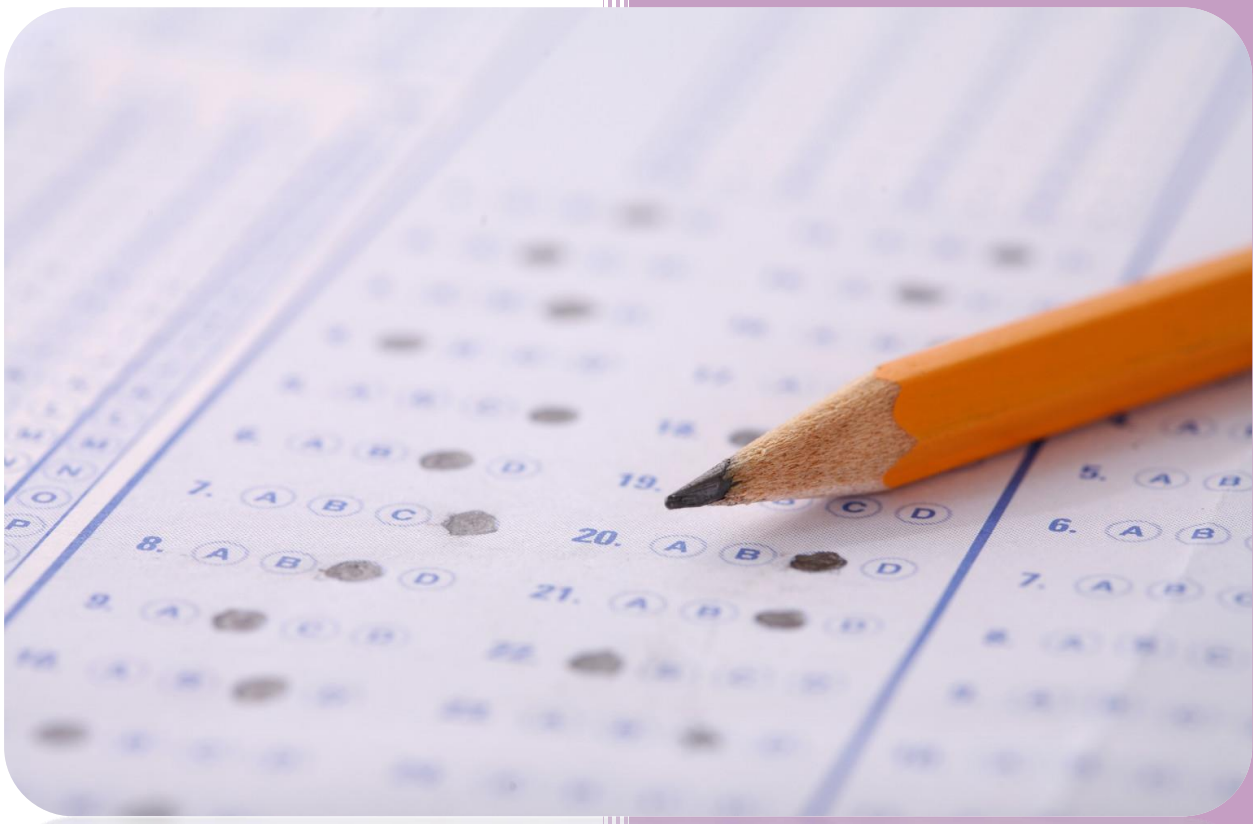
2015

Newdle System - Architecture Notebook



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Purpose

The aim of the document is to describe decisions, constraints, justifications as well as other important aspects of the system that shape its design and implementation.

Architectural goals and constraints

On the basis of the information contained in previous documents: System Requirements and Vision following architectural goals have been distinguished:

Functional

- The system enables to display a list of Test Template of one specific subject of a teacher.
- The system enables creation of a new Test Template.
- The system enables to display a list of questions of one Test Template
- The system enables creation of a new closed question in a Test Template
- The system enables to display a list of Course Effects of one course of one specific teacher.
- The system enables creation of a new Course Effects.
- The system enables to assign a Course Effect to one or more questions.
- The system enables to generate a report in order to check the success Course effects by students in one course.

Non-Functional

- Security: The System mustn't permit the access by unauthorized person in 90% of attempts. Priority: High
- Interoperability: The System should permit to export the information to make it compatible with Edukacja.pl. Priority: High
- Reliability: The System cannot lost any test. Priority: High
- Availability: The System must be availability at least 16/7: 16 hours a day, 7 days a week. Priority: High

Below the limitations of architecture, resulting from decisions about applied technologies, are presented:

- The system requires access to the Internet in order to load the data
- The system requires the last version of Java Runtime Environment to works.
- The system requires to access to a private Database server of the University in order to control the access of the users.

Decisions and justifications

Goal	How to achieved
1. Security: The System mustn't permit the access by unauthorized person in 90% of attempts.	A. Authentication Login using at least a email and a password B. Authorization Different user interfaces. C. Auditing Every sensitive action can be logged
2. Interoperability: The System should permit to export the information to make it compatible with Edukacja.pl.	A. The system is going to allow to export the data in cvs format.
3. Reliability: The System cannot lost any test.	A. Data persistence will be addressed using a relational database. B. Snapshot backup and restore Periodical backups of the database
4. Availability: The System must be availability at least 16/7: 16 hours a day, 7 days a week	A. Maintenance activities and backups. B. Database is going to be localized in the Wrocław University of Technology's Server

Architectural Mechanisms

1A. Login using at least a email and a password

Is forbidden the access to any of the restricted user interface without be registered in the system. There are a special and limited user interface to unlogged users which just allow to fill up a form in order to sign in.

1B. Different user interfaces

According to their profile, users are going to access to different Interfaces with different user menus and functionalities.

1C. Auditing: Every sensitive action can be logged

Every action performed by users is going to be register in a log file in the server, with information like dates, hour and IP address.

2A. System is going to allow to export the data in cvs format

Following the example of Edukacja template, using sematic rules and strategies the system will be able to export the information in a compatible format with Edukacja.

3A. Data persistence will be addressed using a relational database

Following the architecture described in the Development View, the system will be use DAO (Data access object) to mapping the application calls to the persistence layer and provide some specific data operations without exposing details of the database.

3B. Periodical backups of the database

In order to preserve the data in case of equipment failure or other catastrophe, the system will be perform a full backup every week at midnight of Sunday, and an incremental backup every day at 2AM.

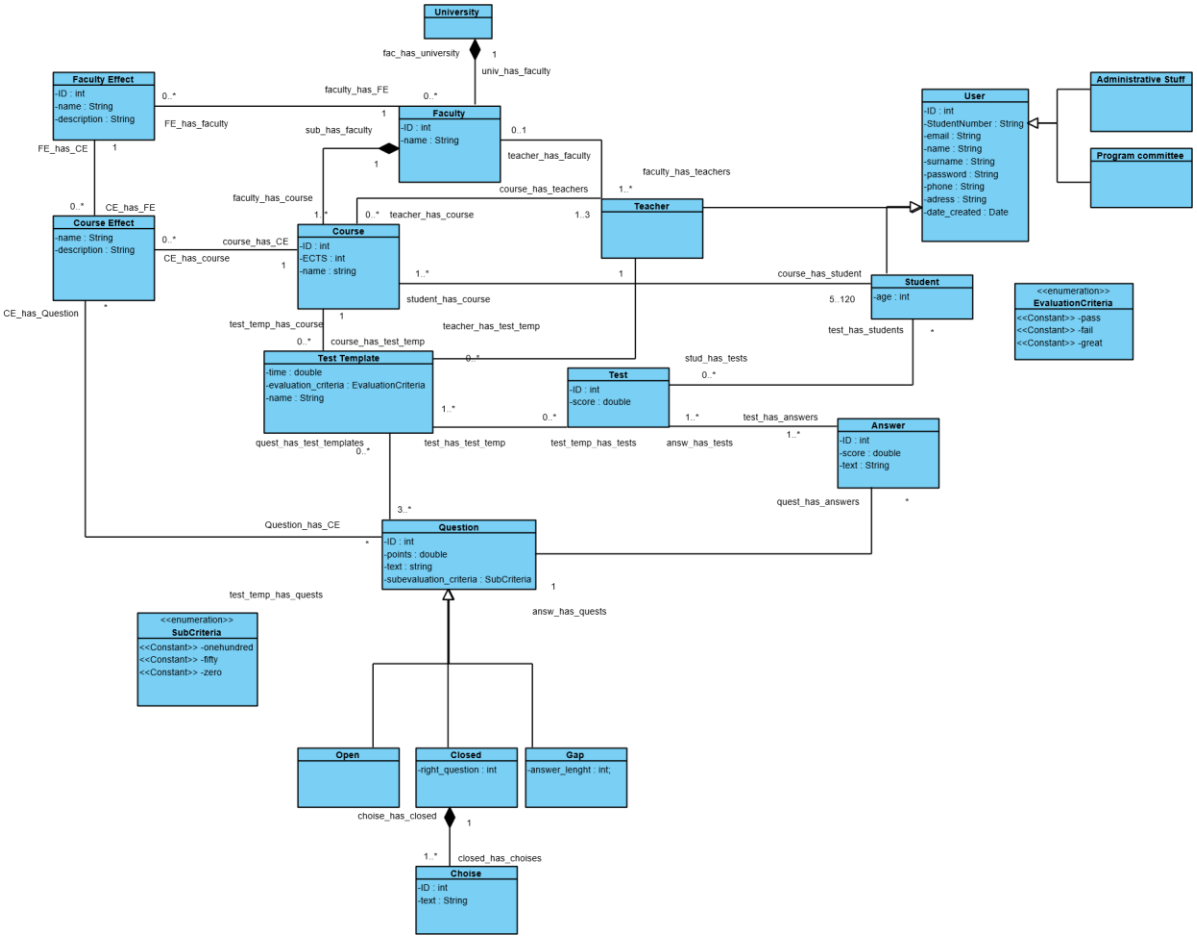
4A. Maintenance activities and backups.

The System must be availability at least 16/7, the time left (8 hours) is reserved for any maintenance activities and backups.

4B. Database is going to be localized in the Wrocław University of Technology's Server.

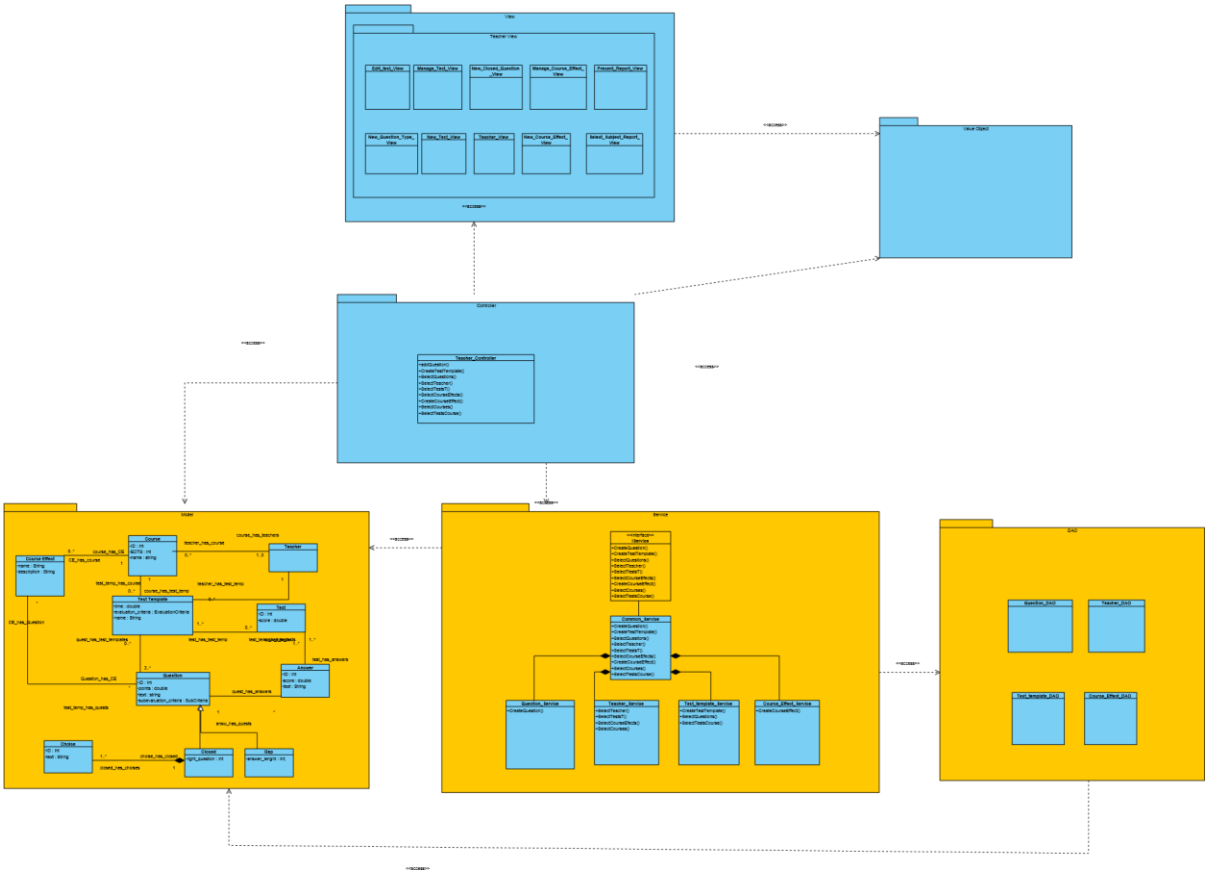
Wrocław University of Technology's Server have a strict policy which allow to ensure security and availability to users.

Key abstractions

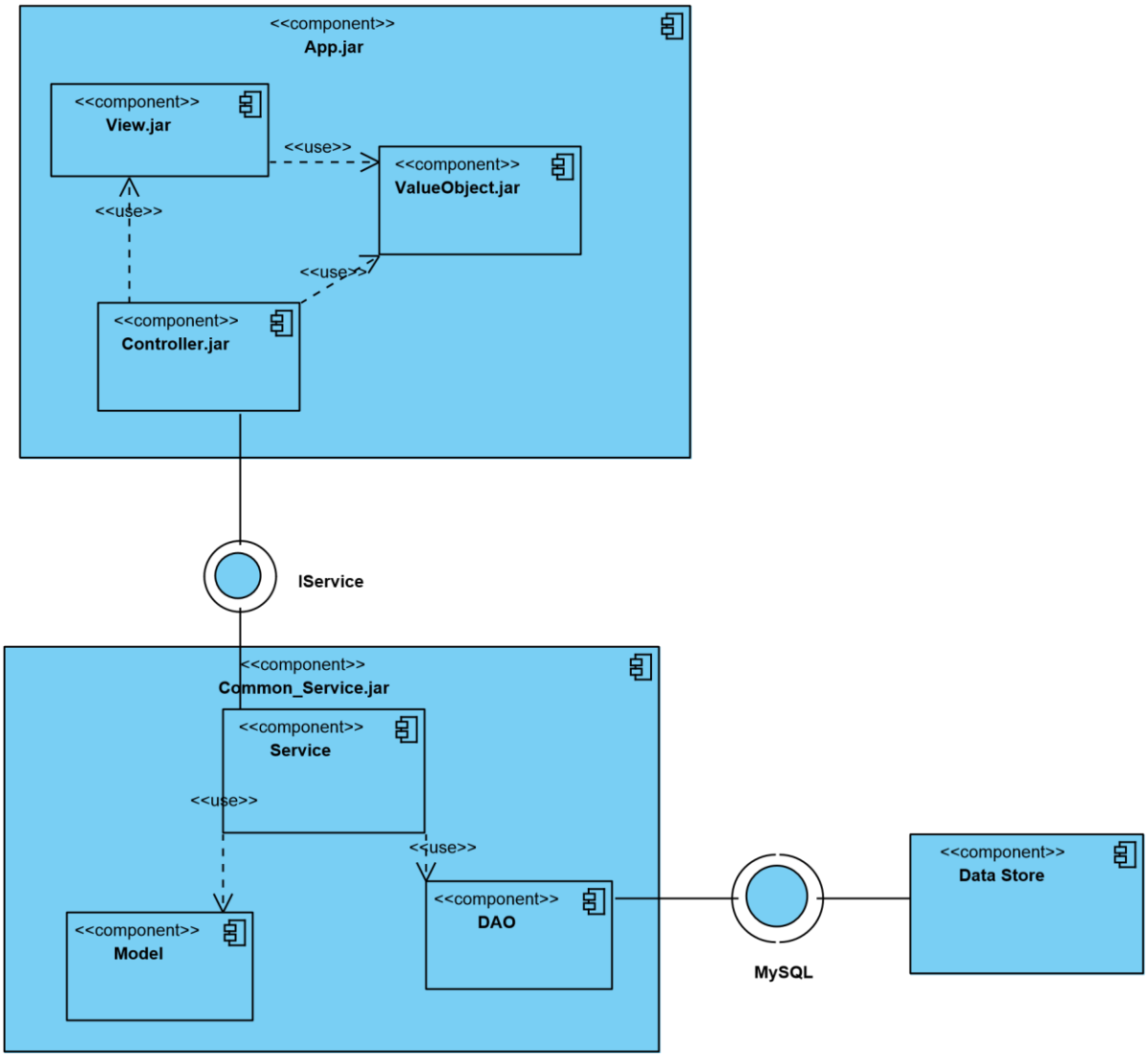


Architectural views

Development view



Functional view



Deployment view