Iteration 2: Identifying Structures to Support Primary Functionality

Step 2: establish iteration goal by selecting Drivers

In this iteration, besides CRN 3, which is to allocate works to members of the development team, following primary use cases will be addressed:

- UC1: Manage Courses
- UC7: Calculate grade statistics
- UC10: Retrieve Course Information
- UC11: Subscribe/Unsubscribe to courses
- UC13: Share files and messages with team
- UC25: Email students

Step 3: Choose One or More elements of the system to refine

The modules located in the different layers by the reference architectures from previous iteration will be refined in this iteration.

Step 4: Choose One or More Design Concepts that satisfy the selected Drivers

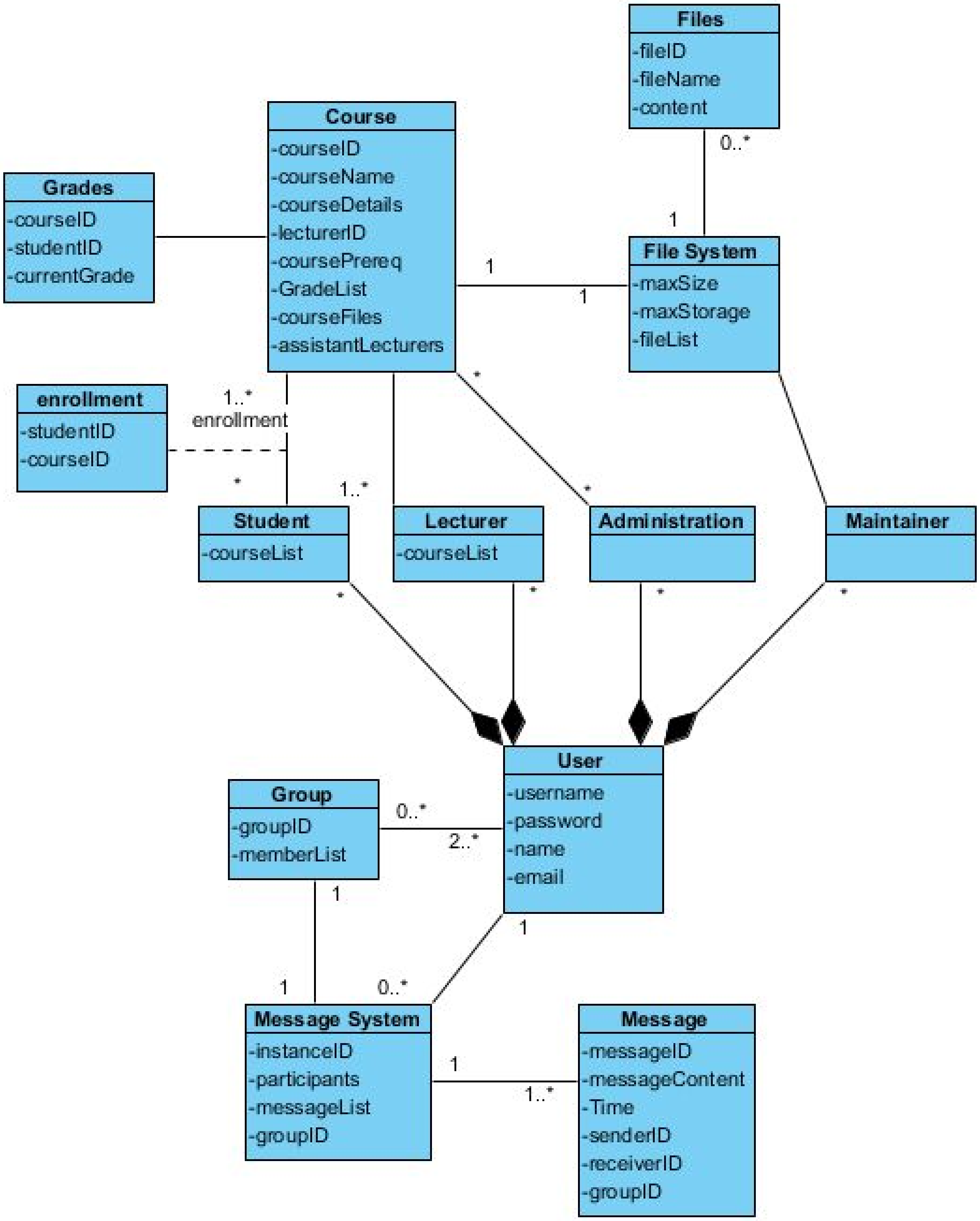
Design Decisions and Location	Rationale and Assumptions
Create a Domain Model	It is to create an initial domain system with major entities.
Identify Domain Objects	CMS need to have domain objects where each distinct functional element of the application has to be encapsulated in a self-containing building block

Decompose Domain Objects into general and specialized components	Domain objects are complete sets of functionality supported by finer grained elements located within the layers.
Spring framework	The application framework allows the objects that form an application to be connected. It also supports different concerns through AOP. Supports: ● Security (QA-5) ● Publishing object interfaces so the objects can be accessed remotely
Hibernate Framework	Hibernate allows objects to be easily persisted in a relational database. It supports transactions and provides a query language that is used to retrieve objects from the database (UC-10). It also utilizes multi-level caching schemes to improve performance.

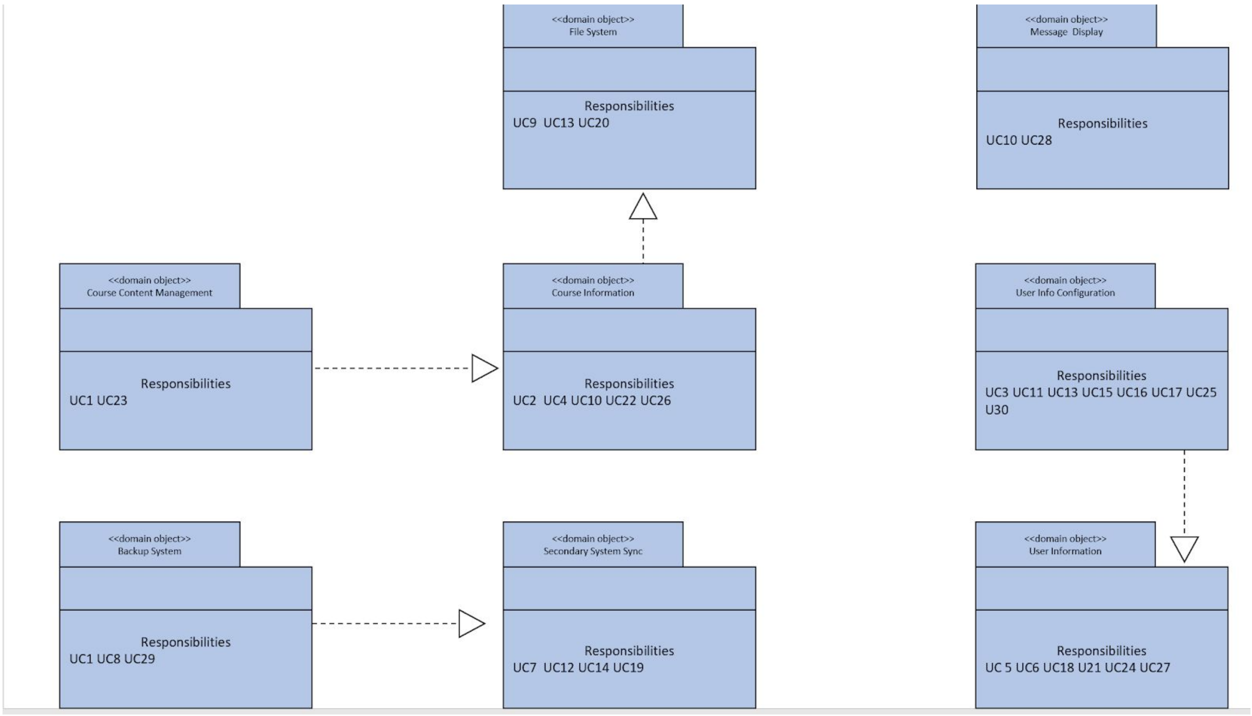
Step 5: Instantiate Architectural Elements, Allocate Responsibilities, and Define Interfaces

Design Decisions and Location	Rationale
Map system use cases to domain objects	By analyzing system use cases, domain objects can be identified.
Decompose domain objects across layers to identify layer-specific modules	Through establishing set of modules, the needs to test these modules are clearer.
Associate components with Spring framework	This framework supports security, and allows remote access.
Associate data layer components with Hibernate	This framework provides easy-to-use tools of handling database.

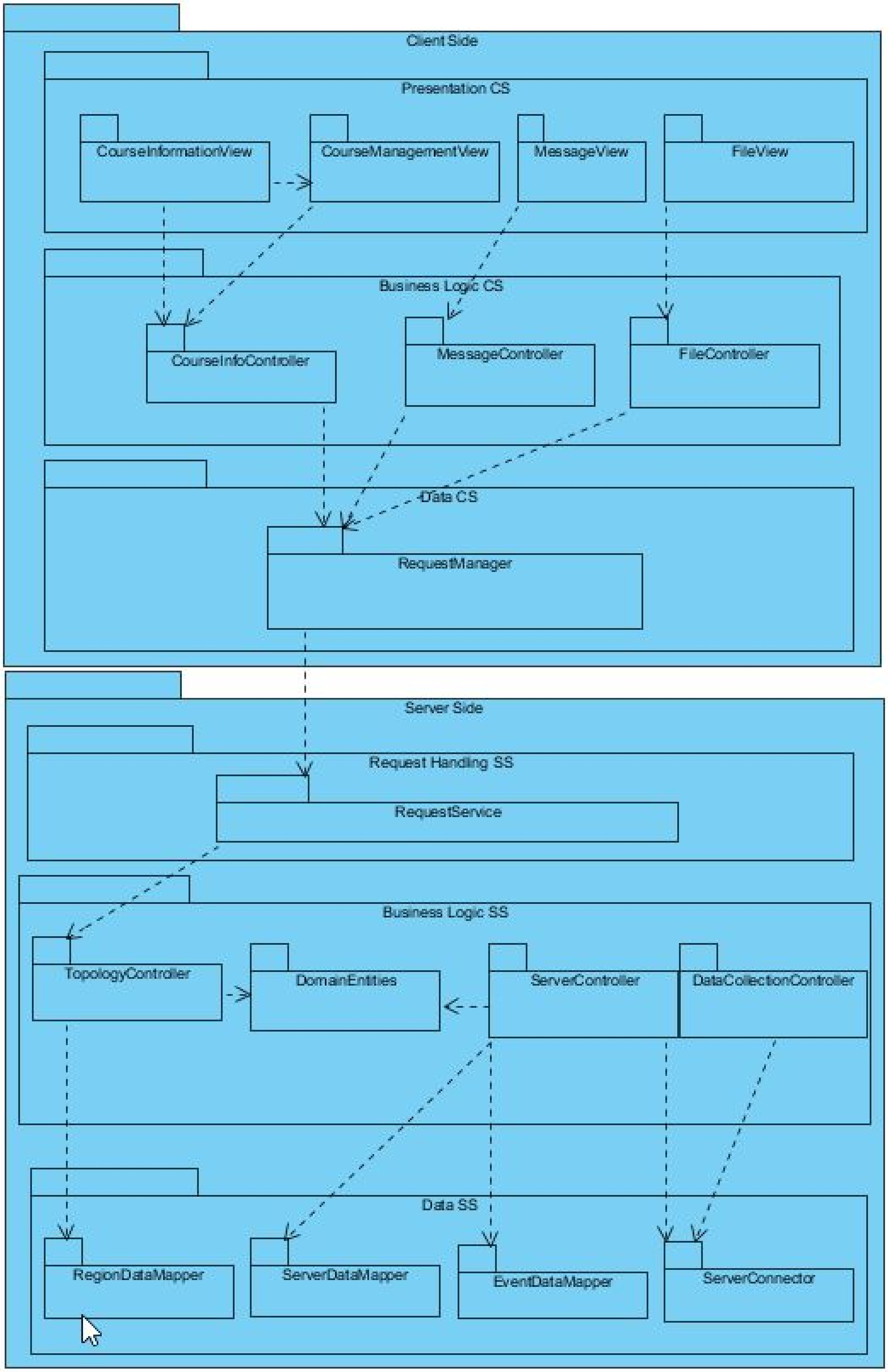
Step 6: Sketch Views and Record Design Decisions



Domain Objects



Modules for primary use case functionality


Client Side
Presentation CS
CourseInformationView
CourseManagementView
MessageView
FileView
Business Logic CS
CourseInfoController
MessageController
FileController
Data CS
RequestManager
Server Side
Request Handling SS
RequestService
Business Logic SS
TopologyController
DomainEntities
ServerController
DataCollectionController
Data SS
RegionDataMapper
ServerDataMapper
EventDataMapper
ServerConnector

Element	**Responsibility**
CourseInformationView	Displays and updates course information when receiving events
CourseManagementView	Displays and updates the overall course management system. Emcompasses both UI-components as well as UI process components
MessageView	Displays and updates information regarding the messaging system
FileView	Displays and updates information regarding the file sharing system
CourseInfoController	Responsible for providing the necessary information to the presentation layer for displaying the course information and management system information
MessageController	Responsible for providing the necessary information to the presentation layer for displaying messaging information
FileController	Responsible for providing the necessary information to the presentation layer for displaying file sharing information
RequestManager	Responsible for the communication with the server-side logic
RequestService	Provides a facade that receives request from clients
TopologyController	Contains business logic related to the topological information
DomainEntities	Contains the entities from the domain model that reside in the server side
ServerController	Contains business logic related to the management on server side events
DataCollectionController	Contains logic to perform data collection and storage
RegionDataMapper	Responsible for the persistence operations (CRUD) related to the regions
ServerDataMapper	Responsible for the persistence operations (CRUD) related to the server
EventDataMapper	Responsible for the persistence operations (CRUD) related to the events

ServerConnector	Responsible for the communication with the servers. It isolates and abstracts operations with the servers to support communication with different types of servers

Step 7: Perform Analysis of current Design and review iteration Goal and Achievement of Design Purpose

Not Addressed	Partially Addressed	Completely Addressed	Design Decisions Made During the Iteration
		UC1	Modules to manage courses are identified
		UC7	Modules to manage grades have been identified
		UC8	By removing local data, admin can manage backups of the system
	UC10		No relevant design decisions
		UC11	Modules to manage subscription have been identified.
		UC13	Modules to manage file system have been identified
		UC25	Modules to manage message system have been identified
	QA-1		No relevant decision.
QA-2			No relevant decision
	QA-5		No relevant decision
	QA-10		Identified domain

			models make possible easy maintenance of the system
CON-1			No relevant decision
CON-2			No relevant decision
	CON-4		Modules that handle file and course system partially address this issue.
		CRN-1	No relevant decision.
		CRN-2	OODP concept has been applied to draw the picture
		CRN-3	Works are delegated according to identified domain objects.