Iteration 2: Selection of technologies

Step 2: Establish Iteration Goal by Selecting Drivers

The goal of this iteration is to address the 3-tier client-server-database system being developed in the previous iteration. The iteration will help us pick the relevant tools and technologies to implement the 3-tier system while taking into account the constraints. The main drivers for this iteration are:

The primary function requirements captured by the following use cases:

UC-1: Display course information
UC-3: Subscribe/Unsubscribe courses
UC-7: Manage courses
UC-8: Manage Users

The quality attributes:

QA-1: A secure login environment for students' information
QA-4: Synchronization with secondary systems
QA-5: Scalability and adaptability
QA-7: Performance

Step 3: Choose one or more Elements in the System to Refine

Iteration 1 helped us in selecting the appropriate layers and modules for the system tiers. Here we will be refining each module by decomposing it into the appropriate services and interfaces. The data layer will be replaced by the appropriate database design; the client and server modules will be further refined into services and interfaces and the quality attributes taken into account.

Step 4: Choose one or more Design Concepts that Satisfy the Selected Drivers

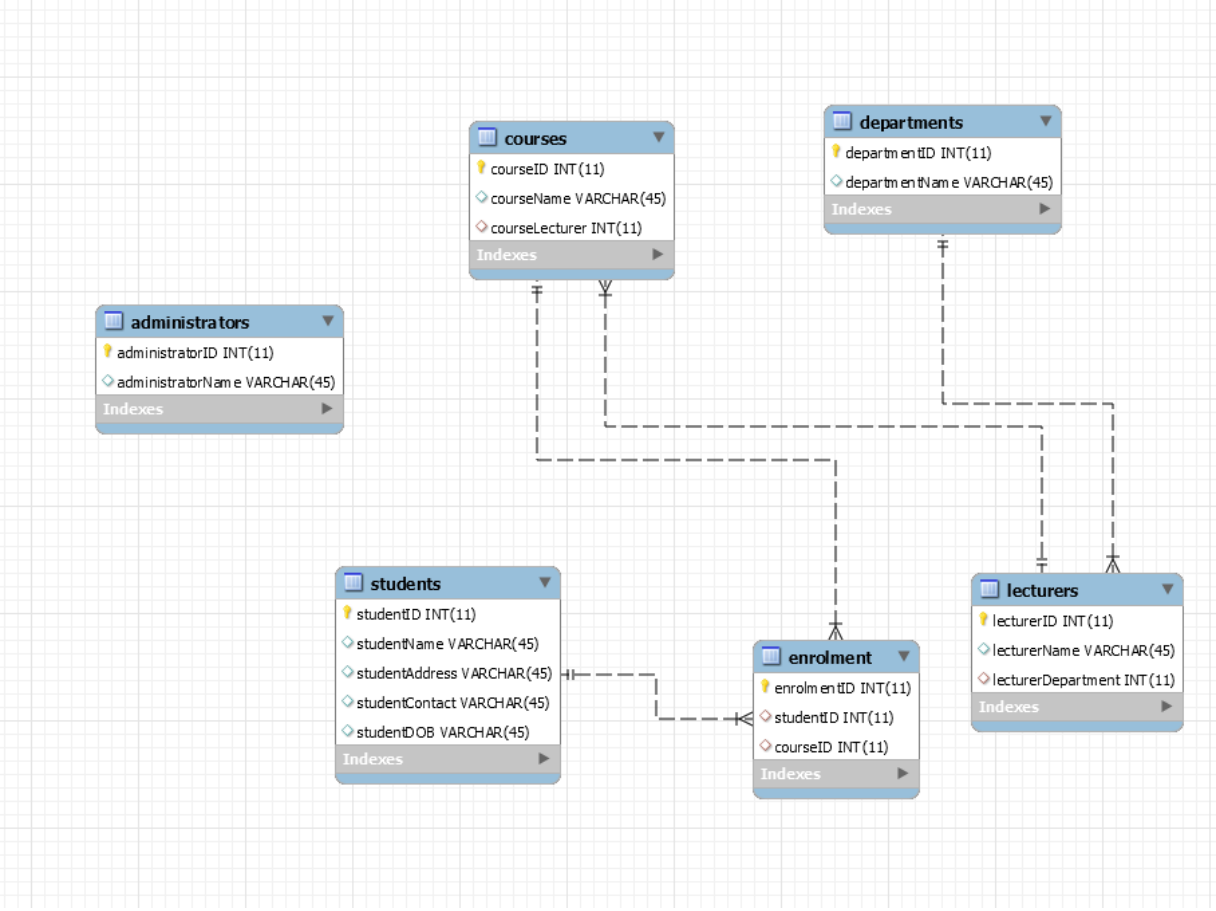
Design Decisions and Location	Rationale and Assumptions
A relational database structure to handle the data layer and modules	The relational database will cover UC-1, UC-3, UC-7, and UC-8 requirements by implementing a relational DBMS system. In addition, the database will conform with QA-5 by addition of more relations
Implementation of a 3-tier client-server-database system	The 3-tier system conforms to UC-1, UC-3, QA-5. The server will be able to process the various client requests to present information, modify records in the database, or link to a backup and sync mechanism
Sync interface for the server component	A sync interface to secondary university systems to sync user data and information will conform with QA-4
Login server module	A login server will be required to allow for UC-8 and QA-1. A secure login system will allow finer control over security of the CMS

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

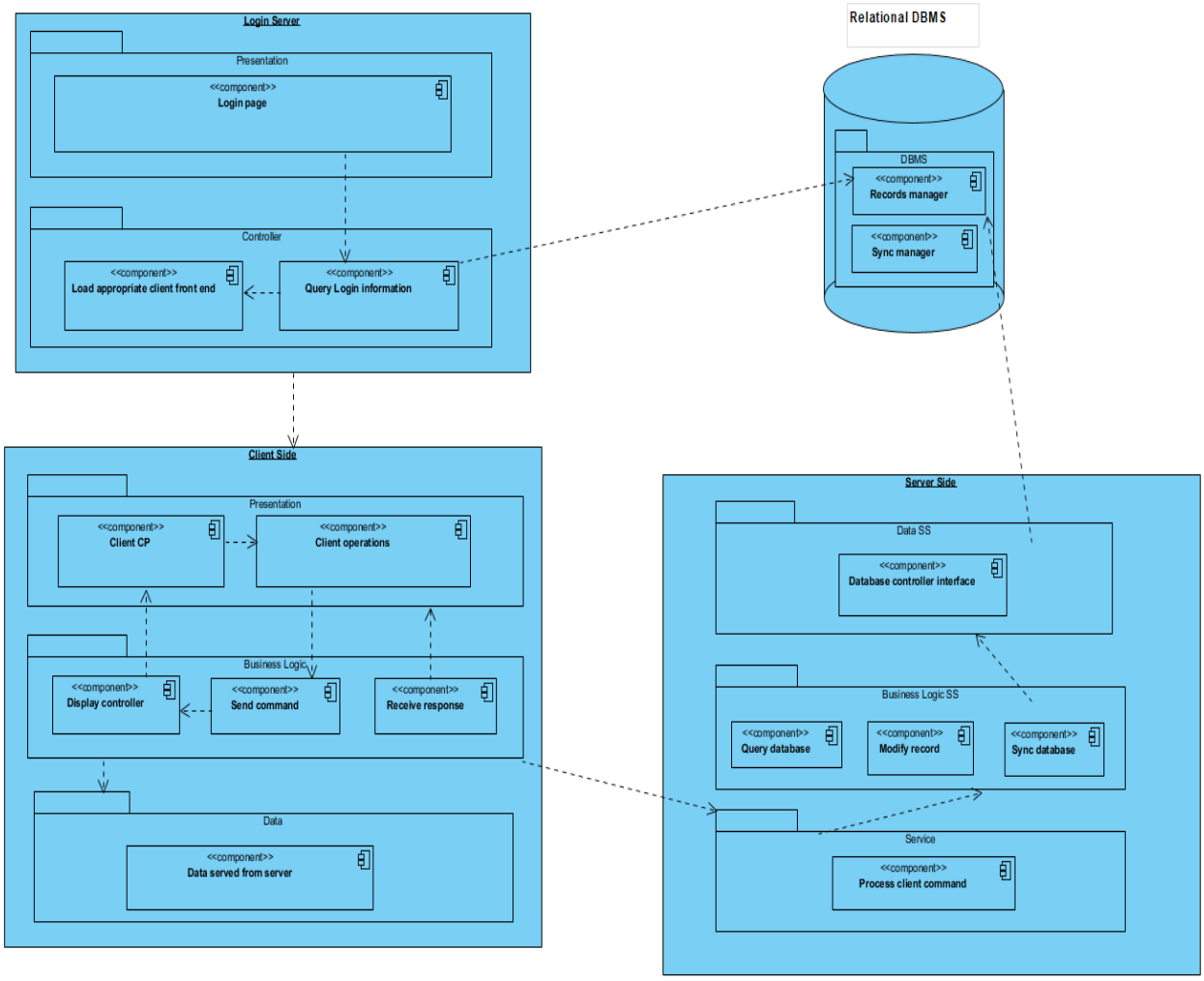
Design Decisions and Location	Rationale
Creation of relations for the DBMS	The detailed relational DBMS design allows u to visualize how information is stored and managed. The relations will hold data for students, lecturers, courses, departments, administrators, system maintainers.
Client Web based front end	The web-based front end provides the view interface for the clients
Server back end	The server backend runs the services to display data, modify records, manage sync
Login server	The login server will handle authentication and loading of the relevant client front end

Step 6: Sketch Views and Record Design Decisions

The diagram below shows the DBMS relations:



The diagram below shows the refined architecture:



Element	Responsibility
Login page	The main landing page for the CMS.
Query login information	Queries the database to match the supplied login information with stored data
Load appropriate client page	Loads up the relevant client front end
Display controller	Formats received data and information to display for the client
Client CP	Shows the interface for interacting with the CMS
Client operations	Processes the client commands to send to appropriate component in business logic layer

Element	Responsibility
Send command	Sends the client command to the server module
Receive response	Receives commands / data from the server module
Data received from server	Temporary storage of the data received as a result of database queries
Process client command	Sends the client command to the appropriate component
Query database	Queries the database to send data for display purposes
Modify records	Adds/removes information from the database
Sync server	Sends command to the database to sync to external university systems
Database controller interface	Interfaces with the database
Records manager	Manages records according to server commands
Sync manager	Sync interface to the external university systems

Step 7: Perform Analysis of Current Design and Review Iteration

Not addressed	Partially Addressed	Completely Addressed
		QA - 1
		QA - 4
	QA – 5	
		UC -1
	QA - 7	
		UC - 3
		UC - 5
		UC - 7
		UC - 8