Assignment 1
Analysis and Design Document

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1. Requirements Analysis

1.1 Assignment Specification

The application is used for the management of students in the Computer Science Department of Technical University of Cluj Napoca. The application has two users (student and teacher/administrator) which must provide a username and a password in order to use the application.

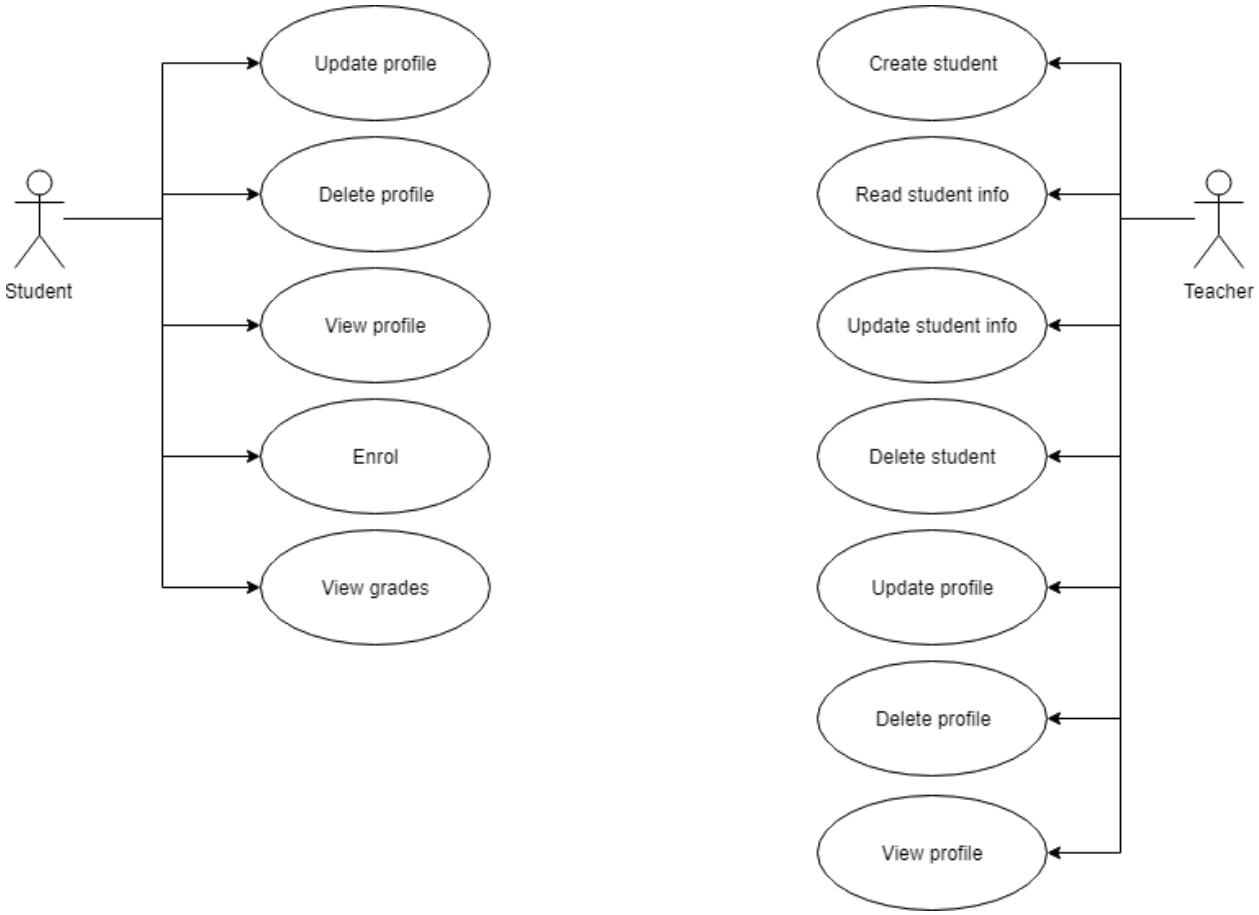
1.2 Functional Requirements

- create/read/update/delete students' information (for teacher/administrator)
- generate reports (teacher)
- add/update/view info (all users)
- create/update/delete/view profile (all users)
- process class enrolment (all users)

1.3 Non-functional Requirements

- reliability

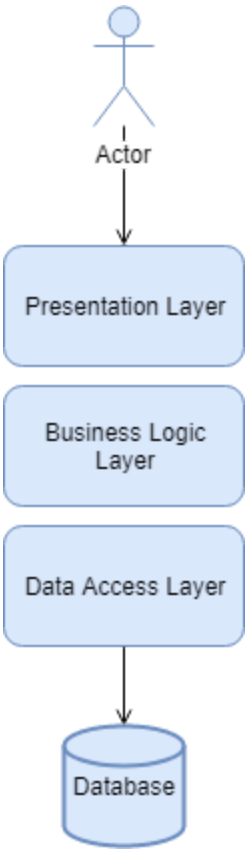
2. Use-Case Model



Use case: create student
Level: user-goal level
Primary actor: teacher
Main success scenario: insert student info → system validate info → student created
Extensions: failure → invalid data or student already exists

3. System Architectural Design

3.1 Architectural Pattern Description



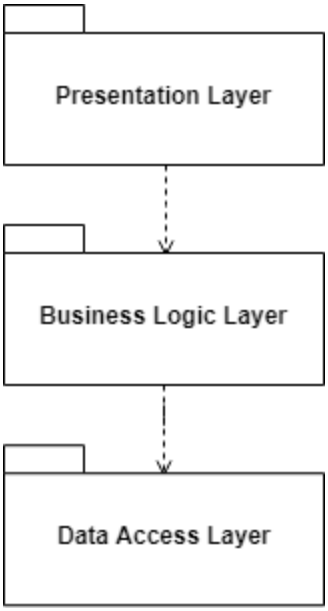
This system uses layered architecture pattern and MVC.

The layered architecture is the most common architectural pattern nowadays. The pattern consists of logically diving the application in layers, each with its own part to play. This application has 3 layers: data access (DAL), business logic (BLL) and presentation layer (PL).

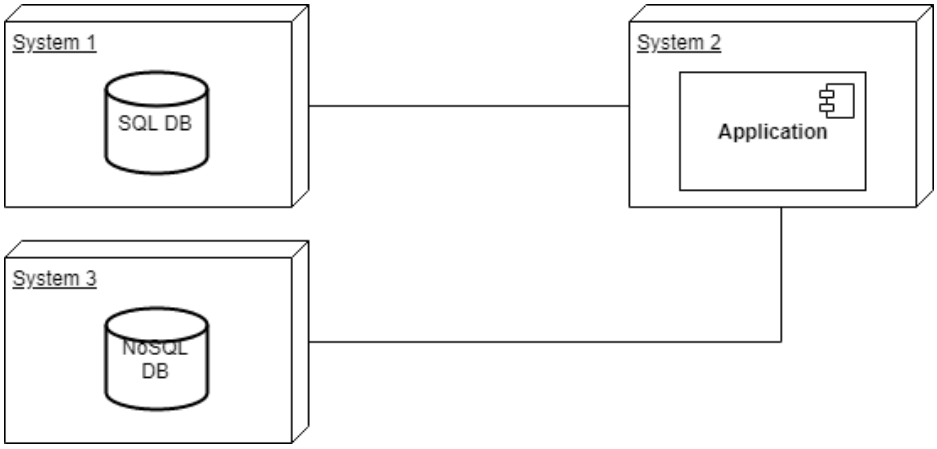
The presentation layer is split in two subparts - controllers and views. The model is represented by the BLL and DAL.

3.2 Diagrams

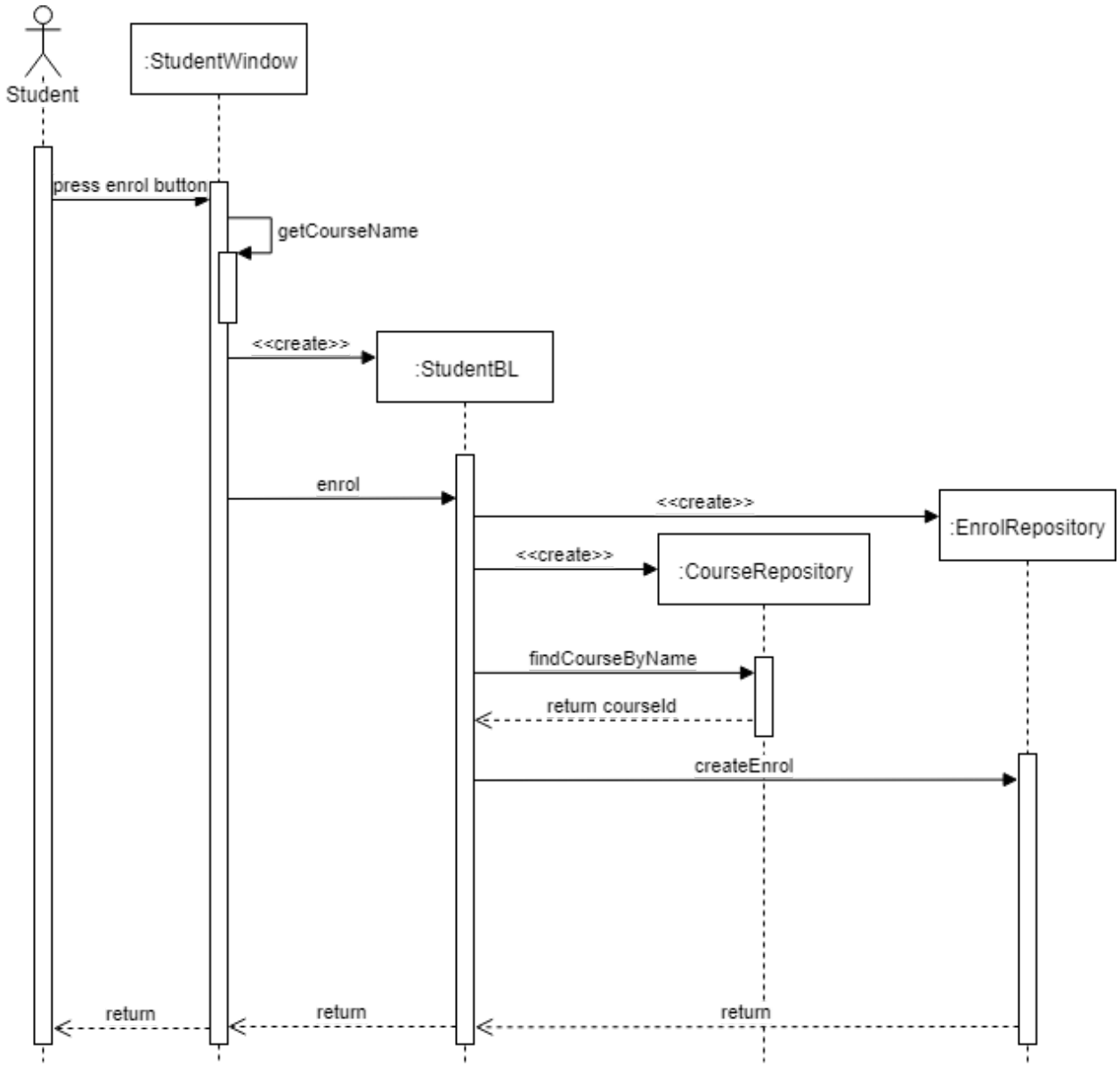
Package Diagram



Deployment Diagram



4. UML Sequence Diagrams

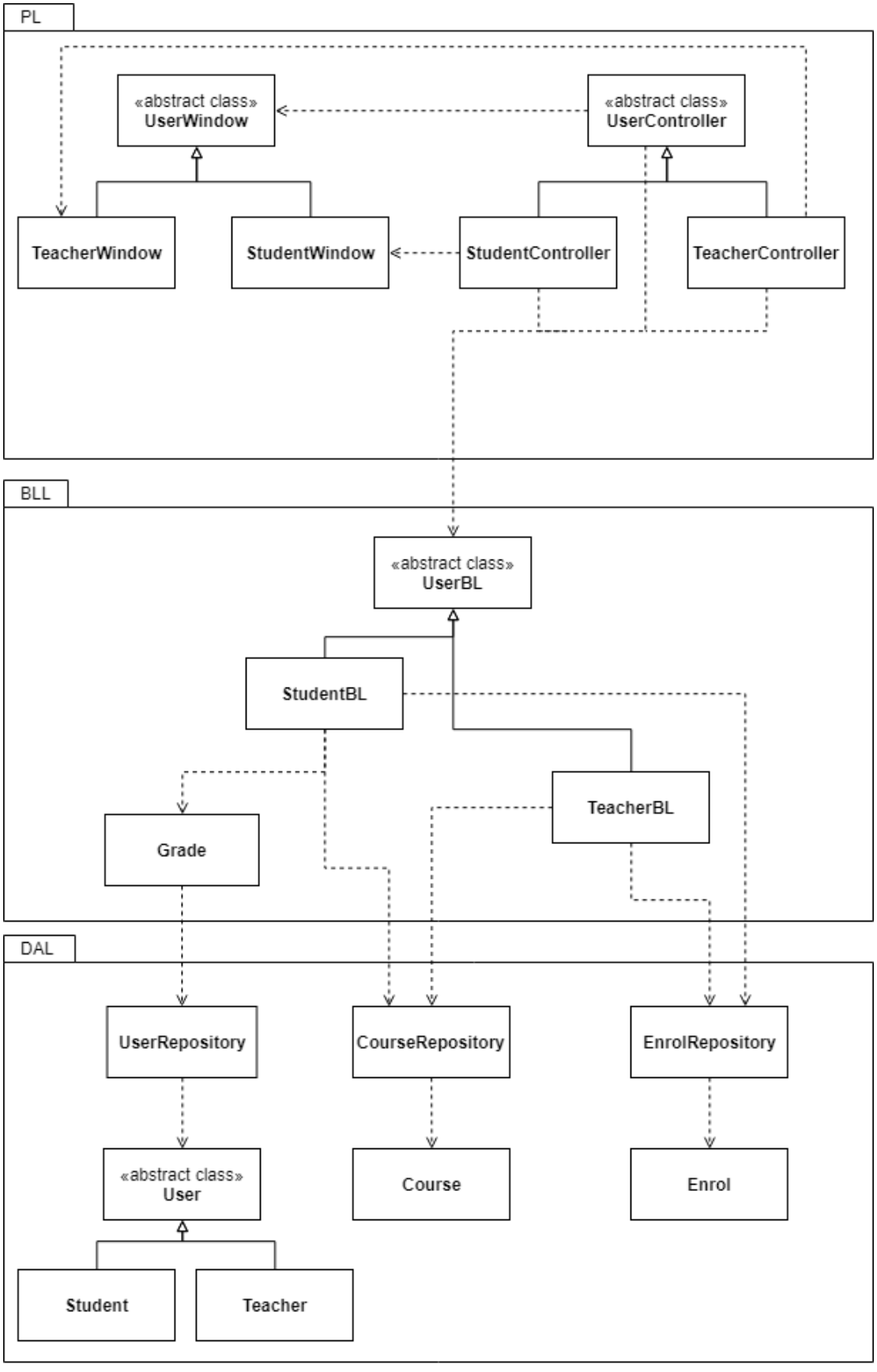


5. Class Design

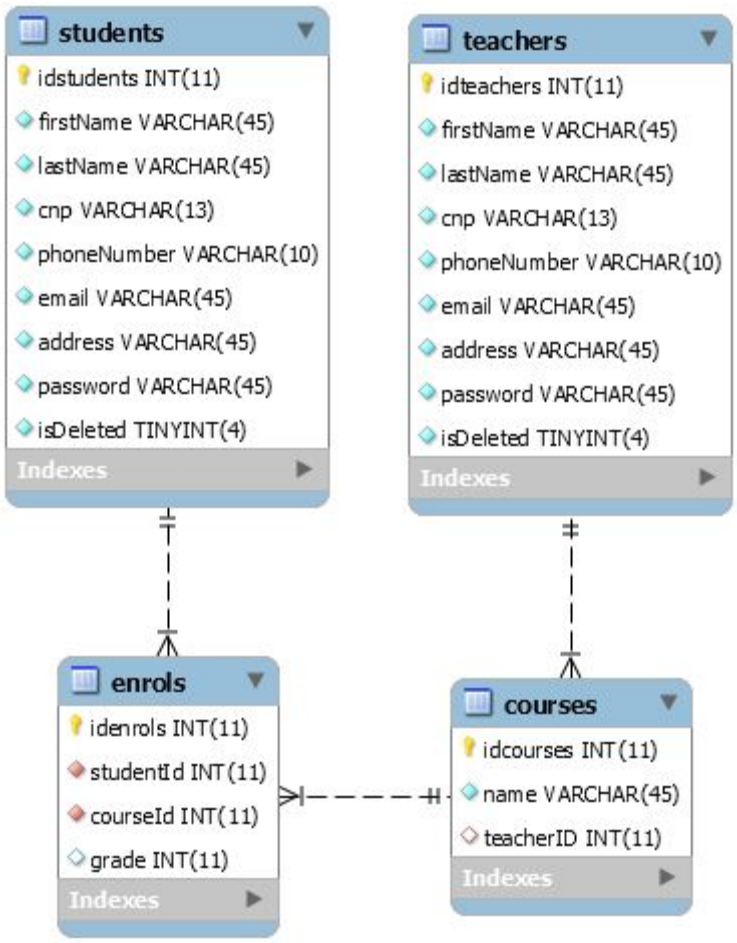
5.1 Design Patterns Description

- Singleton – database connection has only one instance
- Design by contract – database access methods validate data before writing it to the database
- Factory method
- Dependency Injection

5.2 UML Class Diagram



6. Data Model



8. Bibliography

MySQL jdbc guide
JavaFX Docs