SOFE 3650U: Software Design & Architecture

Final Project - ADD Iteration 3

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Iteration 3: Addressing Quality Attribute Scenario Driver

Step 2: Establish Iteration Goal by Selecting Drivers

This iteration will focus on the QA-4 (Performance) quality attribute scenario.
QA-4 states that the website must be able to produce transactions and display tickets in a timely manner. There should be little delay, <1 minute, when performing transactions.

Step 3: Choose One or More Elements of the System to Refine

The elements to be refined in this iteration will be the physical nodes identified in iteration 1, which are the time server and database servers.

Step 4: Choose One or More Design Concepts That Satisfy the Selected Drivers

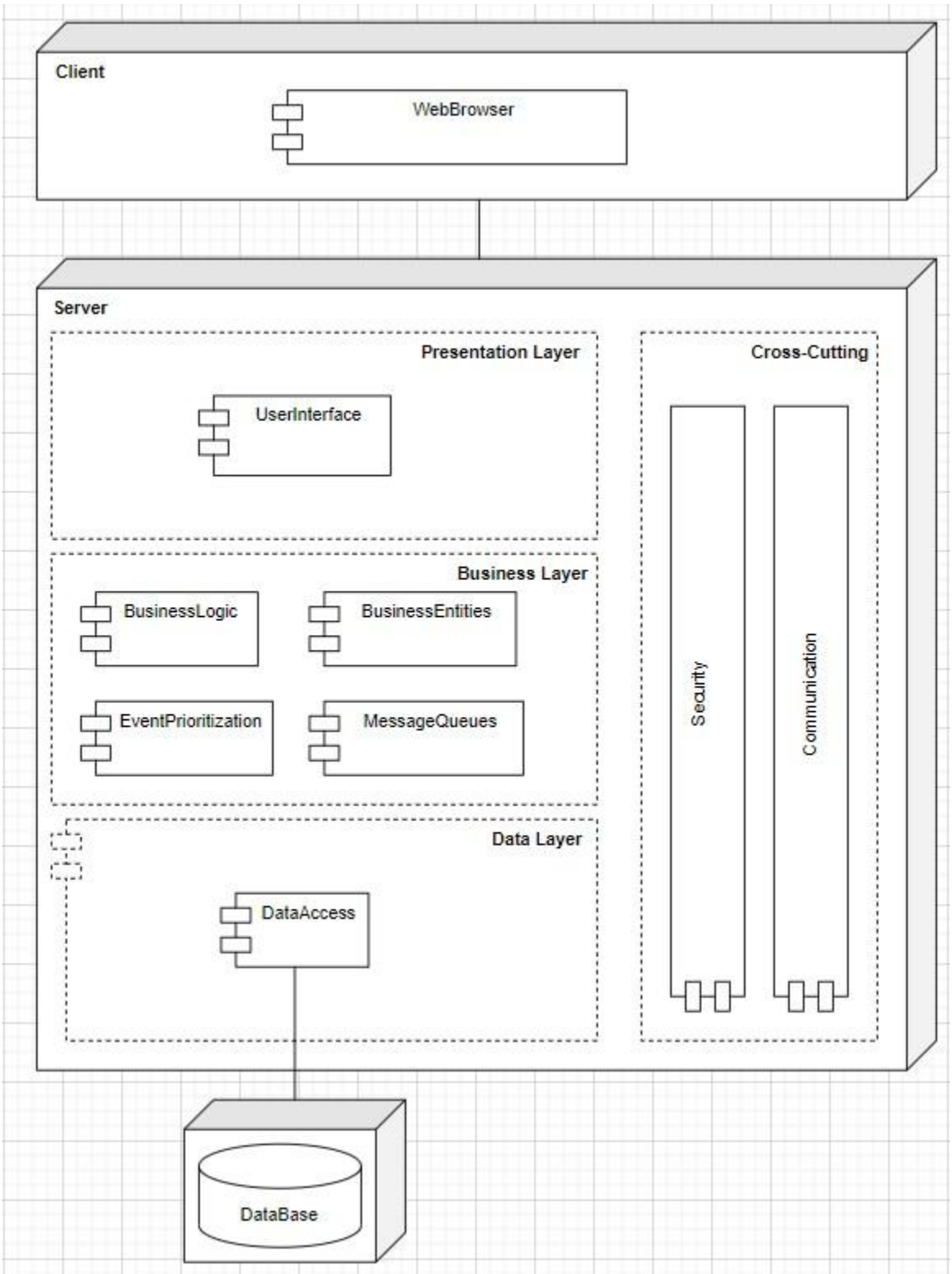
Design Decision and Locations	**Rationale and Assumptions**
Introducing an element from the **message queue**.	Tickets received from the time servers are placed in the message queue then later retrieved by the application. Use of a queue will guarantee that tickets are processed and delivered in a timely manner.
Introducing the **performance** tactic by **prioritizing events.**	Prioritizing transactions by importance of events according to the service provided to the user. Ticket booking transactions made first will get processed first (according to the time).

Step 5: Instantiate Architectural Elements, Allocate Responsibilities, and Define Interfaces

Design Decision and Locations	**Rationale and Assumptions**
Deploy message queue on a separate node	Doing so will guarantee that no transaction data will be lost in the case that the time servers are down according to CON-3.
Identifying the events to be prioritized.	Create the prioritization scheme to rank the order of services according to importance.

Step 6: Sketch Views and Record Design Decisions

Refined Layered Architecture Model (Web Application Reference Architecture)



Layer	Module	Responsibility
Client	WebBrowser	A web browser running on the client's machine
Server - Presentation Layer	User Interface	Receives user interactions and presents the information to the users. It contains UI elements as buttons and text fields.
Server - Business Layer	BusinessLogic	Retrieves and processes application data and applies business rules on the data.
Server - Business Layer	BusinessEntities	Represents the entities from the business domain and the associated business logic.
Server - Business Layer	EventPrioritization	Prioritizing the events from level of importance to the user.
Server - Business Layer	MessageQueues	Using message queues to prioritize the events to be received by the application and to make sure the system time server does not fail.
Server - Data Layer	DataAccess	Provides the common components needed to retrieve and store information (use of API).
Server - Cross-Cutting Layer	Security	Handles security aspects such as user authorization and authentication, as well as password encryption/decryption
Server - Cross-Cutting Layer	Communication	Handles communication mechanisms across layers and physical tiers
External Data Sources	DataBase	Stores all data from the system, later accessed by the DataAccess module in the

		Data Layer.

UML Sequence Diagram for UC-5

Step 7: Perform Analysis of Current Design and Review Iteration

Not Addressed	Partially Addressed	Completely Addressed	Design Decisions Made During the Iteration
	UC-6		Partial addressing of this use case in the refined model.
		UC-7	The refined modules in the architectural model address this use case.
	UC-8		Partial addressing of this use case in the refined model.
		UC-9	The refined modules in the architectural model address this use case.
		QA-4	This quality attribute is the primary goal for this iteration and has been supported through the refined models.
QA-5			No relative decision has been made for this particular quality attribute
	CON-1		Decisions for the work efficiency of the technician have not been made yet.
	CON-2		Decisions for the communication relationship between the developer and technician have not been made yet.
		CON-3	Constraint is referenced by the architecture model that has been refined.
	CON-6		No relative decision has been made for this constraint.

	CRN-2		Technologies and reference architecture that have been considered up to this point have taken into account the knowledge of the developers.