**Introduction to Software Architecture Quality**

- **Video:** What is Software Architecture?
  4 min
- **Reading:** ISO/IEC/IEEE Systems and software engineering — Architecture description
  15 min
- **Video:** Architectural Styles
  5 min
- **Video:** View, Viewpoint, and Perspective
  4 min
- **Video:** Writing Scenarios
  7 min
- **Peer-graded Assignment:** Assessing Quality through Scenarios
  1h
- **Review Your Peers:** Assessing Quality through Scenarios

**Security as an Architectural Concern**

# Peer-graded Assignment: Assessing Quality through Scenarios

**Reviews** 5 complete

**You've finished your peer reviews**
Well done! You sent 5 peers feedback that will help them. If you have time, please review one or two more. Every review you do helps another peer complete the course!

Your fellow learner has submitted their assignment anonymously and your review will be anonymous to them. All names are still visible to course instructors.

## Project

by Anonymous Learner
April 19, 2022

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**PROMPT**

Select a public website that you use enough to be familiar with what a typical user may want to do. This website should not require the peer reviewer to sign up for an account or pay to use the site in any way. The website should also not, to the best of your knowledge, serve malware, use javascript to complete cryptocurrency mining, or any other negative practice that might harm the peer reviewer.

Select three quality attributes that are likely to be important when deciding a website architecture for the website you chose. You can use usability, security, performance, reliability, or any other reasonable quality attribute as the basis of your selection. Briefly explain the importance of each quality attribute as it relates to the software/service you selected.

Then, for each selected quality attribute, write one scenario that would help quantitatively assess whether the software solution meets its goal. You shall write your scenarios using a format that was presented in the lectures.

Write your first selection, discussion of importance and scenario here.

Building a website for WAEC

Scalability, security, performance,

Performance is an indication of the responsiveness of a system to execute specific actions in a given time interval. It can be measured in terms of latency or throughput. Latency is the time taken to respond to any event. Throughput is the number of events that take place in a given amount of time. An application's performance can directly affect its scalability, and lack of scalability can affect performance. Improving an application's performance often improves its scalability by reducing the likelihood of contention for shared resources. Factors affecting system performance include the demand for a specific action and the system's response to the demand. The key issues for performance are:

- Increased client response time, reduced throughput, and server resource over utilization. Ensure that you structure the application in an appropriate way and deploy it onto a system or systems that provide sufficient resources. When communication must cross process or tier boundaries, consider using coarse-grained interfaces that require the minimum number of calls (preferably just one) to execute a specific task, and consider using asynchronous communication.

**RUBRIC**

Is the quality attribute clearly identified?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance present?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance clear?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance reasonable?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance well-written (clear language, proper grammar, correct spelling)?
- 0 pts No
- 1 pt Yes

Is the scenario content present?
- 0 pts No
- 1 pt Yes

Is the scenario content clear?
- 0 pts No
- 1 pt Yes

Is the scenario content reasonable?
- 0 pts No
- 1 pt Yes

Is the scenario content well-written (clear language, proper grammar, correct spelling)?
- 0 pts No
- 1 pt Yes

Does the scenario capture a measurement of the quality attribute identified?
- 0 pts No
- 1 pt Yes

Does the scenario follow one of the formats discussed in the course?
- 0 pts No
- 1 pt Yes

**PROMPT**

Write your second selection, discussion of importance and scenario here.

Scalability is ability of a system to either handle increases in load without impact on the performance of the system, or the ability to be readily enlarged. There are two methods for improving scalability: scaling vertically (scale up), and scaling horizontally (scale out). To scale vertically, you add more resources (such as CPU, memory, and disk to a single system. To scale horizontally, you add more machines to a farm that runs the application and shares the load. The key issues for scalability are:

- Applications cannot handle increasing load. Consider how you can design layers and tiers for scalability, and how this affects the capability to scale up or scale out the application and the database when required. You may decide to locate logical layers on the same physical tier to reduce the number of servers required while maximizing load sharing and failover capabilities. Consider partitioning data across more than one database server to maximize scale up opportunities and allow flexible location of data subsets. Avoid stateful components and subsystems where possible to reduce server affinity.

**RUBRIC**

Is the quality attribute clearly identified?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance present?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance clear?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance reasonable?
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- 1 pt Yes

Is the quality attribute explanation of importance well-written (clear language, proper grammar, correct spelling)?
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- 1 pt Yes

Is the scenario content present?
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- 1 pt Yes

Is the scenario content clear?
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- 1 pt Yes

Is the scenario content reasonable?
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- 1 pt Yes

Is the scenario content well-written (clear language, proper grammar, correct spelling)?
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- 1 pt Yes

Does the scenario capture a measurement of the quality attribute identified?
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- 1 pt Yes

Does the scenario follow one of the formats discussed in the course?
- 0 pts No
- 1 pt Yes

**PROMPT**

Write your third selection, discussion of importance and scenario here.

Security is the capability of a system to reduce the chance of malicious or accidental actions outside of the designed usage affecting the system, and prevent disclosure or loss of information. Improving security can also increase the reliability of the system by reducing the chances of an attack succeeding and impairing system operation. Securing a system should protect assets and prevent unauthorized access to or modification of information. The factors affecting system security are confidentiality, integrity, and availability. The features used to secure systems are authentication, encryption, auditing, and logging. The key issues for security are:

- Spoofing of user identity. Use authentication and authorization to prevent spoofing of user identity, identify trust boundaries, and authenticate and authorize users crossing a trust boundary.
- Damage caused by malicious input such as SQL injection and cross-site scripting. Protect against such damage by ensuring that you validate all input for length, range, format, and type using the constrain, reject, and sanitize principles. Encode all output you display to users.

**RUBRIC**

Is the quality attribute clearly identified?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance present?
- 0 pts No
- 1 pt Yes

Is the quality attribute explanation of importance clear?
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- 1 pt Yes

Is the quality attribute explanation of importance reasonable?
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- 0 pts No
- 1 pt Yes

Does the scenario follow one of the formats discussed in the course?
- 0 pts No
- 1 pt Yes

**OVERALL ASSIGNMENT RUBRIC**

Is the website selected publicly accessible?
- 0 pts No
- 10 pts Yes

Is the website selected a real website with a clear purpose? As an example, it is not just the submitting learner's personal website.
- 0 pts No
- 10 pts Yes

Submit Review

Comments
Comments left for the learner are visible only to that learner and the person who left the comment.

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