CS 102 *Spring 2020/21*

Project Group **G2C**

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Criteria	TA/Grader	Instructor
Presentation		
Overall		

~ LabConnect ~

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Detailed Design Report

(version 1.0)

April 8, 2021

1 Introduction

LabConnect facilitates communication between students, TA's, tutors, and instructors. In the background, it is mainly a web application (If sensible/necessary, it may possibly be ported to Android) that aims to assist CS introductory courses in terms of organization and communication. Proposed ideas for features include priority queuing for TA zoom rooms among many other enhancements to TA/instructor productivity. For example, those who have completed their labs can be tested using pre-defined (by TA or instructor) unit tests, if students pass the tests successfully then they will be ordered by the number of visits to TA in the same session, in order to decrease waiting times for the students who are waiting from the beginning, and to optimize the process in general. TA's can also use the system to see previous versions of each student's code in a more practical way, similar to real version control managers in spirit. The style guidelines put forth by the instructors can be enforced automatically by parsing the student's sent code files. Much of the repetitive work that course staff need to do can be reduced substantially by automated actions, allowing TA's to allocate time for more hands-on help towards students. The student experience can be improved further by adding helpful features such as personal notes for students and so on.

LabConnect is a developing project that aims to make education more productive for students, and more efficient for teaching staff, among other benefits. The feature list compiled for the sake of this goal includes items such as:

- Queueing system for live sessions to optimize wait times and student-TA communication.
- Dashboard designed with a pragmatist mindset, to lessen confusion as much as viable.
- Instructor panel where new assignments can be added with great flexibility.
- Analysis view for students and teaching staff alike, to monitor course progress.
- Announcements board where the teaching staff can reach out to students with ease.
- Simple one-to-one messaging capability for the sake of light written communication.
- Note-taking panel for students to take concise notes regarding individual assignments.
- Detailed view of submission versions where students and the teaching staff can observe automated testing results.

2 System Overview

2.1 Organisation & Architecture

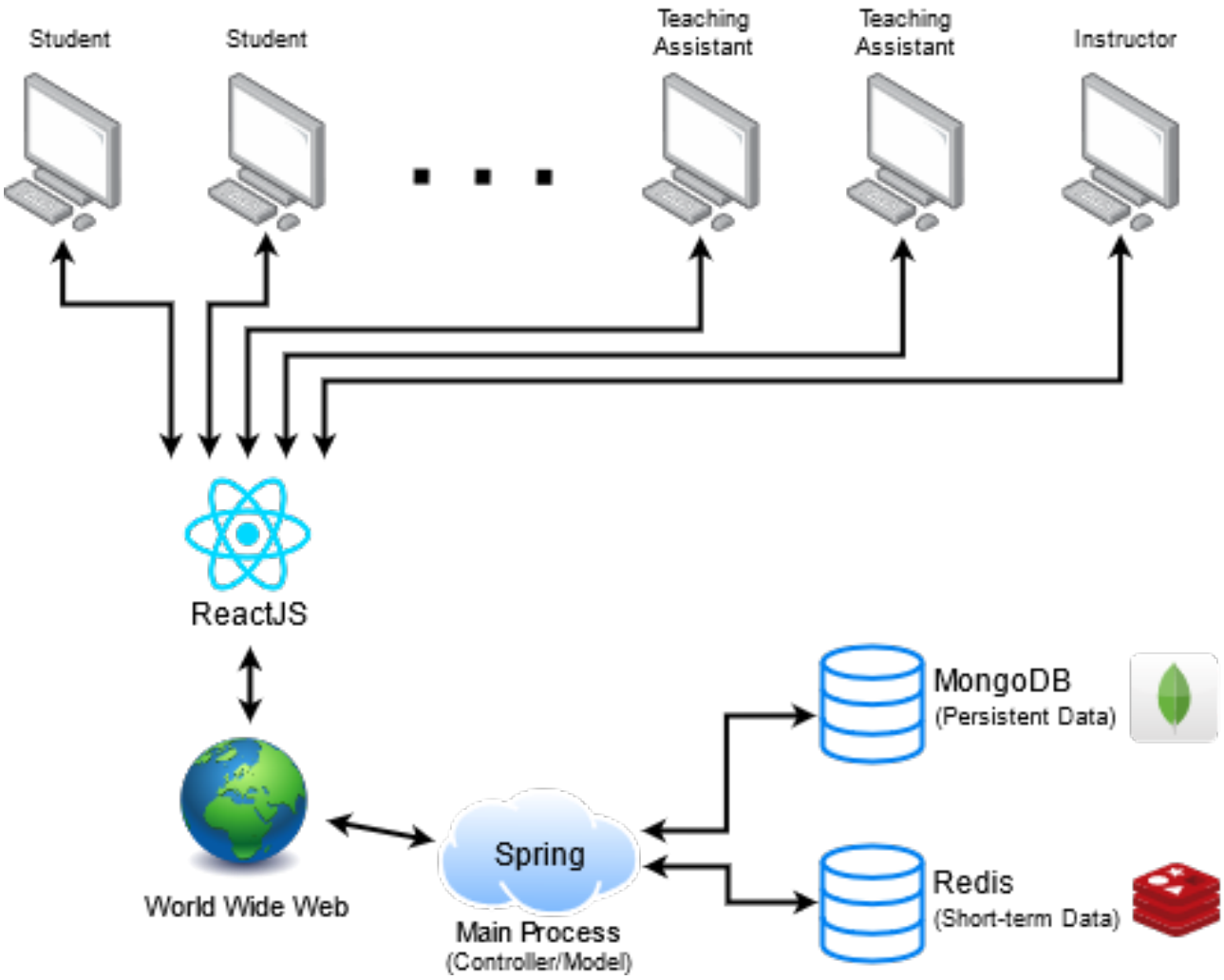

Figure 1: Overlook of LabConnect's Organisation

2.2 Technologies

3 Core Design Details

Classes are designed with the consideration of keeping them cohesive, every class only handles one concept.

3.1 Class Diagram

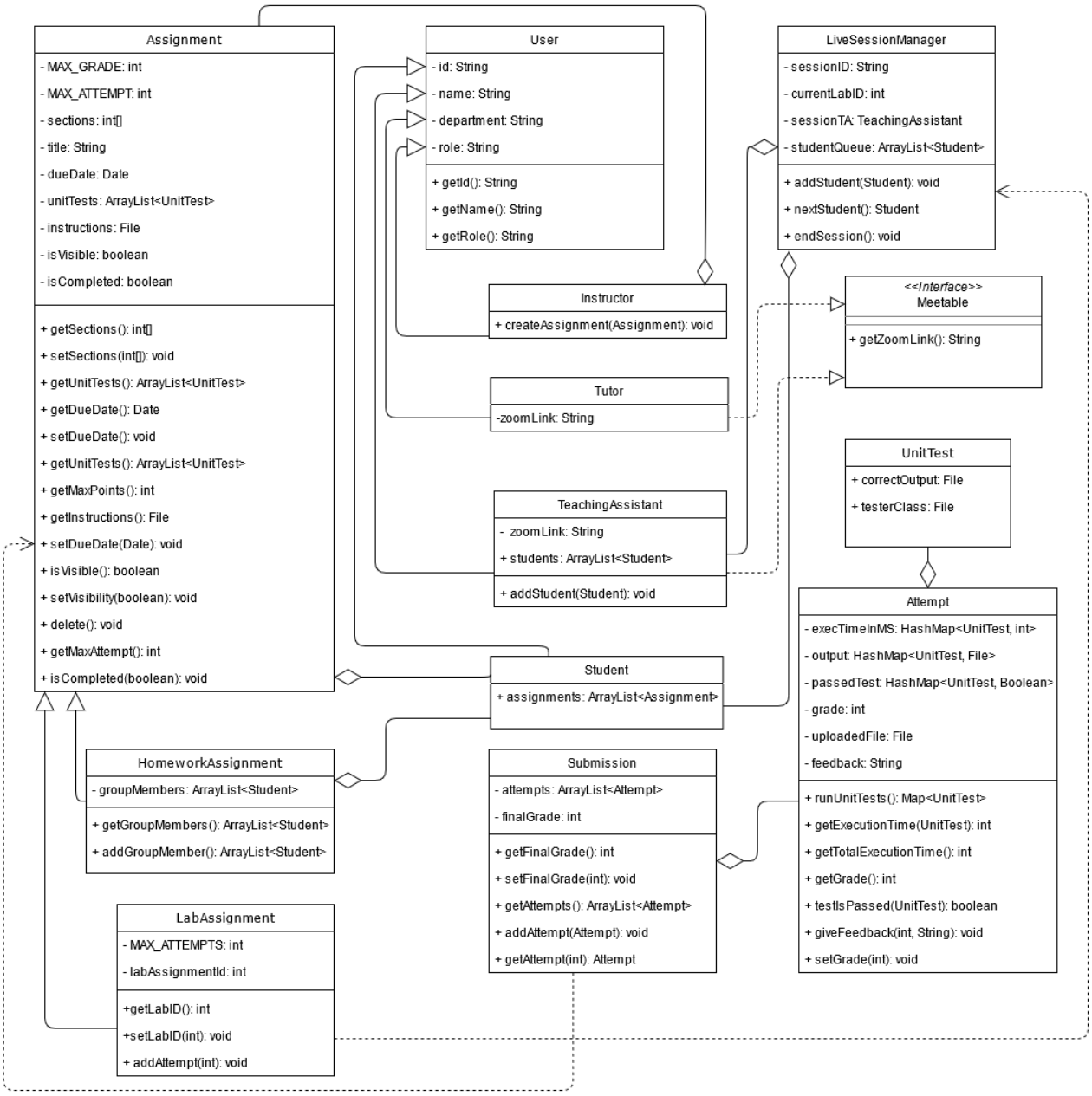

Figure 2: UML Class Diagram for LabConnect

4 Task Assignment

Borga Haktan Bilen: Assignment, User, LiveSessionManager
Vedat Eren Arıcan: Assginment, Instructor, Meetable
Berkan Şahin: Assignment, Tutor, UnitTest
Berk Çakar: Assignment, TeachingAssistant, Attempt
Alp Ertan: Assignment, Student, Submission, HomeworkAssignment, LabAssignment
For the other parts of the implementation, we agreed on sharing those parts pairwise equally because of the project's size. We made this decision because one of the primary goal of our

group is learning new concepts and gaining experiences. Thus, it will not be even for other members of the group who did not work on the part which involves new technologies.