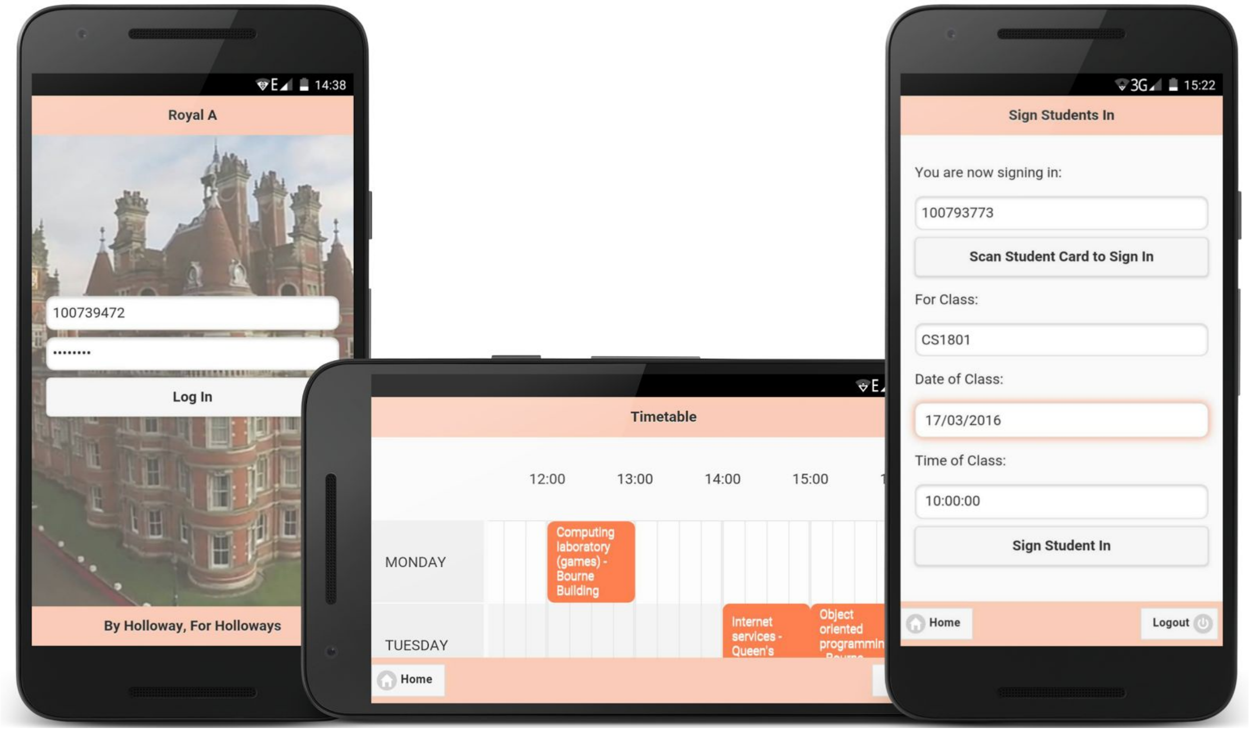
CS2810

Team 6 Final Report



Royal A

100739472

By Holloway, For Holloways

Timetable

	12:00	13:00	14:00	15:00
MONDAY	Computing laboratory (games) - Bourne Building			
TUESDAY			Internet services - Queen's	Object oriented programmin

Sign Students In

You are now signing in: 100793773

For Class: CS1801

Date of Class: 17/03/2016

Time of Class: 10:00:00

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DOCUMENT INFORMATION & CONTROL

Document Information

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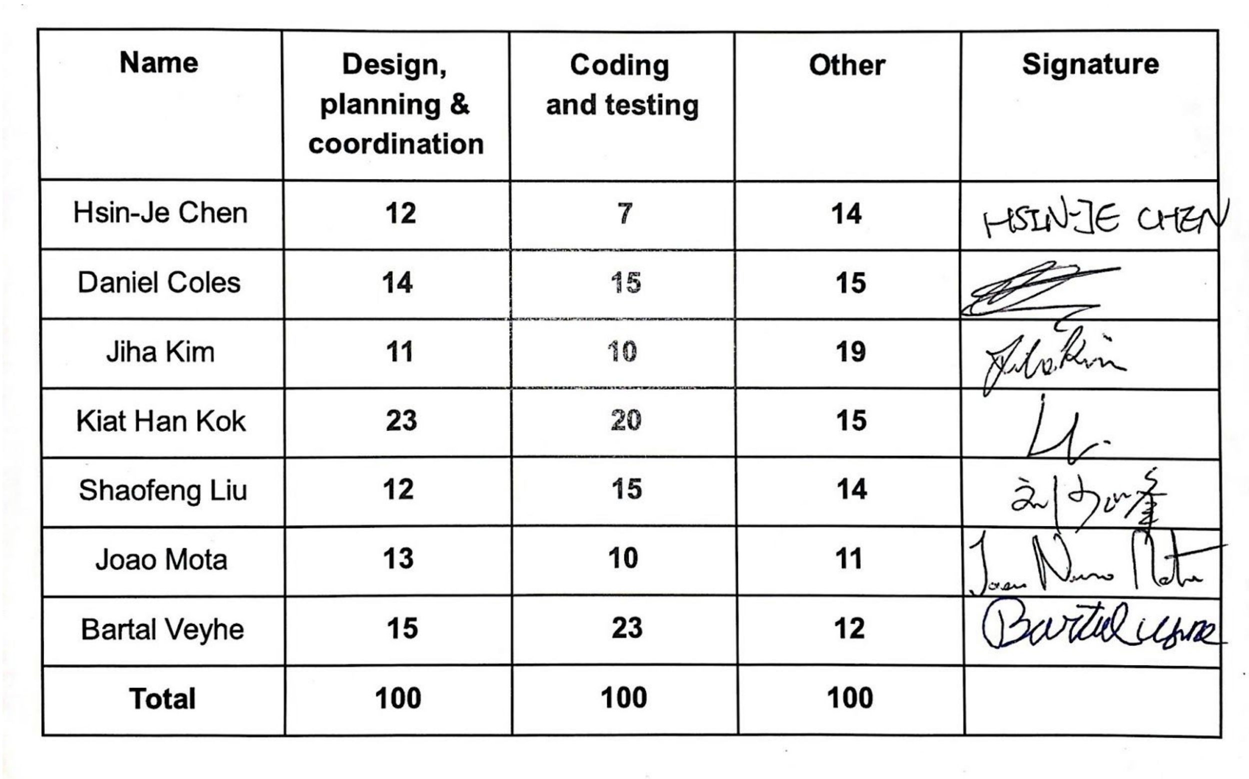
Statement of Relative Contribution



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Kiat Han Kok	23	20	15	
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Bartal Veyhe	15	23	12	Bartal Veyhe
Total	100	100	100	

Introduction

Purpose of Document

This document is to summarise and document the technical aspects of CS2810 Team Project, Royal Holloway Attendance System, (Royal A). It will contain the instructions for the installation of the solution. It also addresses the shortcomings, recommendations and continuity.

The Scope

The scope of this document is to address the following:

- Summary of Royal A and the architecture
- Instructions on setup
- List of user stories completed

Why Royal-A?

The current student attendance system is slow and easily taken advantage of by non-attending students. With an average of 13 hours of lectures per week and 300 students in all 4 years of the course, leading to a huge amount of manual data entry. An automated system would allow for an easy and efficient process to record the attendance of all students.

Royal-A

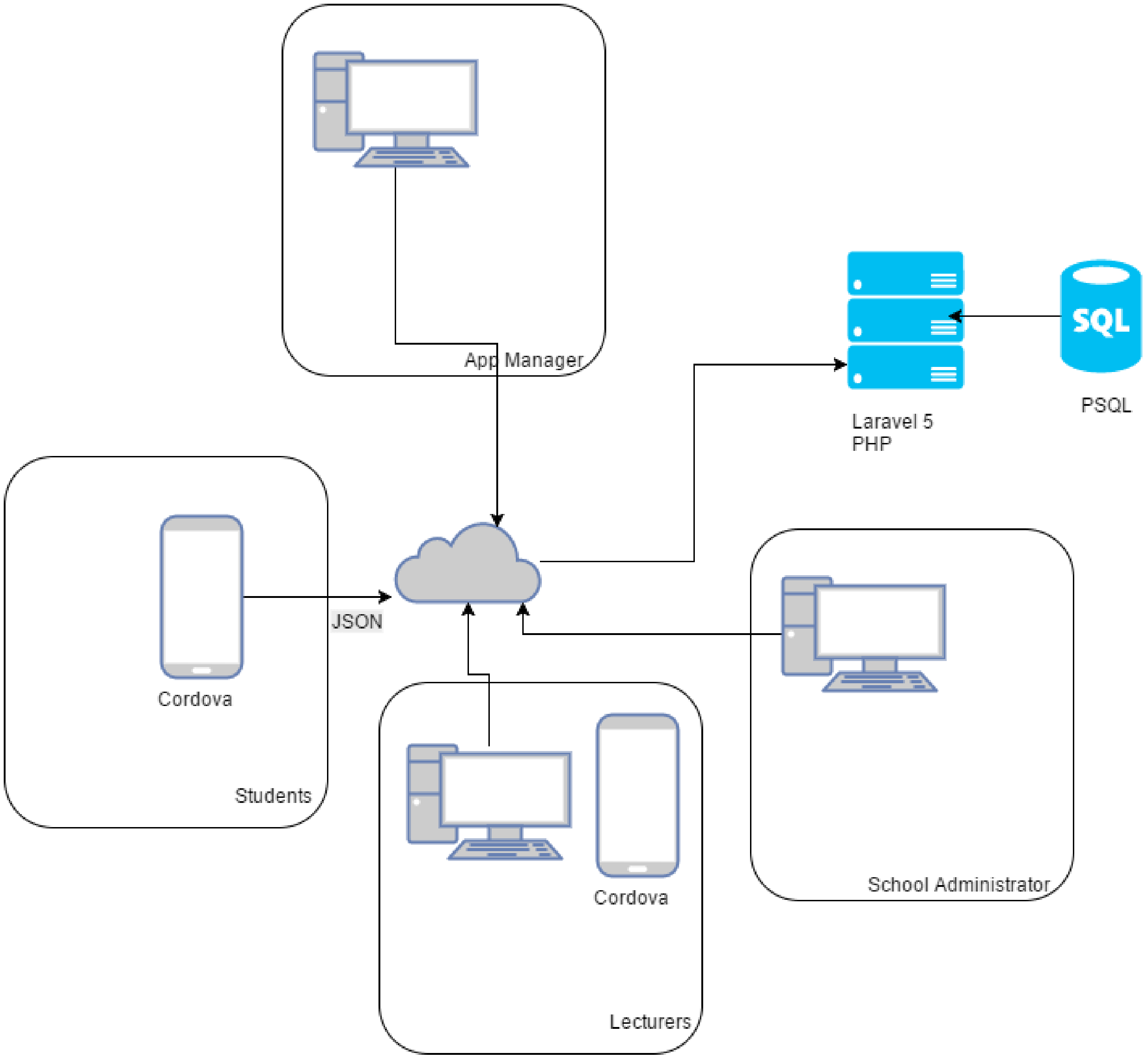
In this project we developed a solution that is easily accessible to all students attending the lectures. It is integrated with a backend system for the course administration showing statistics on the student attendance.

A student attending a lecture can confirm their attendance using their smartphone to scan a QR code presented by the lecturer within the duration of the lecture.Security measures, like unique QR code and Geo-fencing restrictions, are in place to limit the abuse of the attendance system. They would be able to view their weekly time tables and their attendance. Students in lectures will then be able to access a “Question & Answer” feature that allows answering of questions asked by lecturer. This is a software version of a clicker-style solution, yet more cost effective and adaptable. Given the data required for this implementation students will also be able to access a timetable that will display the lectures they have.

Administrators would be able to manage all the systems including adding/removing students from lists and courses, input necessary information associated to the course such as lecture venues and course leaders and so on. Lecturers would be able to manage their courses and view student attendance. All users would have their personalized timetable.

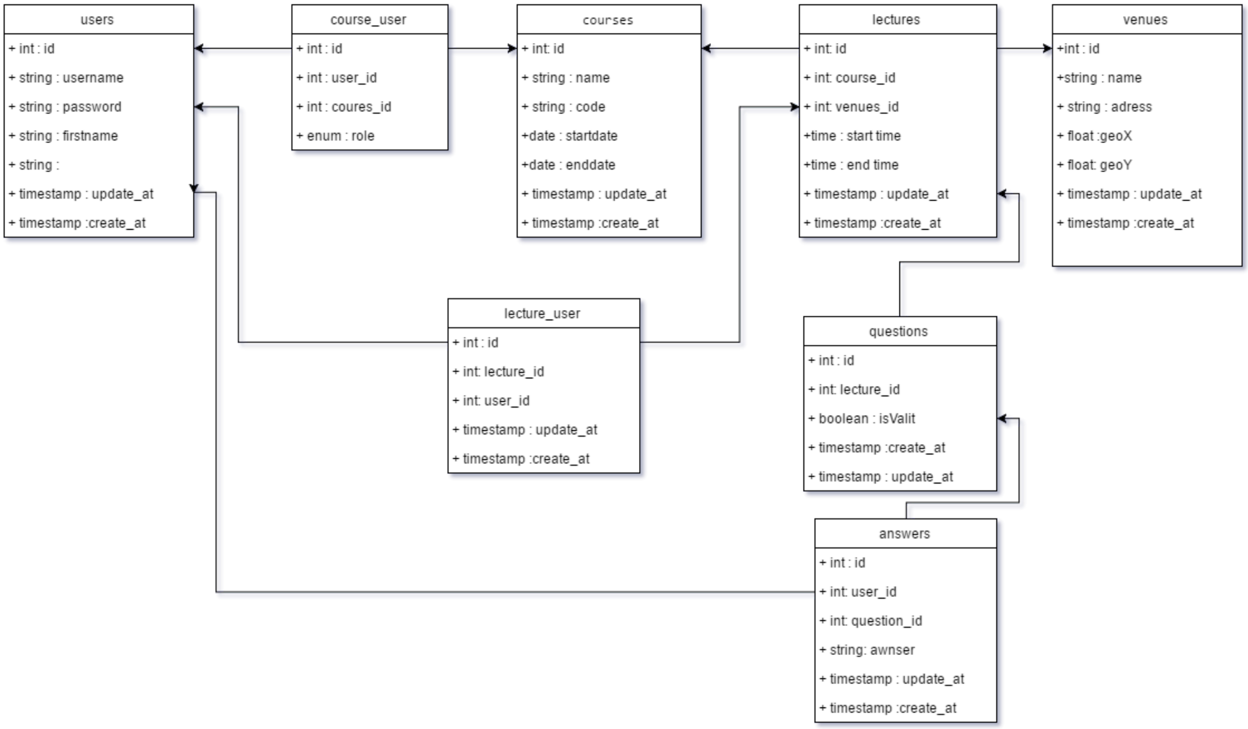
Architecture Diagram

We utilize a server-client architecture for our project, where all the clients would connect to the server via web services.

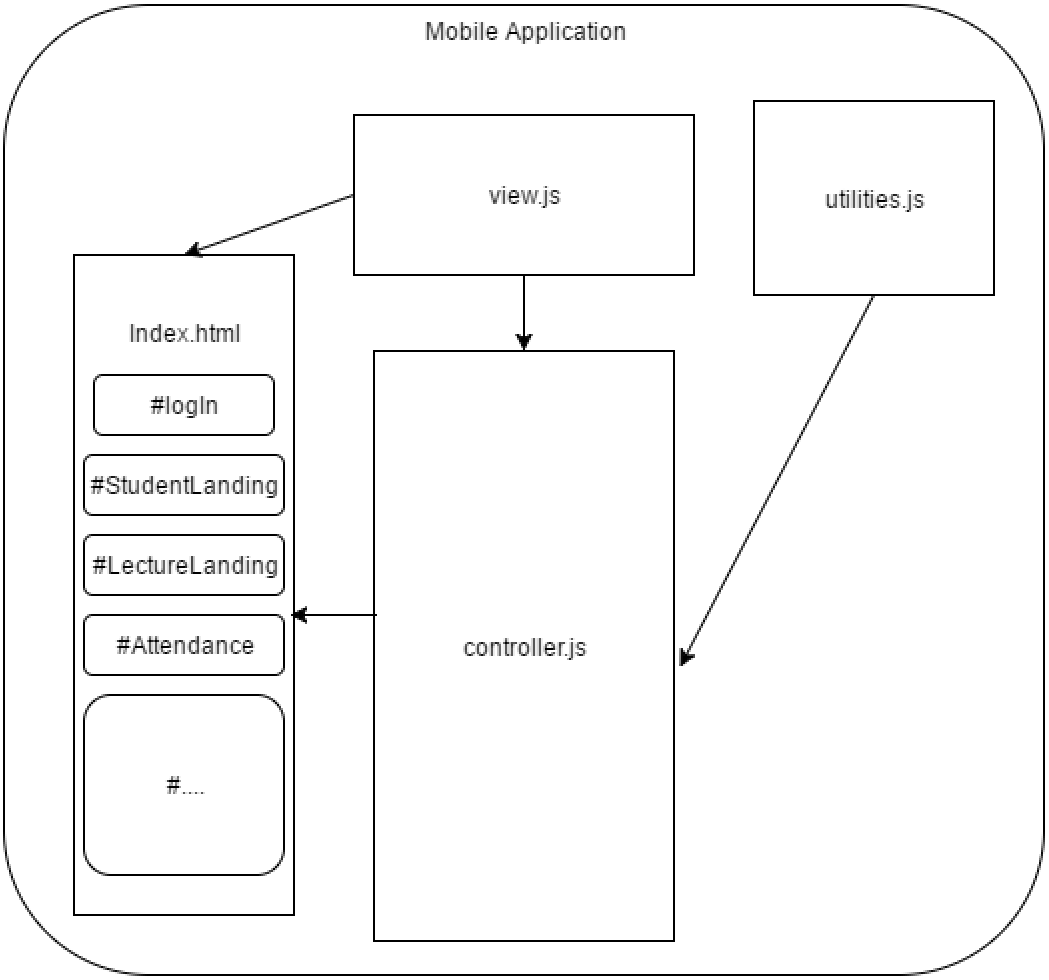


Entity Diagram

The entity diagram belows shows the layout of the entity and it’s relationship in our project.

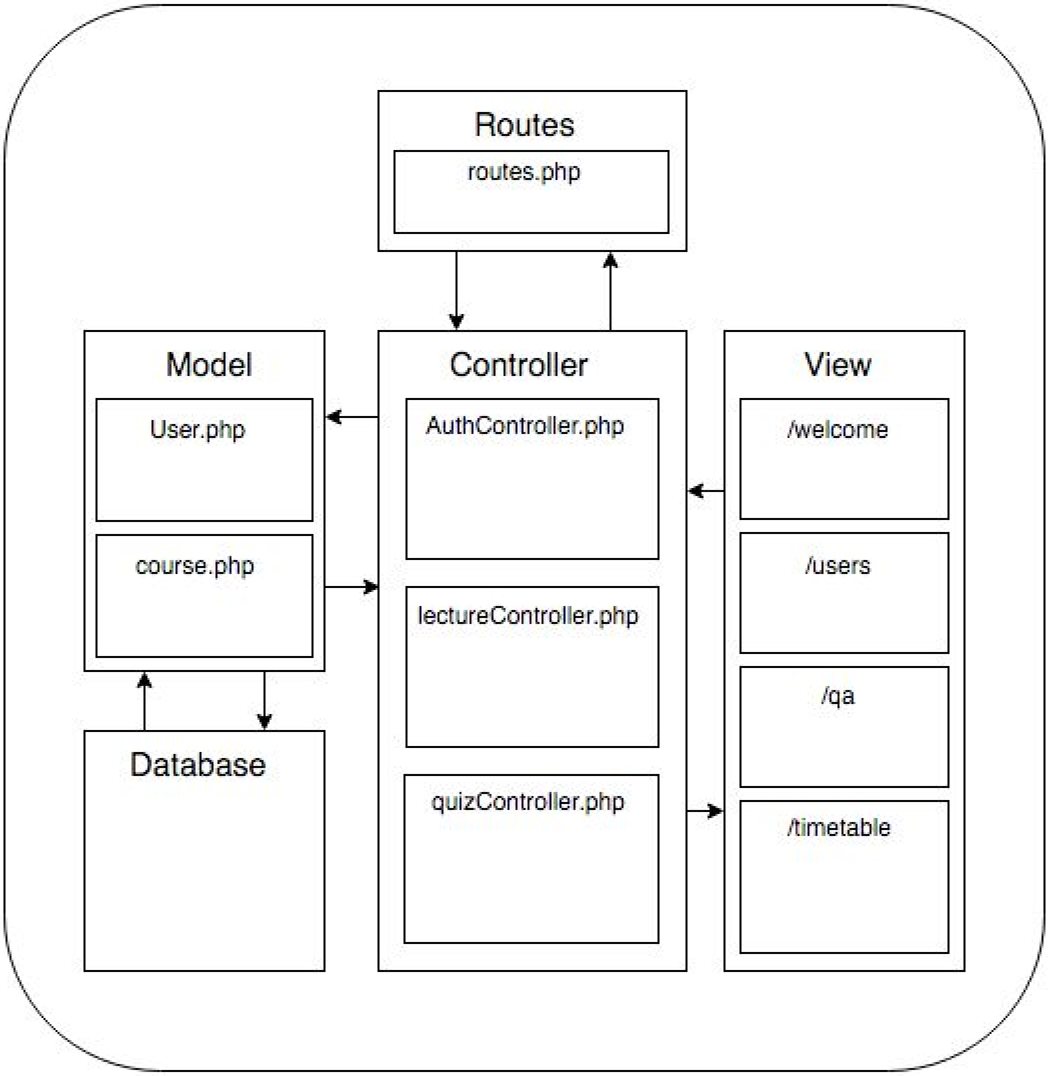


Mobile Application Packages



In the mobile application, the application is refactored into a few major files. According to Apache Cordova, it attempts to replicate a real mobile application. It tries to avoid loading of a new HTML, that will look like a mobile web application. Therefore, it stores all different screens into different div tags in a single *index.html* file. *Index.html* contains the layout of all the screens in the mobile application. *View.js* sets all the actionlistener for all the buttons and global wide functions. *Controller.js* is the main file that contains all the implementation of the functions in the application. *Utilities.js* contains independent functions that assists the application, but is not related to the application, like calculating distances between 2 points.

Web Application Packages



The web site keeps all of the files that consist of either the view, controller or model in their respective directories. This prevents the size of the files from being too big and facilitates the running of the app. Furthermore, the *routes* file that takes the url's submitted either through get or post methods and directs them to the correct file in the controller directory. Other than the main files, there is the rest of the laravel framework that supports the languages used in the files.

Installation and Setup

Mobile Application

1. Install Node.js
2. Install git client
3. Install apache cordova using “sudo npm install -g cordova”
4. Clone project directory, and go into Cordova project directory
5. Run “cordova platform add ios/android” in the command line
6. Run “cordova run ios/android” in the command line to run the application

Web Application

1. Install Composer with the code snippet provided in https://getcomposer.org/download/
2. Install Laravel using the command: composer global require "laravel/installer"
3. Download and install PostgreSQL from http://www.postgresql.org/download/
4. Install Git client
5. Clone project directory, into any directory you wish to use
6. Edit .env file to accommodate your system
7. Migrate tables using the following command in the web-server directory:
   php artisan migrate:refresh --seed

List of Completed User Stories

Sprint 1 (4 completed)

i. Setup development environment for web and mobile
ii. Learning Laravel 5.1, and going through PHP tutorial
iii. On Apache Cordova, finding tutorials and complete them
iv. Set up test cases for web and mobile

1	User Story	Setup development environment for web and mobile
	Description	In this user story/task, we decided on the environment, programming language, and tools that we are going to use. The necessary development tools and environment are setup on all the developer working stations.
	Task(s)	Download and install all required development tools.
	Test(s)	All members are able to develop on their workstation with the required tools.
2	User Story	Learning Laravel 5.1, and going through PHP tutorial
	Description	In this user story/task, members in web team went through Laravel 5.1 and PHP tutorials.
	Task(s)	Watch the videos on laracast and complete the tutorial on the laravel website.
	Test(s)	All members in web team are able to develop the programme using Laravel and PHP
3	User Story	On Apache Cordova, finding tutorials and complete them
	Description	In this user story/task, members in mobile team went through Apache Cordova tutorials
	Task(s)	Complete the tutorial on the apache cordova website.
	Test(s)	All members in mobile team are able to develop the programme on mobile using Apache Cordova
4	User Story	Set up test cases for web and mobile
	Description	Tests cases are required the mobile and web application

	Task(s)	Complete a list of test cases to be done for web and mobile.
	Test(s)	Check all the test cases are made for web and mobile

Sprint 2 (3 completed)

Web Team
i.As a lecturer, I would want to be able to sign in to my application

Mobile Team
ii. As a student, I would want to be able to sign in to my application.
iii. As a lecturer, I would want to be able to sign in to my application.

Web Team		
1	User Story	As a lecturer, I would want to be able to sign in to my application.
	Description	Most functions can be done by user who sign in to his/her application
	Task(s)	Create login forum
		Receiving JSON
		Handling sign in information
		Sign in to mobile app
		Set up restful API for sign in
		FORM input for sign in
	Test(s)	Check that right username and password passes JSON
		Check that wrong user or password gets rejected JSON
		Check that SQL injections do not pass
		Check that page exists
		Check that wrong user or password gets rejected form
Mobile Team		

2	User Story	As a student, I would want to be able to sign in to my application.
	Description	A student will be able to sign into the mobile application and presented with the student landing page.
	Task(s)	Student signs in and launches student screen with the correct username and password
	Test(s)	Student fails to login with wrong username and password
		Student logins with correct username and password and presented with student screen
3	User Story	As a lecturer, I would want to be able to sign in to my application.
	Description	A lecturer will be able to sign into the mobile application and presented with the lecturer landing page.
	Task(s)	Lecturer signs in and launches student screen with the correct username and password
		Implement SHA256 for the password
	Test(s)	Lecturer fails to login with wrong username and password
		Lecturer logins with correct username and password and presented with lecturer screen

Sprint 3 (3 completed)

Web Team
i. As a student, I would want to be able to see the weekly timetable.

Mobile Team
ii. As a student, I would want to be able to sign in to a lecture.
iii. As a student I want to be able to view my weekly timetable of lectures.

Web Team		
1	User Story	As a student, I would want to be able to see the weekly timetable

	Description	A student can see the weekly timetable which is updated
	Task(s)	Model
		Database
		JSON
		Create visual template
		Setup API calls for mobile team
	Test(s)	Student is displayed with the correct timetable on the website.
Mobile Team		
2	User Story	As a student, I would want to be able to sign in to a lecture.
	Description	A student should be able to sign in to a lecture for attendance
	Task(s)	Retrieves the current class that the student is going to sign in
		Signs in to lecture
		Implements the QR code reader
		Scans the lecture QR code
		Implements the geolocation API
		Checks that student is at the right place
		Write the sign in protocol to talk to the server
	Test(s)	User at the right location can sign in successfully into the lecture
		User at the wrong location cannot sign in
		User who scans the wrong QR code cannot sign in
3	User Story	As a student I want to be able to view my weekly timetable of lectures
	Description	The user should be able to view a timetable of the present week's lectures on the timetable page of the application.

	Task(s)	Retrieve timetable data via an AJAX call to the database hosted on our server.
		Present the retrieved data in the timetable JS JQuery plugin
	Test(s)	The timetable page displays all lectures for courses which the user is enrolled on.
		Timetable displays correct lecture information

Sprint 4 (7 completed)

Web Team
i. As a manager I would want to be able to sign in to system.

Mobile Team
ii. As a student i want to be able to view my upcoming lectures for the current day and next day.
iii. As a lecturer, I would want to be able to add/remove students from attendance in a lecture.
iv. As a student, I would want to be able to sign in securely.
v. As a lecturer, I would want to be able to sign in securely.
vi. As a lecturer, I would like to view the percentage of the student attendance
vii. As a student, I would want to be able to check my timetable for detailed venue location and the lecturers teaching

Web Team		
1	User Story	As a manager I would want to be able to sign in to system.
	Description	A user should be able to sign in to system to manage
	Task(s)	Login to system
		Logout system
		Implemented UI on blades
	Test(s)	Login to system
		Logout from system
Mobile Team		

2	User Story	As a student i want to be able to view my upcoming lectures for the current day and next day.
	Description	Produce a ‘What’s next’ page within the app displaying timetable information for next 2 days
	Task(s)	Retrieve timetable data via an AJAX call to the database hosted on our server. .
		Display data in presentable manner using CSS and JavaScript
	Test(s)	A student can view their upcoming timetabled events.
3	User Story	As a lecturer, I would want to be able to add/remove students from attendance in a lecture.
	Description	As students may at times, forget to bring their mobile devices. Lecturers have the option to sign students into lectures
	Task(s)	Add student to attendance
		Remove student from attendance
		Create the view for lecturer sign in student
	Test(s)	Add correct student to attendance
		Remove correct student from attendance
		View sign in students
4	User Story	As a student, I would want to be able to sign in securely.
	Description	Security measures like SQL injection prevention, and session token are required to prevent cyber attacks on the system.
	Task(s)	SQL injection prevention
		Implement session token
		HTTPS
	Test(s)	Prevents OWASP TOP 10 attack
5	User Story	As a lecturer, I would want to be able to sign in securely.

	Description	Security measures like SQL injection prevention, and session token are required to prevent cyber attacks on the system.
	Task(s)	SQL injection prevention
		Implement session token
		HTTPS
	Test(s)	Prevents OWASP TOP 10 attack
6	User Story	As a lecturer, I would like to view the student attendance
	Description	Lecturer would want to view the current attendance
	Task(s)	View student attendance in percentage
		Lecturer can set class details parameters to view which class attendance they want to see
		Talk to server to retrieve class attendance
		Retrieve current class and set the parameters
		Auto create lecture instances
	Test(s)	Display student attendance properly
		Retrieves current class details
7	User Story	As a student, I would want to be able to check my timetable for detailed venue location and the lecturers teaching
	Description	Timetable is essential for all students. With this function, a student will be see his schedule for the week.
	Task(s)	View a weekly timetable with detailed information
	Test(s)	Correct timetable information is displayed

Sprint 5 (12 completed)

Web Team

i. As a manager I would want to be able to add user to system
ii. As a manager I want to be able to remove user from system

iii. As a lecturer I would like to start a question when I want to ask a question to the class (server side)
iv. As a school administrator, I want to sign in to the system
v. As admin, I want to be able to review aggregate/individual student attendance for each lecture and throughout the year
vi. As a manager I want to be able to view attendance of individual or multiple users

Mobile Team
vii. As a lecturer, I want to be able to view the results/graphs of the question I posted
viii. As a lecturer, I would like to send questions for students to answer
ix. As a lecturer, I would want to be able to see the timetable
x. As a student, I want to be able to check my timetable for detailed venue location and the lecturers teaching
xi. As a student, I want to be able to answer question that lecture post online
xii. As a student, I want to be able to view overall attendance for each session in this week

Web Team		
1	User Story	As a manager I would want to be able to add user to system
	Description	A manager should be able to add new user to system.
	Task(s)	Add user to system
		Database entry
		Model
		Update user
		Delete user
	Test(s)	Add user
		Update user
		Read user
		Delete user
2	User Story	As a manager I want to be able to remove user from system
	Description	A manager should be able to remove user which is not in use
	Task(s)	Remove user from system

	Test(s)	Remove user
3	User Story	As a lecturer I would like to start a question when I want to ask a question to the class (server side)
	Description	A lecturer would want to prepare questions
	Task(s)	Tell server to start count down and receive answer from user
		Set up server to get start flag
		Create table entry
		Create model
		Create controller
	Test(s)	Test is server start question section
4	User Story	As a school administrator, I want to sign in to the system
	Description	Most functions can be done by user who sign in to the system
	Task(s)	Login user
		Logout user
	Test(s)	Log in/out user
		Display and get form
5	User Story	As admin, I want to be able to review aggregate/individual student attendance for each lecture and throughout the year
	Description	With this function, an administrator can review and see a high level view of which students are not meeting the required attendance easily.
	Task(s)	View single student attendance
		View attendance for course
		View attendance by year of study
	Test(s)	Test display individual student
		Test display multiple student

6	User Story	As a manager I want to be able to view attendance of individual or multiple users
	Description	Attendance of individual or multiple users should be able to be controlled by a manager
	Task(s)	View single student attendance
		View multiple student attendance
		View attendance according to course
	Test(s)	Display individual attendance
		Display multiple student attendance
Mobile Team		
7	User Story	As a lecturer, I want to be able to view the results/graphs of the question I posted
	Description	The number of users able to answer the question should be displayed, after the question has been submitted.
	Task(s)	Display percentage of result on screen
		Get statistics from server
		Send statistics to mobile
		Model
		Database
		Display Q&A statistics on website
	Test(s)	Display statistics properly
		Receive data from server
		Display on website properly
		Display on mobile properly
8	User story	As a lecturer, I would like to send questions for students to answer

	Description	A lecturer wants to send questions to be answered by students during the class
	Task(s)	Server notice student that there is new question
		Receive notice from server at mobile end
		Create event that the user will look for
		New question fire question update hook
	Test(s)	Get noticed
		Send message to mobile
9	User Story	As a lecturer, I would want to be able to see the timetable
	Description	A lecturer should be able to see the timetable to check her/his schedule
	Task(s)	Lecturer is able to see the timetable
	Test(s)	Correct timetable information is displayed
10	User Story	As a student, I want to be able to check my timetable for detailed venue location and the lecturers teaching
	Description	Attended lectures should appear highlighted in green on the timetable whereas unattended lectures should appear red.
	Task(s)	Student is able to see the upcoming event in the timetable and whether or not they have attended the lecture
	Test(s)	Information of the upcoming event is displayed accordingly to the student
11	User Story	As a student, I want to be able to answer question that lecturer post online
	Description	Question lecturer posted online should be answered by students in the lecture.
	Task(s)	Finish student page for answering question
		Send answer to server end
		Get response when succeed

		Set up api for mobile end
		Database
		Model
		Create new question
		Create new answer
		Add answer to user and question
		Update answer if resubmit
	Test(s)	Test with server response
		Test that question after close do not get store in the database
		Test that question inside send when database is open get store
		Test reset answer update the answer in row in the database
		Completed Q&A controller on server end
12	User Story	As a student, I want to be able to view overall attendance for each session in this week
	Description	A student should be able to see overall attendance to check how many classes he/she missed in this week.
	Task(s)	Checks if a student has attended the selected lecture
		Display attendance information on the timetable
		Display green if lecture has been attended
	Test(s)	Display the correct attendance information on the timetable