College Class Check-in System

Software Design Specification

Version 1.4

Development Team: CCCS

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Revision History

Date	Version	Description	Author
2018/6/22	1.0	Write part of this doc	Alfred Liu
2018/6/23	1.1	Write part of this doc	Breeze Pu
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Software Design Specification

1. Introduction

The College Class Check-in System (CCCS) is used to monitor students' attendance in college classes. It uses modern technologies such as GPS and fingerprint authentication to guarantee the accuracy and efficiency. With such system, students who are absent could be traced and the attendance rate could be improved greatly.

1.1 Purpose

The purpose of College Class Check-in System is to monitor students' attendance and make it convenient for teachers to manage the class.

1.2 Functions

The College Class Check-in System can:

- Ensure a high attendance
- Provide utilities for classroom questioning
- Support teaching evaluation
- Support requests for leave

1.3 Performance

The client is required to have a two-second response time to all button presses.

The server is required to support more than 500 simultaneous client sessions with the same response time.

1.4 Oriented Users

CCCS is oriented for college teachers and students.

1.5 Developers

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1.6 Privacy

This document can only be viewed by internal team members of CCCS.

1.7 Baseline

This ducument is based on *Software Requirements Specification*.

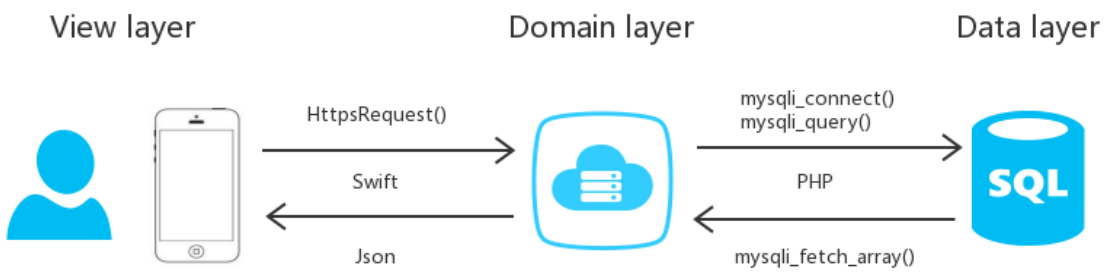
2. References

This ducument has no references.

3. Architecture Design

3.1 Overall Design

This system is based on the three-tier architectural model.



3.2 Interface Design

3.2.1 User Interfaces

- Navigation Bar
  - Left navigation control: return to last page
  - Title bar: current screen or operation name
  - New button: add a new course / raise a new question
- Tab Bar
  - Left button(“Course”): show the course info
  - Right button(“Me”): show the user info
- Course Table View
  - Section: Course Name
  - Section rows:
    - Teacher
    - Place
    - Status(Started / Not Started)

- Question Table View
  - Section: Question Name
  - Section rows:
    - Description
    - Options

3.2.2 Hardware Interfaces

Requires iOS 11.3 or later. Compatible with iPhone SE, iPhone 5s, iPhone 6(plus), iPhone 6s(plus), iPhone 7(plus), iPhone 8(plus) and iPhone X.

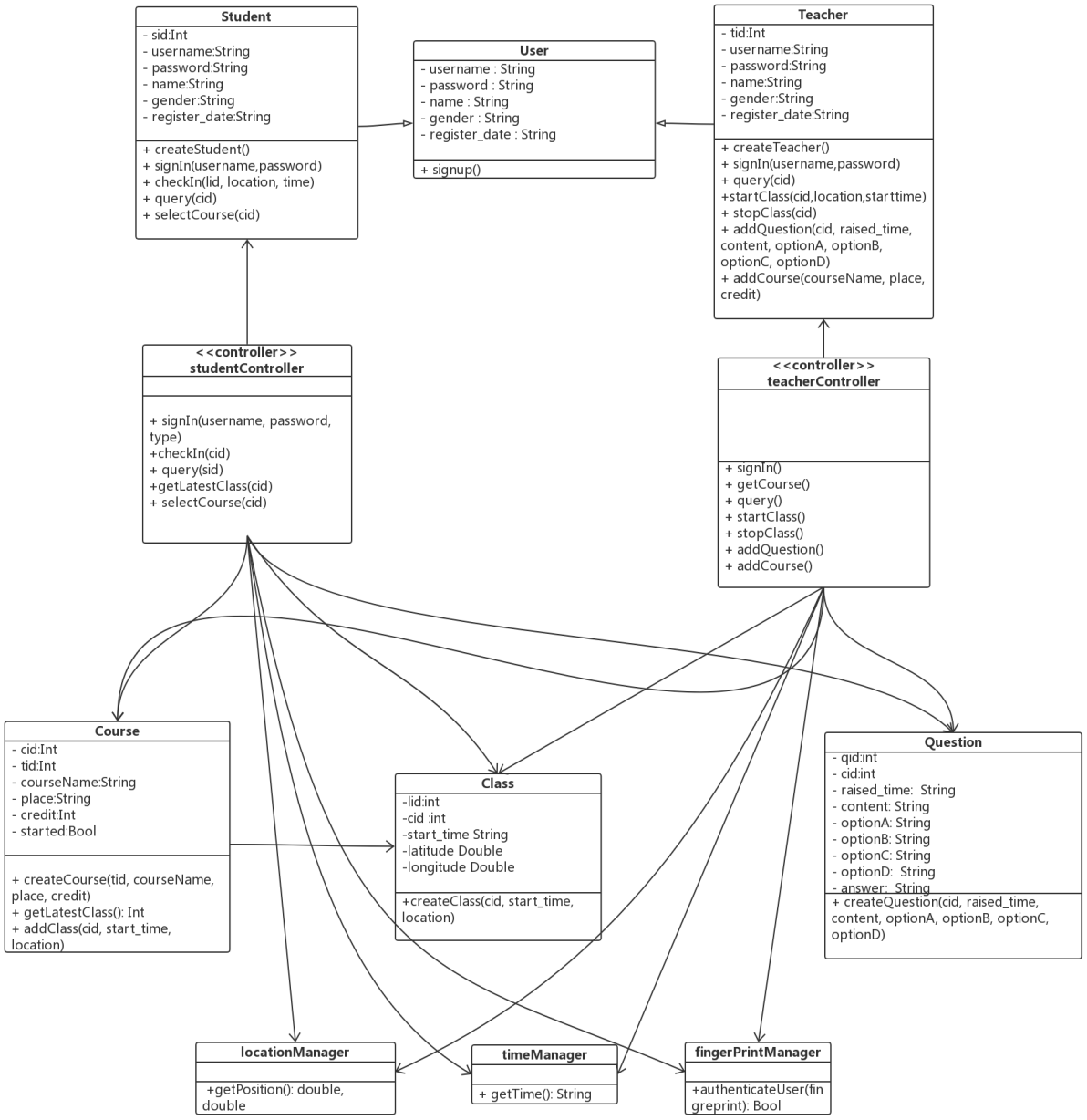
3.2.3 Database Interfaces

PHP combined with MySQL is deployed on a Tencent CVM.

4. Detailed Design

4.1 Global Design Class Diagram

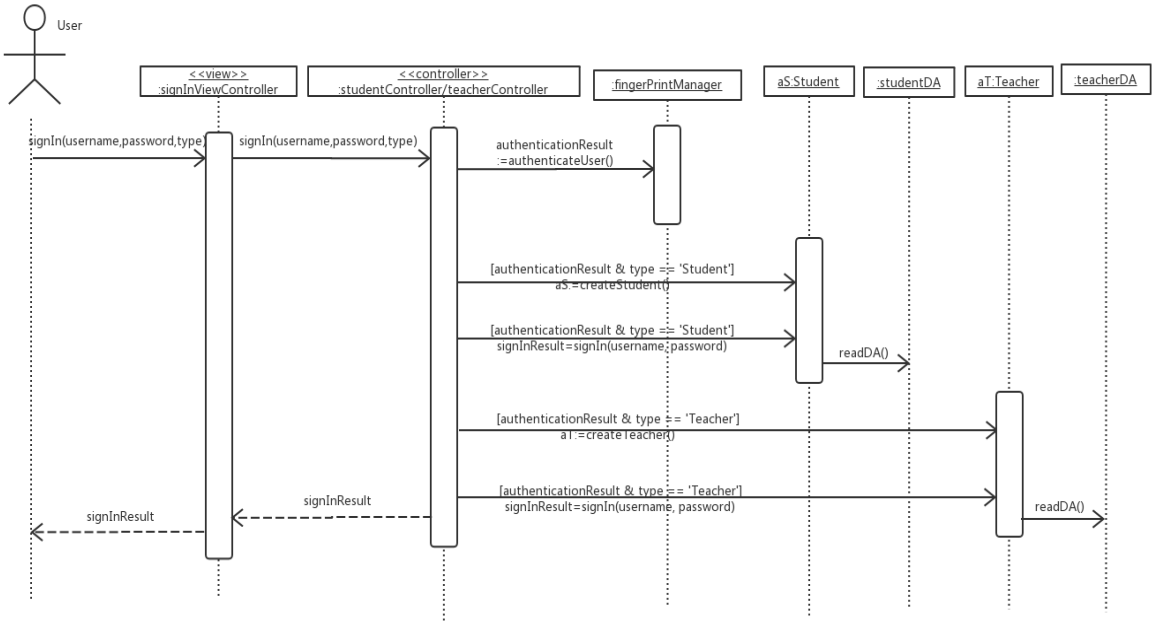
The Design Class Diagram(DCD) is shown as follows:



4.2 Sequence diagram of key use cases

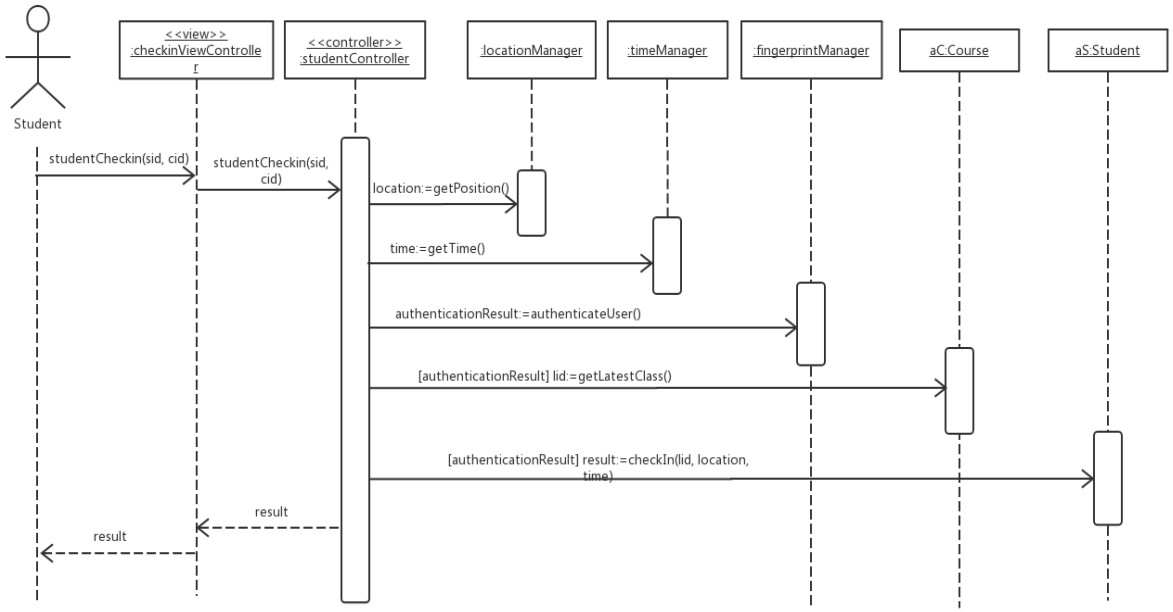
4.2.1 Sign In (for student and teacher)

A user can sign in with his username and password. In order to enhance security, fingerprint authentication is also required.



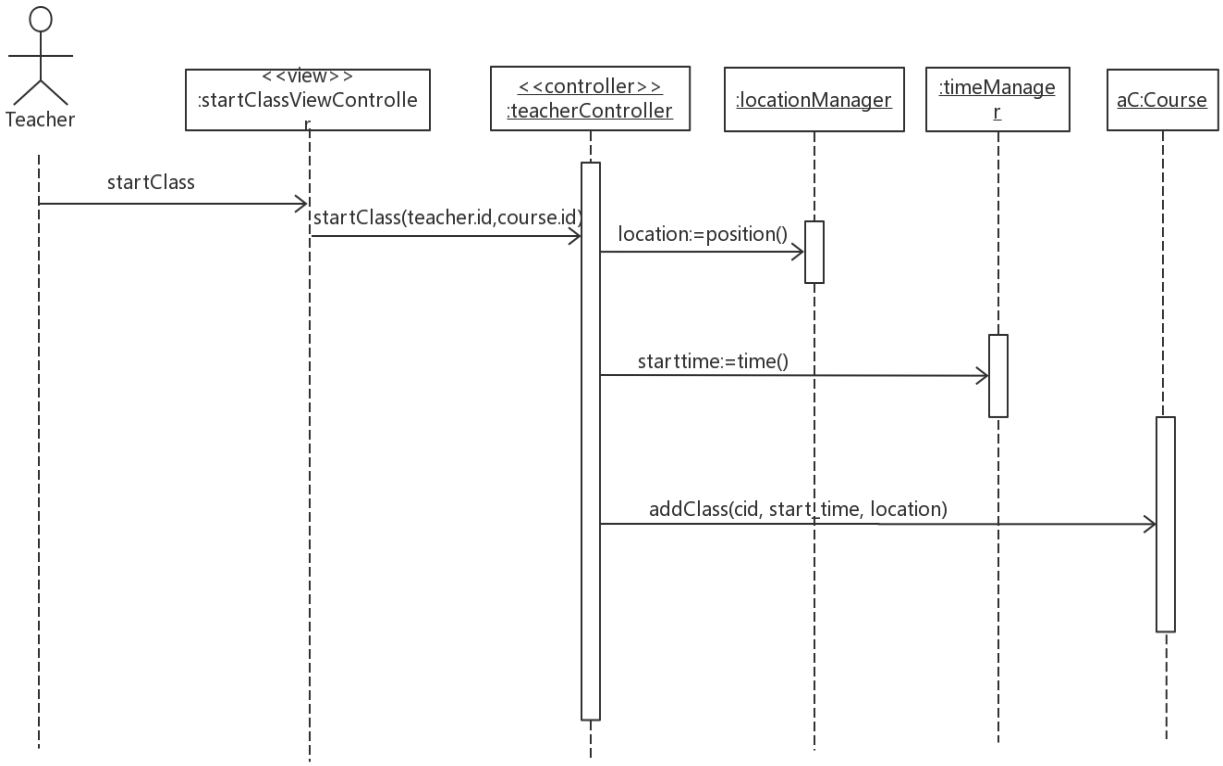
4.2.2 Check In (for student)

A student can check-in when the fingerprints are matched. When the identity is confirmed, 'Student controller' will get latest class that student would take. By comparing the class's start time with current time, student state is updated and recorded in database.



4.2.3 Start Class (for teacher)

A teacher can start a class which he/she teach in the classroom. 'Location manager' will record the position of the teacher and 'Time manager' will provide the start time. A class record will be added to the database.



5. Requirement Traceability

5.1 Requirements Traceability Matrix

Requirements traceability matrix is used to assist in determining the completeness of our project. Here are the detailed requirements of our product which we used to track whether or not they are being met by the current process and design.

ID	System Requirement	Applicable Roles	Description
RQ1	Login	studentteacher	A student/teacher can use ID and password to login. Fingerprint authentication is also required to enhance security.
RQ2	Register	studentteacher	A student/teacher can create an account by setting username, password, usertype, gender etc.

RQ3	Start Class	teacher	A teacher can start a class which he teach, and his position information will be recorded.
RQ4	Check-in	student	Since a student state is 'absent' originally, if he checks in before class starts, his state would be 'success', else his state would be 'late'.
RQ5	Ask Questions	teacher	A teacher can raise questions in his class at any time.
RQ6	Answer Questions	student	A student is supposed to answer the question in 5 minutes, and his position, fingerprint, authentication are also required.
RQ7	Query attendance	studentteacher	**student**: A student can view his own attendance recently.**teacher**:A teacher can view attendance of all his students.