {
11            if (arr[i] == 0) // S5
12                count++; // S6
13            i++; // S7
14        }
15        return count; // S8
16    } else
17        System.out.println("Invalid Input"); // S9
18    return count; // S10
19 }

```

What is the Cyclomatic Complexity of this program?

☐ 3

☐ 5

☐ 2

☒ 4

☐ 6

Correct!

Question 7

4 / 4 pts

Given an input {0, 1, 2} to *numZero* method in Question 6, how much statement coverage can be achieved?

Correct!

☐ 70%

☐ 90%

☒ 80%

☐ 100%

Question 8

4 / 4 pts

Given an input { } (an empty array) to *numZero* method in Question 6, how much branch coverage can be achieved?

☐ 5/6

☐ 4/6

☒ 1/6

☐ 2/6

☐ 3/6

☐ 6/6

Correct!

Question 9

4 / 4 pts

Here is the same subprogram again:

```

1 // This method should return the number of
2 // occurrences of 0 in arr
3 public static int numZero(int[] arr) {
4     int count = 0; // S1
5     int i = 0; // S2
6
7     if (arr.length != 0 && arr != null) // S3
8     {
9         while (i < arr.length) // S4
10        {
11            if (arr[i] == 0) // S5
12                count++; // S6
13            i++; // S7
14        }
15        return count; // S8
16    } else
17        System.out.println("Invalid Input");// S9
18    return count; // S10
19 }

```

There is a fault embedded in the program. Which of the following inputs can reveal the fault?

Correct!

☒ Null

☐ {}

☐ {0, 0}

☐ {0}

Question 10

4 / 4 pts

What is the actual fault in the above program?

☐ null pointer exception

Correct!

☒ It does not check if input is null before making reference call to the input

☐ It does not check if input is null

- ☐ Input is null

Question 11

4 / 4 pts

Suppose we don't know the source code of method *numZero*, but we still would like to test the program as a blackbox. What input would you use? (Multiple Answers)

Correct!

- ☒ {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}

Correct!

- ☒ A very big integer array

Correct!

- ☒ An array with one integer only

Correct!

- ☒ {}

Question 12

4 / 4 pts

Which of the following statements is incorrect?

- ☐ System testing may involve real users.
- ☐ Unit & Integration testing are usually performed by programmers
- ☐ Regression testing is a process re-running all existing tests.
- ☒ Unit & Integration testing are validation activities.

Correct!

Question 13

5 / 5 pts

Describe five steps in a debugging process.

Correct!

Step 1

Stabilize

Correct!

Step 2

Localize

Correct!

Step 3

Correct

Correct!

Step 4

Verify

Correct!

Step 5

Globalize

Question 14

6 / 6 pts

In a Scrum project, what the team should do if they fall behind the schedule?
(Multiple Answers)

Correct!



They should debug their process of current sprint in the retrospective meeting



They should add more developers.

Correct!



They should still strive for the completion of a shippable product.

Correct!



They should focus on the top-prioritized task(s).

Question 15

10 / 10 pts

Describe a normal Git work cycle in five steps.

Correct!

Step 1

Pull, resolve conflicts if ne ▼

Correct!

Step 2

Modify ▼

Correct!

Step 3

Save & Commit ▼

Correct!

Step 4

Pull again, resolve conflict ▼

Correct!

Step 5

Push ▼

Question 16

4 / 6 pts

Continued with Question 15, when should we do testing in a normal Git work cycle? (Multiple answers)

Correct!

☒ After the initial pull

☐ After push

Correct!

☒ After modification is made

Correct Answer

☐ After resolving any conflicts

Question 17

Not yet graded / 3 pts

Why do we need to specify acceptance criteria for each task/card on Flyingdonut?

Your Answer:

Because as a team, all the members need to be on the same page, which means having the same understanding for the project requirement. By specifying acceptance criteria, each member can read, review, and decide on how to complete the project by dividing and assigning different tasks. Creating tasks/cards and providing comments also helps members in the team to ask questions on the parts that are not clear.

Question 18

Not yet graded / 3 pts

Why do we need to do regression testing, after the code has already passed all unit testing?

Your Answer:

It is suggested that programmers should thoroughly test a fix to ensure that it really does correct the defect they intend to correct. Furthermore, because of the likelihood of introducing a new fault, programmers should rerun all tests to try to detect this occurrence. Therefore, doing regression testing is important. Also, nowadays, there are many unit testing and integration testing tools available and can automate regression testing, so there is no reason for programmers not to do frequent regression testing.

Question 19

Not yet graded / 8 pts

In your project, what software engineering knowledge have you used? You may elaborate through the following aspects:

Process:

Architectural styles:

Design Patterns:

Tools:

Your Answer:

Process: Prototyping

Architectural styles: Model-View-Controller, Layered

Design Patterns: Composite, Observer, Strategy

Tools: JavaSwing, GitLab, FlyingDonut, Eclipse, Discord, JUnit Testing

Question 20

Not yet graded / 1 pts

As we are approaching the end of the semester, do you have any memorable moment you had with this class? If yes, please share one.

Your Answer:

I really enjoy the class. I learned a lot about product planning and development. The Pirex project is fun and challenging.

Quiz Score: **83** out of 100