school of computing, informatics, & decision systems engineering

ASU Ira A. Fulton Schools of Engineering Arizona State University

CSE 460: Software Analysis and Design

Online Shopping Store Submission

Directions:

Read the description of the online shopping store provided, then respond to the prompts for Phases I and II. Use this document to enter your responses. Save all responses in this document as a single PDF titled “Last Name_First Name_Online Shopping Store Project_Submission”.

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Phase I

Develop a scenario for each quality factor based on the online shopping example in the Project Description and explain how to test that quality factor for the client-server web application in the space provided. *You may use additional pages as needed to answer this question.*

Quality Factor: Time Behavior

1. Source of Stimulus: End user (Customer)
2. Stimulus: Customer queries for clothing selections, checkout, and other operations should occur in 20-30 seconds.
3. Environment: Normal operations
4. Artifact: User operation process
5. Response: returns desired clothing information, redirected operator to checkout page, and the inform operator other information
6. Response Measure: The response for each operation is in twenty to thirty seconds.

How to test time behavior:
Log in to Online Shopping Store as a customer to perform several following actions: randomly select some cloths and view the information of selected cloths, perform the checkout action for selected cloths, views shopping cart.

The first action should return the correct description of selected cloth,
The second action should direct operator to checkout page with displaying selected cloths for checking out,
The third action should show the operator a shopping cart with desired items added.

Measure and record the time spent for each operation above and check whether they can finish the tasks within 20-30 seconds.

Quality Factor: Confidentiality

1. Source of Stimulus: End user(customer, store manager, malicious attacker) access database server
2. Stimulus: Login and authentication mechanisms need to be added to the system. Unauthorized attempt is made to display data, change or delete data, access system services, change the system's behavior, or reduce availability.
3. Environment: When are in customer's sensitive information retrieving process, the attack can come when the system is either online or offline, either connected to or disconnected from a network, either behind a firewall or open to a network, fully operational, partially operational, or not operational
4. Artifact: Date access authentication process, system services, data within the system, a component or resources of the system, data produced or consumed by the system

5. Response: Grant privilege to an operator for accessing certain types of data. The system should also track activities within it by recording access or modification; attempts to access data, resources, or services; and notifying appropriate entities (Store manager) when an apparent attack is occurring
6. Response Measure: The end user(customer) can only view their own information such as each customer's shopping history, address, contact information, and payment methods, etc. Only the managers or website developer can retrieve a list of allowed user information data. Measures the system's response include how much of the online shopping store system is compromised when a particular component or data value is compromised, how much time passed before an attack was detected, how many attacks were resisted, how long it took to recover from a successful attack, and how much data was vulnerable to a particular attack

How to test confidentiality:
Log in to the system as a customer, check if the owned the personal information (shopping history, address, contact information) are shown correctly.
Log in to the system as a store manager, an authentication process should be prompted during the logging. A manager can view a list of allowed user information who recently have ordered items.
Creating a testing bed environment, act as an attacker to perform SQL injection or authentication attack toward database server and measure performance of data server while undergoing the attacks and check if the sensitive customer's data can be retrieved or not.

Quality Factor: Recoverability

1. Source of Stimulus: Internal/external: people, hardware, software
2. Stimulus: Fault: omission, crash, incorrect timing, incorrect response
3. Environment: Normal operation, startup, shutdown, repair mode, degraded operation, overloaded operation
4. Artifact: Processors, communication channels, persistent storage, processes
5. Response: Prevent the fault becoming a failure; Detect the fault: log the fault, notify appropriate entities(people or system); Recover from the fault: disable source of event causing the fault, be temporarily unavailable while repair is being effected, fix or mast the fault/failure or contain the damage it causes, operate in a degraded mode while repair is being effected.
6. Response Measure: When a fault/failure happens, the system downtime should be no more than 10 minutes. Time or time interval when the system in fault/failure must be available. Measure the time for detect the fault/failure. Measure the time to repair the fault. Measure the time or time interval in which system can be in degraded mode proportion or rate of a certain class of fault that the system prevents, or handles without failing.

How to test recoverability:

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To test recoverability, it is necessary to create a test bed as close to actual conditions of deployment as possible. Changes in interfacing, protocol, firmware, hardware, and software should be as close to the actual condition as possible if not the same condition.
In testing environment, when there are several end users (customers, managers) in session, perform several software or physical operation to shut down the server. After some time re-connected the servers and analyze the system’s ability to continue receiving data from the point at which the network connection was broken.
Restart the system when a customer or manager in as session with definite number of sessions opened. Check and measure the if the system downtime is under 10 minutes and whether the browser can recover all of them or not.

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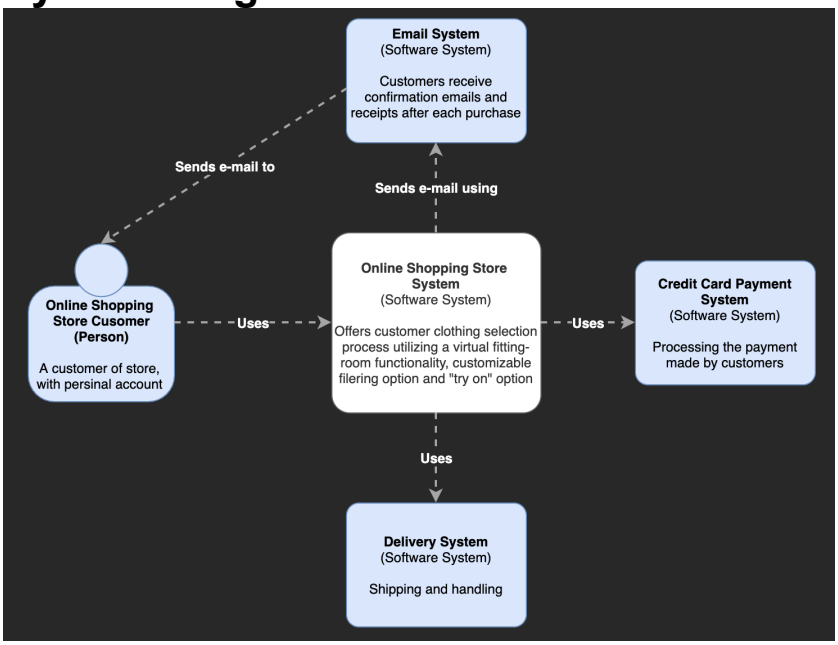
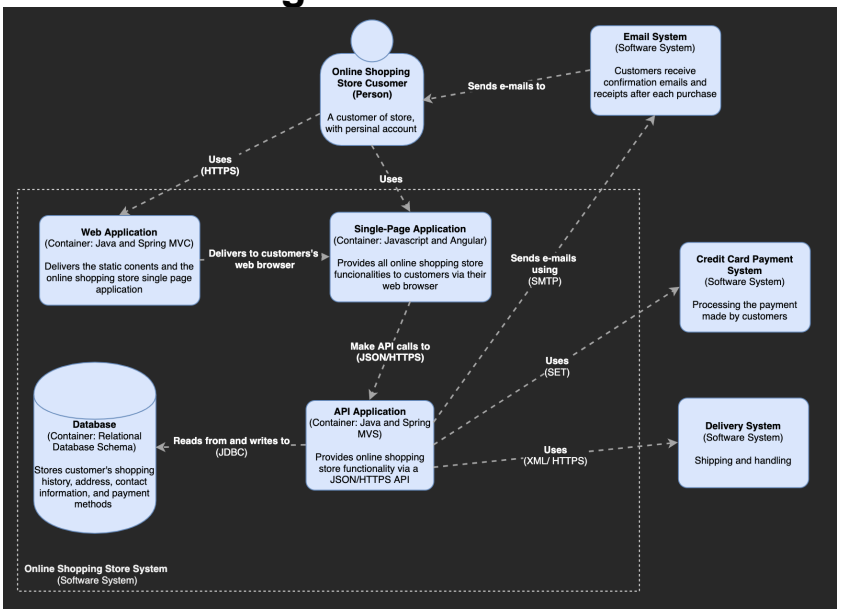
Phase II

Draw each diagram according to the online shopping store situation described in the project description. Take a clear screenshot of each diagram and paste it in the corresponding space provided. *You may add additional pages as needed.*

System Diagram:



Container Diagram:



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Deployment Diagram: