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Module Code: PROJ202SL	Module Name: Integrating Project
Coursework Title: Resource Allocation System for NSBM	
Deadline Date: 27/04/2017	Member of staff responsible for coursework: Mr. Viraj Edirisinghe
Programme: Plymouth Computing	

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Signed on behalf of the group:

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Signed:

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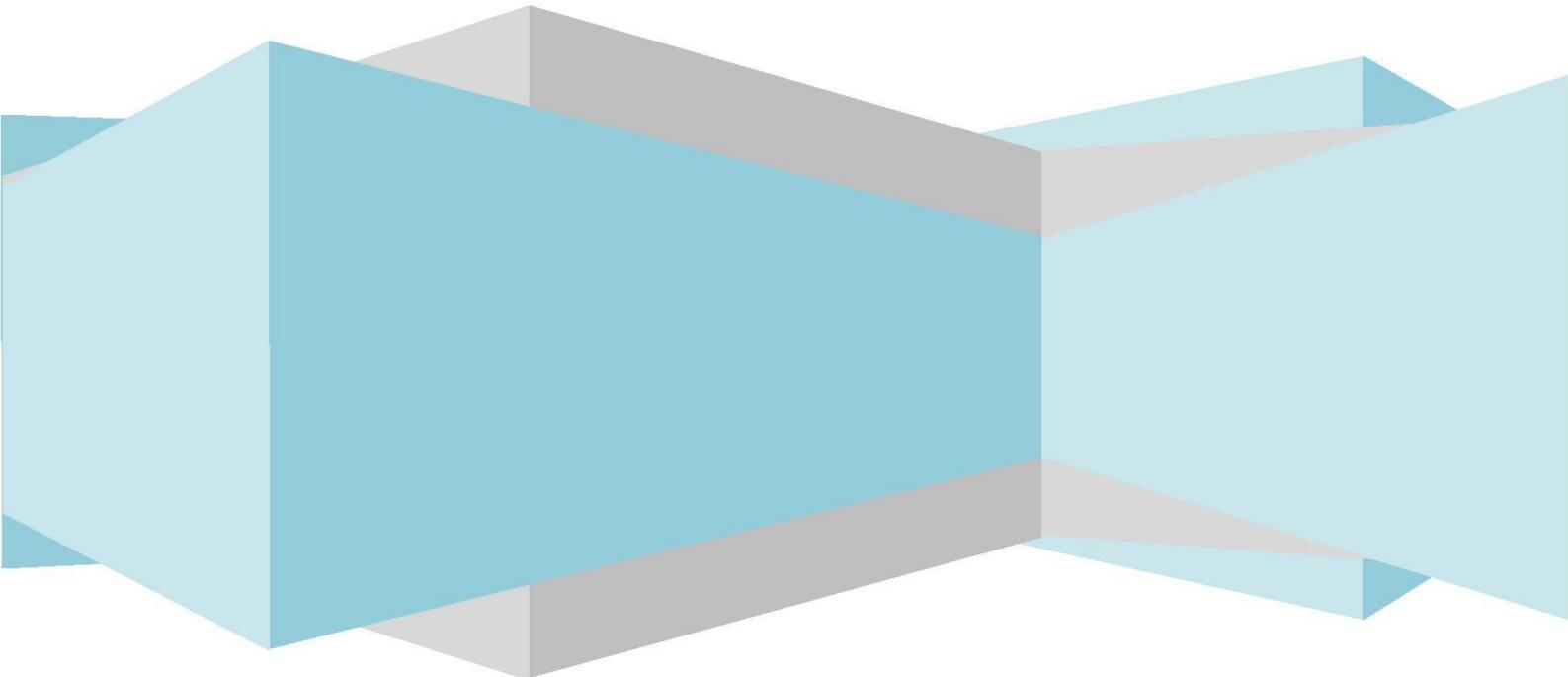
Overall mark \_\_\_\_\_ % Assessors Initials \_\_\_\_\_ Date \_\_\_\_\_



# PROJECT REPORT

## PROJ202SL-Integrating Project

**Resource Allocation System for NSBM**



### NAME

Vidanagamage Lasitha T B  
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### INDEX

10569203  
10569206  
10569217  
10569058  
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## CONTENT

1. Introduction .....	5
2. Functional Specifications	
2.1. Usecase Diagram .....	6
2.2. Web Application	
Login.....	7
Dashboard .....	8
Lecturers .....	8
Instructors .....	10
Batches .....	11
Modules .....	12
Lecture Halls .....	13
Labs .....	14
Lab Allocation .....	15
Lecture Allocation .....	17
2.3. Mobile Application .....	19
3. Technical specification	
3.1. Non- functional Requirement .....	21
3.2. UML Diagrams	
Entity Relationship Diagram .....	22
Data Flow Diagram .....	23
Class Diagram .....	24
4. Workload Matrix .....	25
5. Personal Reflects and Contribution .....	26
6. Future implementation .....	51
7. Conclusion .....	52



## NerdLK

### WEB DESIGN & DEVELOPMENT SOLUTIONS

NerdLK is a young and dynamic web development and mobile development group that interested in new web and mobile technologies. We are new comers to the web and mobile development sector and we anticipate to get an experience from this project. Furthermore, we have active and well-motivated members who willing to contribute.



## INTRODUCTION

This Web application for administration and a mobile application for the students. In web application Admin have authority to add lecturers, modules, instructors, batches, lecture halls, labs, and allocate labs and lectures. And also admin can access to edit and delete those data. Time table scheduling divided into hall allocation and lab allocation.

The mobile application is Students can easily access online student time table and hall allocation. To develop the mobile application we develop a rest full API for retrieve data about batches, lab schedule and lecture schedule. Data response is held by JSON format.

University students can view lab allocation and hall allocations in one click and lecturers, instructors can view and cancel. The software maintains the details for each batch as well as provides editing the lecture and time. Timetable is allowed for only present time and upcoming lecture/lab schedule. Previous schedules are removed automatically from the system.

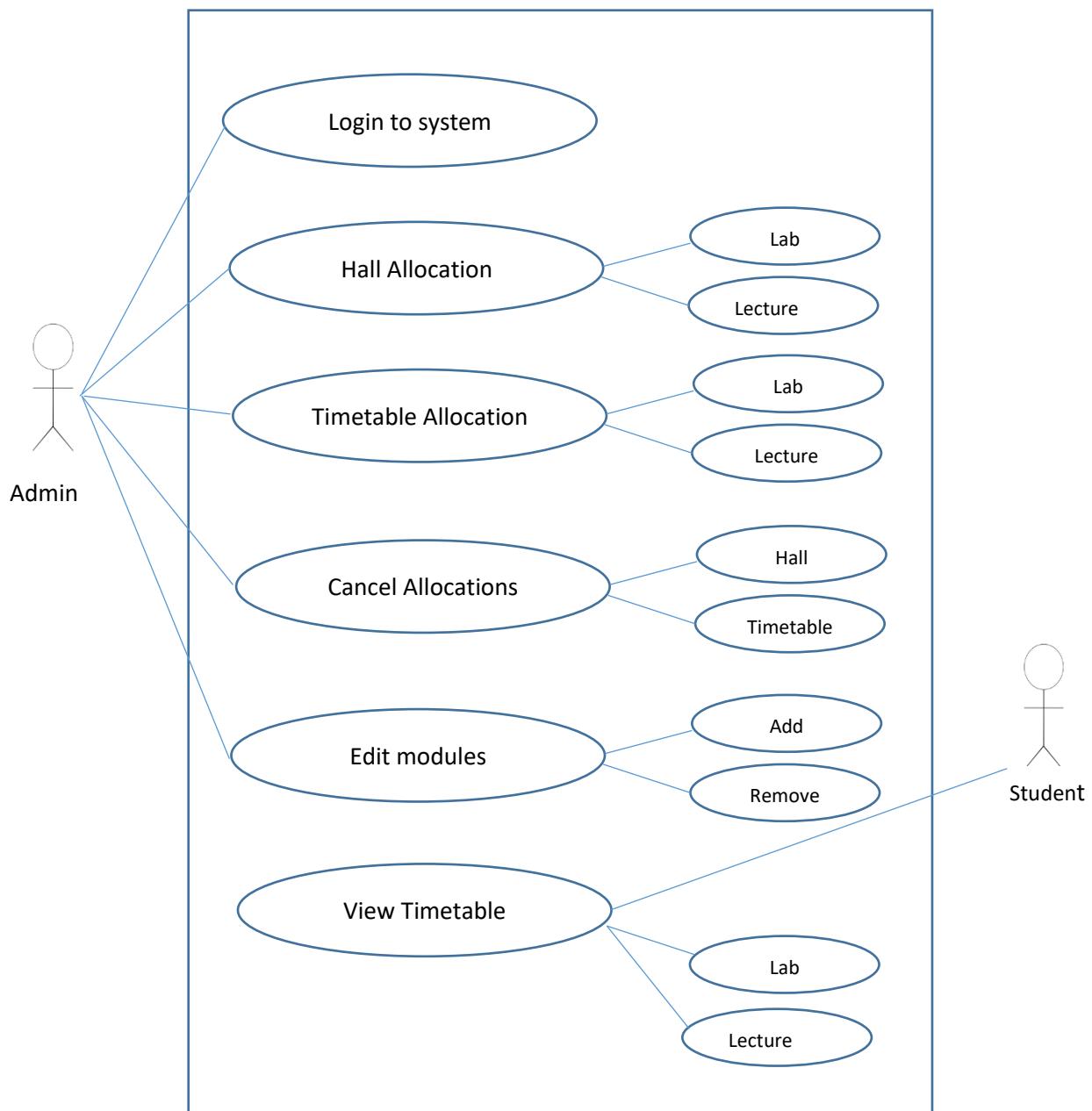
Resource allocation system is very useful for Educational Institute to prepare an exam in halls and labs. It will help the university to manage their tasks efficiency.

For web application we use PHP, HTML5, CSS3, JavaScript, jQuery and for mobile application we use Ionic2 and Angular2. To create database we use MySQL.



## FUNCTIONAL SPECIFICATIONS

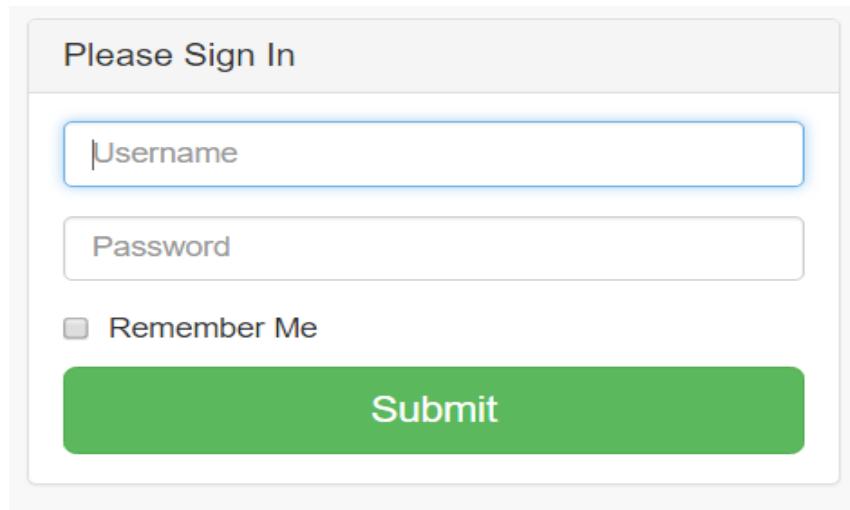
### 2.1 Usecase Diagram



## 2.2. Web Application

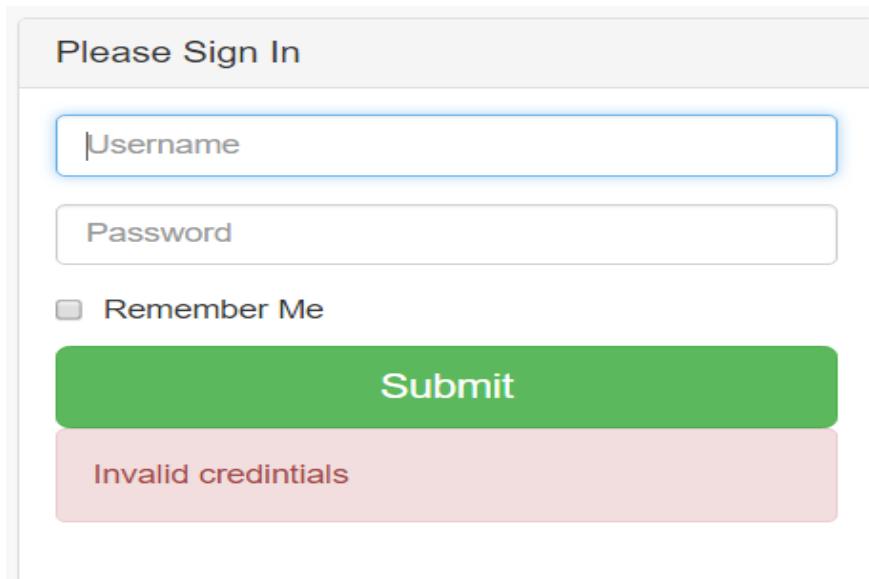
### Login:

- When someone login to this system, system will require username and password. When a lecturer login to the system, Sessions are used to authenticate users to the admin panel.
- **Keep me signed in** - When the user put a tick to “Remember Me” box, system use cookies to save user information. This access privilege will be possible until user sign-out from the system.



The screenshot shows a simple login form titled "Please Sign In". It contains two input fields: "Username" and "Password", both with placeholder text. Below the fields is a "Remember Me" checkbox. At the bottom is a large green "Submit" button.

- When user unable to provide correct user name or password, System will forward an error message by displaying “Invalid credentials”.



The screenshot shows the same login form as above, but with an additional red rectangular box at the bottom containing the text "Invalid credentials", indicating an error message was displayed.



## Dashboard:

- This is the dashboard of the admin.
- Admin has the ability to add, delete and edit lecturers and also add new instructors edit and delete them.
- Admin has access to add, edit, delete -> batches, modules, lecture halls and labs.
- Only admin has access to add new fields for the timetable. And whenever a lecturer was canceled a lecture he can cancel it from the time table.

The screenshot shows the NSBMRAS dashboard with a dark header bar. On the left is a sidebar with links: Dashboard, Lecturers, Instructors, Batches, Modules, Lecture Halls, Labs, Time Table, and Time Table (with a dropdown arrow). The main area is titled "Dashboard" and contains six cards with icons and labels: "Lecturers" (lecturer icon), "Instructors" (instructor icon), "Batches" (people in a room icon), "Modules" (book icon), "Lecture Halls" (auditorium icon), "Labs" (computer lab icon), "Time Table" (calendar icon), and another "Time Table" link.

## Lecturer:

System can search for a lecturer whether he/she already exists. Lecture table is displaying the current lecturer information. So it's easy to do edition or deletions.

The screenshot shows the NSBMRAS Lecturers page. The sidebar includes links for Dashboard, Lecturers, Instructors, Batches, Modules, Lecture Halls, Labs, and Time Table. The main content area has two sections: "Add lecturer" (with a "Lecturer Name" input field and "Add Lecturer" button) and "Lecturer Table" (a table with columns "Id" and "Name", showing entries for Chaminda Wijesinghe, Manoja Weerasinghe, Viraj Edirisinghe, and Saliva Patahandi, each with "Edit" and "Delete" buttons). A green banner at the top of the main content area says "Add lecturer".



When admin wants to edit a lecturer name, click the button of edit and change it.

## Lecturers

Edit lecturer

Lecturer Name
<input type="button" value="Edit Lecturer"/>
Example:- Manoja Weerasinghe

When admin wants to search for a lecturer he can search by name or id.

DataTables Advanced Tables

Show 10 entries		Search: cham
Id	Name	#
1	Chaminda Wijesinghe	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Showing 1 to 1 of 1 entries (filtered from 5 total entries)

Previous  Next

Admin can select how many entries per page to display using drop down button of show entries. It can view maximum 100 no of entries per page.

Show 10 entries

Id	Name
1	Chamin

Lecturer Table

Show 10 entries		Search:
Id	Name	#
1	Chaminda Wijesinghe	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
3	Manoja Weerasinghe	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
4	Viraj Edirisinghe	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
5	Saliya Patabandhi	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
6	Aparajitha Ariyawansa	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
7	Chaminda Rathnayake	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
8	Damith Mudunkotuwa	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
9	Nadeera Ahangama	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
10	Mohomad Shafraz	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
11	Dileeka Alwis	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Showing 1 to 10 of 12 entries

Previous   Next



## Instructors:

This is the admin page of instructors that can add, edit and delete. Admin page is displaying instructor table for more details. It's easy to understand and help for quick search the data about instructors

The screenshot shows the NSBMRAS admin dashboard. On the left, there is a sidebar with the following menu items: Dashboard, Lecturers, **Instructors**, Batches, Modules, Lecture Halls, Labs, and Time Table. The main content area has a title "Instructors". Below it, there is a green header bar for "Add instructor" containing a text input field for "Instructor Name" and a blue "Add Instructor" button. A note below says "Example:- Ayesh Withanage". To the right of this is a table titled "Instructor Table" with the following data:

Show	10	entries
Id	Name	#
3	Ayesh Withanage	<button>Edit</button> <button>Delete</button>
4	Yasith Basnayake	<button>Edit</button> <button>Delete</button>
5	Kalani Samarasinghe	<button>Edit</button> <button>Delete</button>

At the bottom of the table area, it says "Showing 1 to 3 of 3 entries" and has "Previous" and "Next" buttons.

Admin can edit instructor name by using edit instructor button.

The screenshot shows an "Edit Instructor" form. It has a yellow header bar. Below it is a text input field for "Instructor Name" and a blue "Edit Instructor" button. A note below says "Example:- Ayesh Withanage".



## Batches:

Admin has access to add batches, edit and delete batches. Current details about the batches in batch table is displaying on the admin page. Batch name is searching by batch-name or batch-id. By displaying no of students it's easy to allocate labs and halls.

Id	Name	No of Students	#
2	BSC-PLY-COM-15.2	200	<button>Edit</button> <button>Delete</button>
5	BSC-PLY-COM-15.1	180	<button>Edit</button> <button>Delete</button>

When admin wants to edit batch name, click the button of edit and change it

BSC-PLY-COM-15.2
200



## Modules:

This is the admin page of modules that can add, edit and delete. Module table is displaying the current module information. It's easy to understand and help for quick search.

The screenshot shows the 'Modules' section of the NSBMRAS application. On the left, there is a sidebar with navigation links: Dashboard, Lecturers, Instructors, Batches, Modules (which is the active link), Lecture Halls, Labs, and Time Table. The main content area has a green header 'Add Modules'. It contains fields for 'Module Name' and 'Module Code', and a blue 'Add Module' button. Below this is a note: 'Example:- Computer Networks - CNET255SL'. Underneath is a table titled 'Lecture Hall Table' with one entry:

Show	10 entries	Search:	
ID	Name	Module Code	#
2	Computer Networks	CNET255SL	<a href="#">Edit</a> <a href="#">Delete</a>

At the bottom, it says 'Showing 1 to 1 of 1 entries' and has 'Previous' and 'Next' buttons.

When admin wants to edit module name or module code he can use edit button as below.

The screenshot shows the 'Edit Modules' form. It has two input fields: 'Computer Networks' and 'CNET255SL'. Below these is a blue 'Edit Module' button. A note at the bottom says: 'Example:- Computer Networks - CNET255SL'.



## Lecture Halls:

Admin can add, edit and delete lecture hall name and number of students. Current details about the lecture halls in lecture hall table is displaying on the admin page. Lecture hall is searching by lecture hall name or no of students. By displaying no of students it's easy to allocate halls.

The screenshot shows the NSBMRAS admin interface. The left sidebar has a navigation menu with options: Dashboard, Lecturers, Instructors, Batches, Modules, Lecture Halls (selected), Labs, and Time Table. The main content area is titled 'Lecture Halls'. It contains two sections: 'Add Lecture Hall' (with fields for Lecture Hall Name and No of Students, and a 'Add Lecture Hall' button) and 'Lecture Hall Table' (a search table showing one entry: Id 2, Name LEC006, No of Students 180, with Edit and Delete buttons). A note at the bottom says 'Example:- LEC006'.

By using edit button, admin can change lecture hall name and no of students.

The screenshot shows the 'Edit Lecture Hall' form. It has fields for 'Name' (LEC006) and 'Students' (180), and an 'Edit Lecture Hall' button. A note at the bottom says 'Example:- LEC006'.



## Labs:

Admin can add, edit and delete lab name and number of students. Current details about the labs in lab table is displaying on the admin page. Labs can search by lab name or no of students. By displaying no of students it's easy to allocate labs.

The screenshot shows the 'Labs' section of the NSBMRAS web application. On the left, there is a sidebar with links: Dashboard, Lecturers, Instructors, Batches, Modules, Lecture Halls, Labs (which is currently selected), and Time Table. The main area has a title 'Labs'. Below it, there is a green header 'Add Lab' containing fields for 'Lab Name' and 'No of Students', and a blue 'Add Lab' button. A note says 'Example:- LEC006'. Below this is a table titled 'Lab Table' with columns: Id, Name, No of Students, and actions (Edit, Delete). The table contains three entries: LAB002 (Id 2, 50 students), LAB003 (Id 3, 40 students), and LAB004 (Id 4, 50 students). At the bottom, it says 'Showing 1 to 3 of 3 entries' and has 'Previous' and 'Next' buttons.

Id	Name	No of Students	#
2	LAB002	50	Edit Delete
3	LAB003	40	Edit Delete
4	LAB004	50	Edit Delete

By using edit button, admin can change lab name and capacity of the lab.

The screenshot shows the 'Edit Lab' form. It has a yellow header 'Edit Lab'. Below it are two input fields: one containing 'LAB002' and another containing '50'. There is a blue 'Edit Lab' button. A note at the bottom says 'Example:- LAB002'.



## Lab Allocation:

Admin can add lab allocation by filling date, time, batch, module, instructor, lab and group. Current details about the lab allocations in lab allocation table is displaying on the admin page. Any detail about lab allocation can search by any column name in table.

It can't take the same group in same time for the lab sessions.

NSBMRAS

lasitha ▾

Dashboard

Lecturers

Instructors

Batches

Modules

Lecture Halls

Labs

Time Table

Lab Allocation

Lecture Allowcation

### Lab Allocation

Add

Date: mm/dd/yyyy

Time: Select Time Slot

Batch: Select Batch

Module: Select Module

Instructor: Select instructor

Lab: Select Lab

Group: ex:- G1

Add

Lab Allocation Table

Show 10 entries Search:

ID	Date	Time	Batch	Module	Instructor	Lab	Group	Status	#
1	2017-04-27	01.00PM-04.00PM	BSC-PLY-COM-15.2	Computer Networks	Yasith Basnayake	LAB002	G1	Active	<button>Cancel</button>
2	2017-04-27	09.00AM-12.00PM	BSC-PLY-COM-15.2	Computer Networks	Ayesh Withanage	LAB002	G1	Canceled	<button>Cancel</button>

Showing 1 to 2 of 2 entries

Previous 1 Next



## Error Handling in Lab Allocation

It helps to consider that whether,

- Lab is available or not
- Batch-group is available or not
- Instructor is available or not
- Capacity of the lab is available or not.

**Batch-group has another lab-session in this timeslot**

- It shows that the batch is not available in that time. The batch-group has another lab session at the same time.

**Lab is already allocated in this timeslot**

- It shows the selected lab is not available in the selected time. It helps to consider that whether the lab is available or not.

**Instructor is not available in this timeslot**

- It shows the selected instructor is not available for the selected time



## Lecture Allocation:

Admin can add lecture allocation by filling date, time, batch, module, lecturer and lecture halls. Current details about the lecture allocations in lecture allocation table is displaying on the admin page. Any detail about lecture allocation can search by any column name in table. System only can for cancel the lecture that was allocated. So that, it helps to get an idea about the resource availability. After canceling a lecture that resources will be available for another allocation.

NSBMRAS

lasitha ▾

Dashboard

Lecturers

Instructors

Batches

Modules

Lecture Halls

Labs

Time Table

Lab Allocation

Lecture Allocation

### Lecture Allocation

Add

Date: mm/dd/yyyy

Time: Select Time Slot

Batch: Select Batch

Module: Select Module

Lecturer: Select Lecturer

Lecture Hall: Select Lecture Hall

Add

Lab Table

Show 10 entries Search:

ID	Date	Time	Batch	Module	Lecturer	Lec Hall	Status	#
1	2017-04-28	09.00AM-12.00PM	BSC-PLY-COM-15.1	Computer Networks	Chaminda Wijesinghe	LEC006	Canceled	<button>Cancel</button>
2	2017-04-27	09.00AM-12.00PM	BSC-PLY-COM-15.2	Computer Networks	Chaminda Wijesinghe	LEC006	Active	<button>Cancel</button>

Showing 1 to 2 of 2 entries

Previous 1 Next



### Error Handling in Lecture Allocation

It helps to consider that whether,

- Lecture hall is available or not
- Batch is available or not
- Lecturer is available or not
- Capacity of the hall available or not.

**Lecture hall is already allocated in this timeslot**

- It shows the selected lecture hall is not available in the selected time. It helps to consider that whether the lecture hall is available or not.

**Lecturer is not available in this timeslot**

- It shows the lecturer is not available for the selected time

**Batch has another lecture in this timeslot**

- It shows that the batch is not available in that time. The batch has another lecture at the same time.

**No enough capacity in this lecture hall**

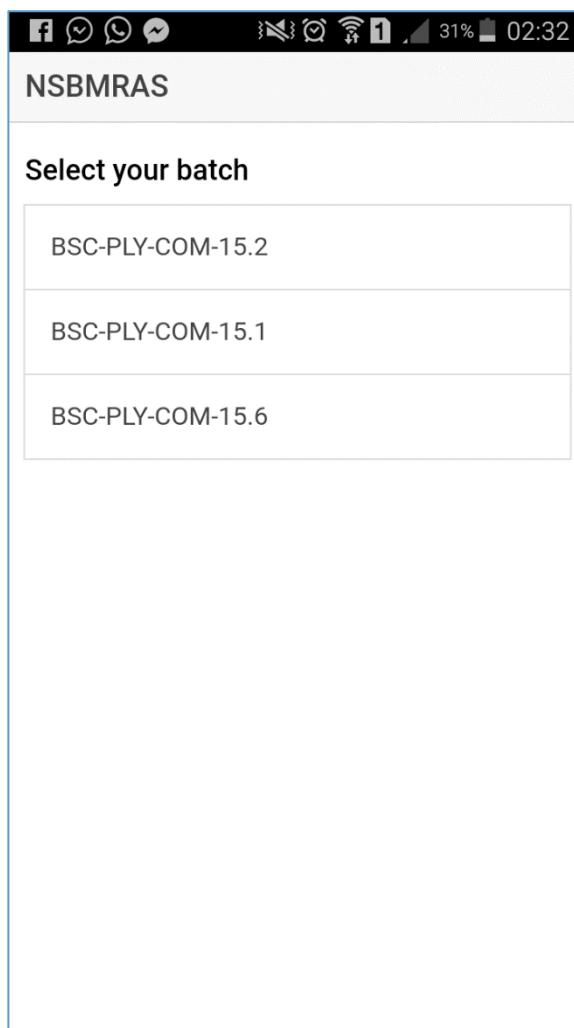
- It shows that the lecture hall capacity is not enough.



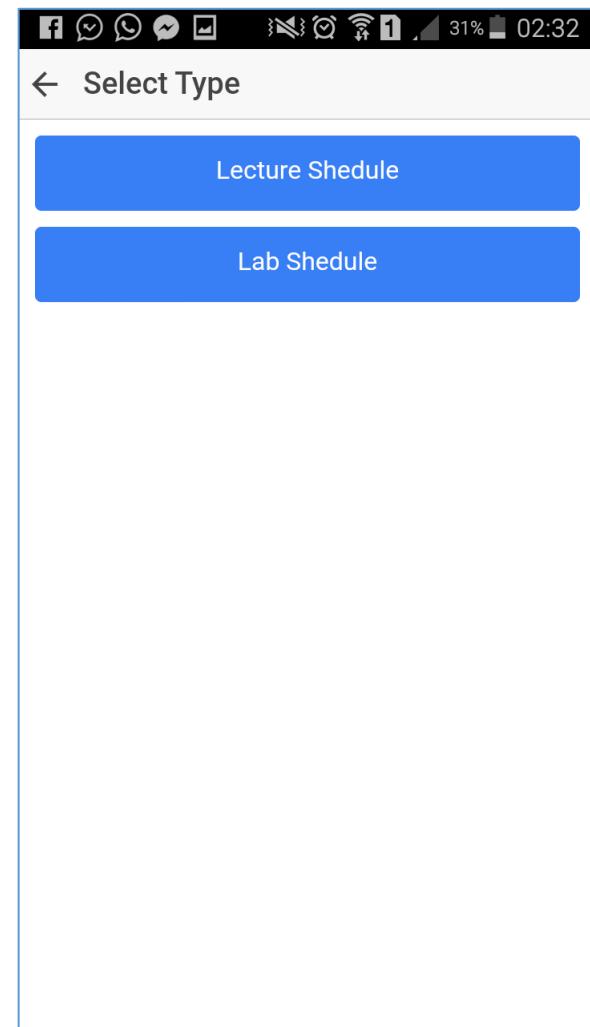
### 2.3. Mobile Application

We developed a **rest full API** for the mobile application to retrieving data about lab and lecture scheduling. In the mobile application, it sends a http request to the API and display the retrieved data. Data response is held by **JSON** format. Mobile application will shows the canceled lectures and upcoming lectures/ lab schedules to a particular batch.

**1<sup>st</sup> View:**

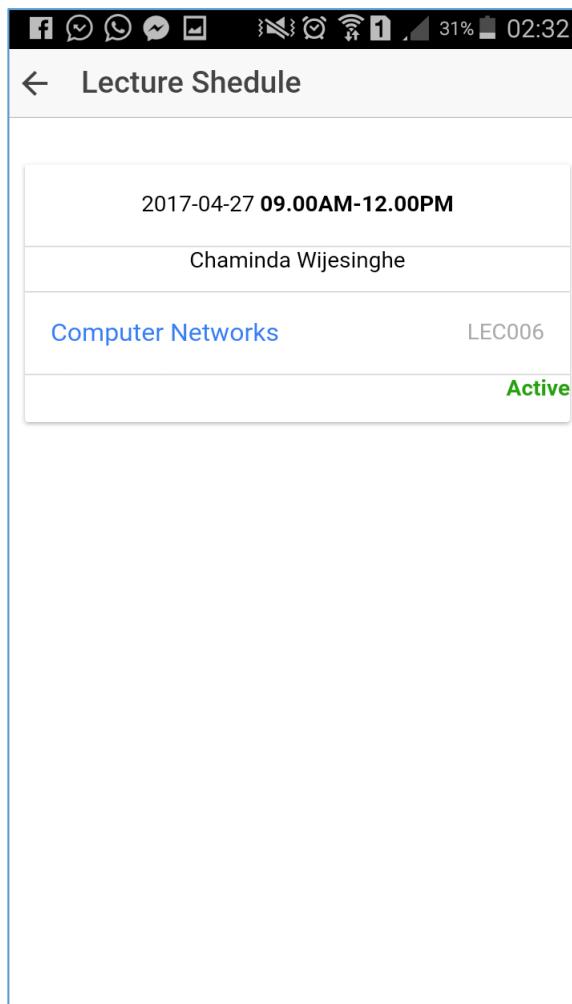


**2<sup>nd</sup> View:**

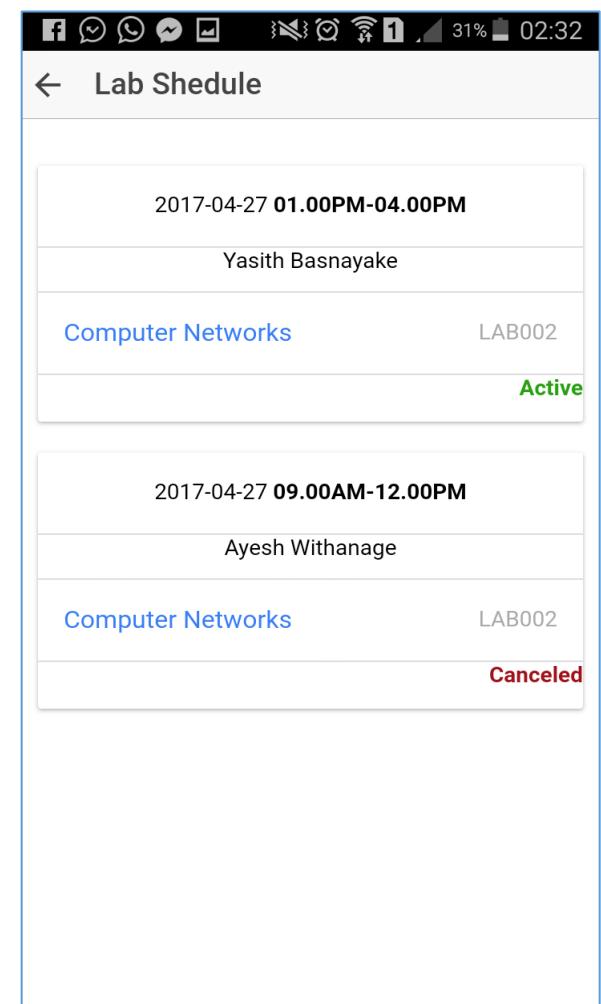




**3<sup>rd</sup> View:**



**4<sup>th</sup> View:**



## TECHNICAL SPECIFICATION

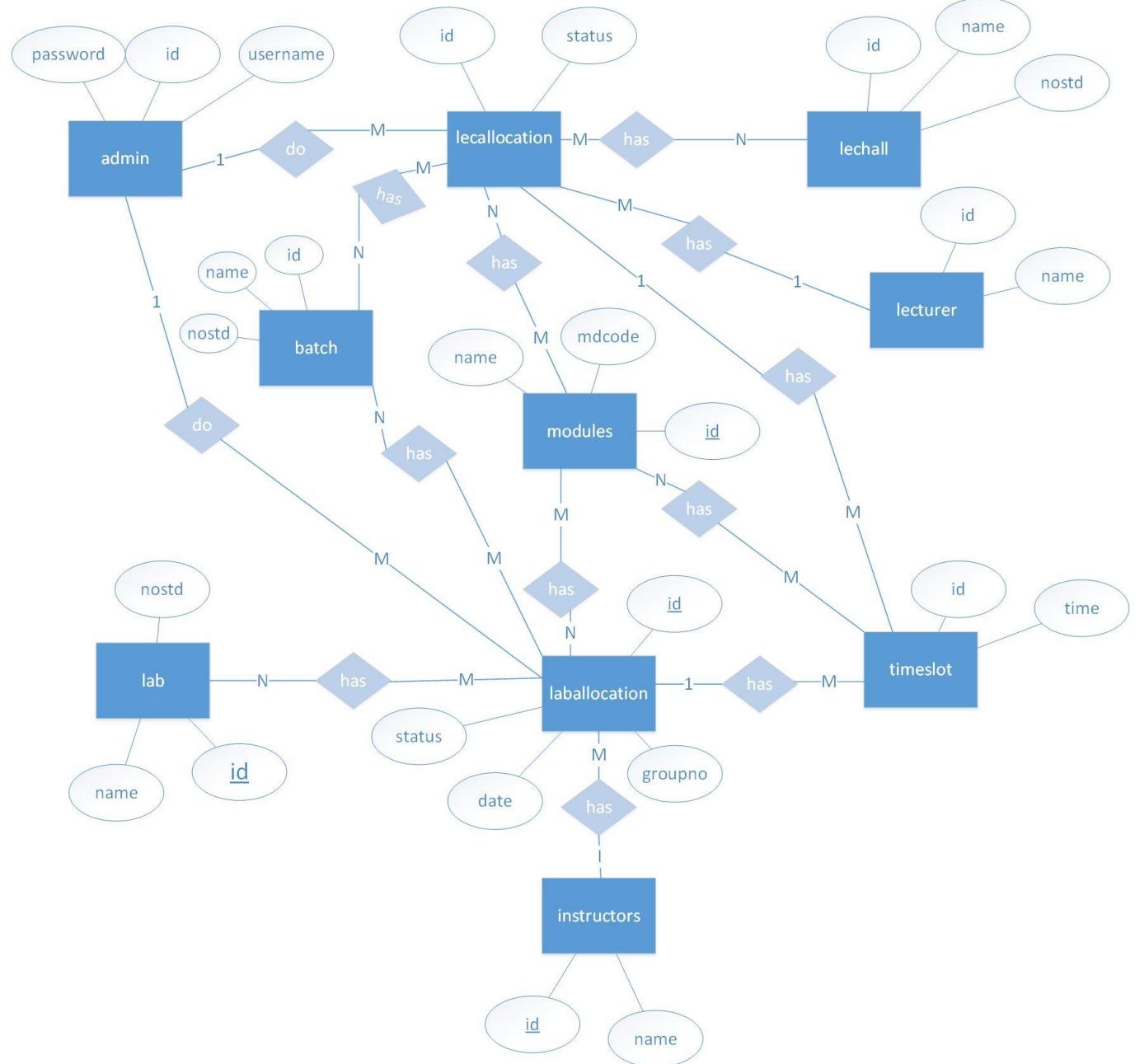
### 3.1. Non-functional Requirements:

- **Usability**
  - How easy it is to use, which often includes how easy it is to learn. Creating mobile application is a very useful for university students, lecturers and instructors. To view timetables or notifications they no need to login. They can easily view their day to day timetables using mobile app.
- **Reliability**
  - The quality of web, mobile applications; web application is design for administration. Only admin has authority to access to the web site. Site is design for do resource allocations. Site design, writing style, web site look is well created.
- **Speed**
  - Sending notifications or emails for lecture and lab cancellations is more helpful for students, lecturers and instructors.
- **Time consuming**
  - Using mobile app students can avoid time consuming.
- **Cost**
  - The costs of creating and maintaining a new system are common non-functional issues that have an impact on the creation and development of a resource allocation system. This means that some of the functional requirements may be too expensive to become reality, while others may be delayed in implementation. Costs of upgrading and maintaining a program must be reasonable.
- **Flexibility**
  - If lectures and lab sessions are changed, then the system must be updated as well. When administration doing changes in web, then mobile app also updated.



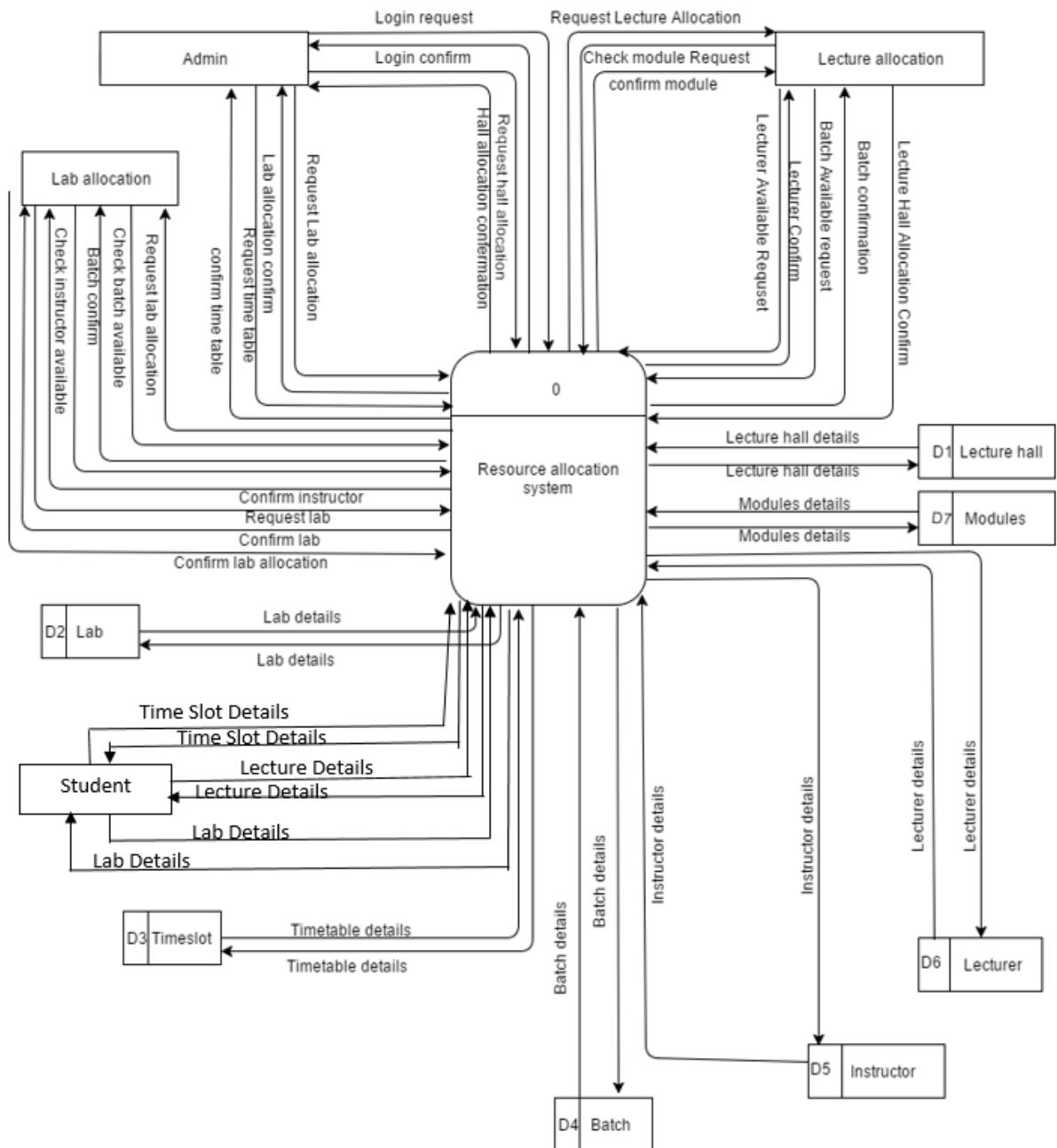
## UML DIAGRAMS

Entity Relationship Diagram:



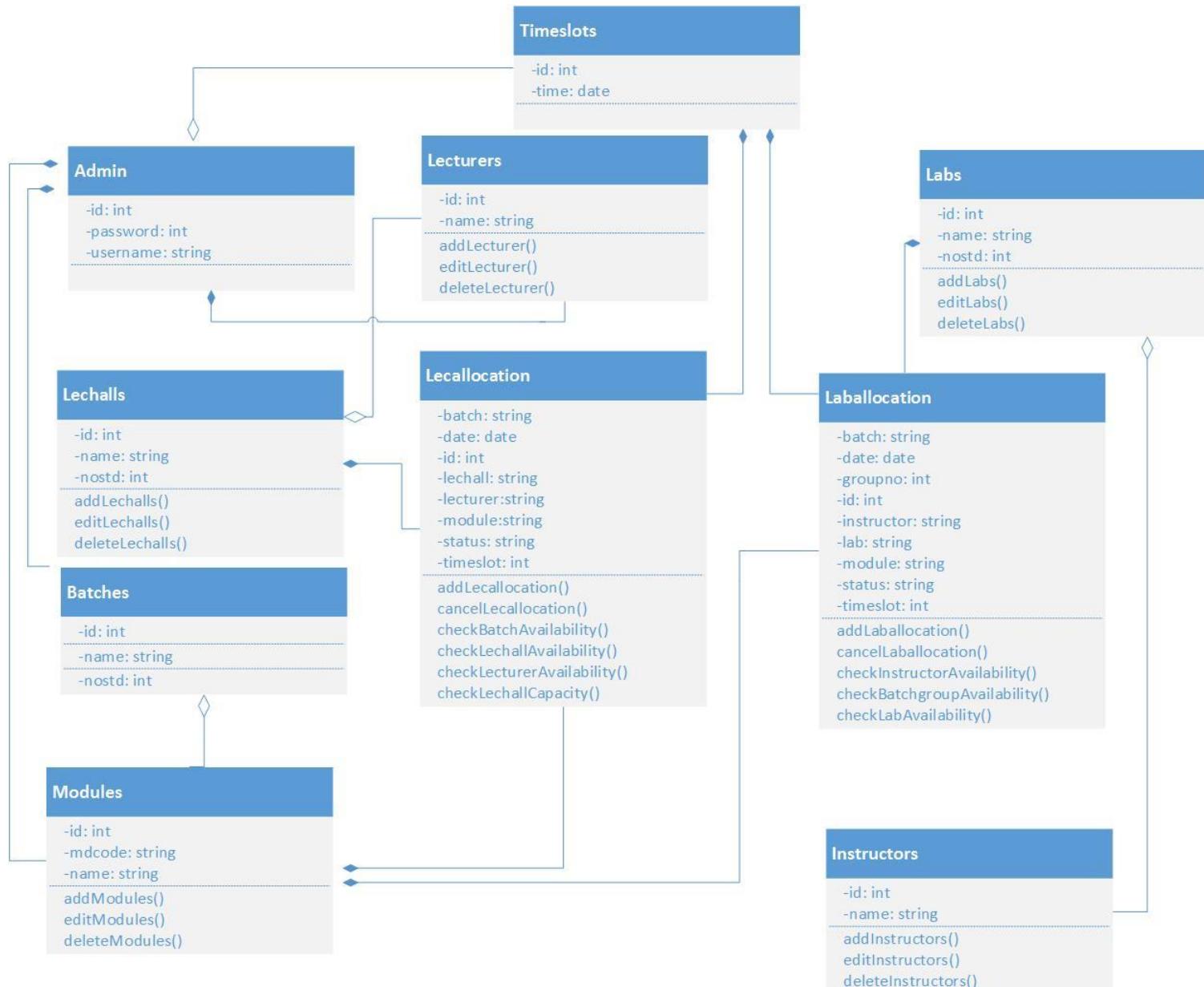


## Data Flow Diagram:





## Class Diagram:





### WORK LOAD MATRIX:

Index Number	System analysis	Web Frontend	Web Backend and API	Database	Testing	Mobile Frontend	Mobile Application
10569203		X	X	X	X	X	X
10569206	X	X		X	X		
10569217	X				X	X	
10569058	X			X	X		
10569137	X			X	X		

## PERSONAL REFLECTS AND CONTRIBUTION:

Index no: 10569203

Name: Vidhanagamage L.T. B

My contribution to the project is developing the **web back-end** for admin users and **mobile application** for students. Web back-end is used mainly for scheduling lab sessions and lecture sessions. For implementing these features I mainly considered about availability of lectures, instructors, batches, lecture halls, labs and reusability of the cancelled allocations. When I developed the mobile application I mainly considered about viewing lecture schedules and lab schedules for students. Both mobile and web applications have one centralized database and API web service will communicate within mobile application to database.

To implement web back-end used following technologies.

- Php
- MySQL
- HTML5
- CSS3
- JQuery
- JavaScript

### When I developing the web back-end what I learned from this project is,

#### • Sessions

Sessions are used to implement admin authentication system. After confirming username and password is correct session variable will store username of the admin. Every page that admin needs authentication page will check whether session variable is assigned or not. If assigned, page will let access and if not user will redirect to login page.

#### • Cookies

Cookies used to remember admins login. In the login page if user ticks remember me checkbox cookie will save username and encrypted password. When admin comes again to the system it will automatically log in the user. If user logs out from the system, cookie and session will be destroyed.



```
// Login Process
if (isset($_POST['submit'])) {
    $username=$_POST['username'];
    $password=$_POST['password'];
    $password=md5($password);
    $rememberme=$_POST['rememberme'];
    $sql = "select * from admin where username='".$username' and password='".$password."'";
    $result = mysqli_query($con, $sql);
    $rows = mysqli_num_rows($result);
    if($rows==1){
        if(!empty($rememberme)) {
            setcookie("nsbmras_login", $username, time() + (10 * 365 * 24 * 60 * 60));
            setcookie("nsbmras_password", $password, time() + (10 * 365 * 24 * 60 * 60));

        }
        $_SESSION['username'] = $_POST['username'];
        header('Location: index.php');

    }else {
        array_push($Alerts, 'Invalid credentials');
    }
}
```

```
//Remember me (Cookie)

if(isset($_COOKIE['nsbmras_login'])){
    $username=$_COOKIE['nsbmras_login'];
    $pass=$_COOKIE['nsbmras_password'];

    $sql="select * from admin where username='".$username' and password='".$pass."'";

    $result=mysqli_query($con,$sql);
    $row=mysqli_fetch_assoc($result);
    $rows=mysqli_num_rows($result);
    if($rows==1){

        $_SESSION['username'] = $username;

        header('Location: index.php');
    }

}
```



```
//Check Login
<?php if(!isset($_SESSION['username'])) {
    header('Location: login.php');
```

- **Connect mySQL database to php.**

Connection.php file will connect database to php and assigned it to \$con variable.

```
//create connection
$con = mysqli_connect("localhost","root","","nsbmras");

// Check connection
if (mysqli_connect_errno())
{
    echo "Failed to connect to MySQL: " . mysqli_connect_error();
}
```

Whenever database connection is needed it will be imported.

```
include "includes/connection.php";
```

- **Retrieve data from database and display**

First data will be imported through SQL query then it will be display inside html tags using loops.

```
<tbody>
    <?php
        $sql="select * from instructors";
        $result=mysqli_query($con, $sql);
        foreach ($result as $data) {

    ?>
        <tr class="odd gradeX">
            <td><?php echo $data['id']; ?></td>
            <td><?php echo $data['name']; ?></td>
            <td><a href="instructors.php?edit=<?php echo $data['id'];?>" class="btn btn-warning">Edit</a>

        </tr>
        <?php } ?>
    </tbody>
```



- GET and POST methods  
Send and get form data through GET and POST method
- Insert, Update , Delete data in the database
- API

Application programming interface is developed to respond JSON data to Mobile Application.

```
<?php
include "../includes/connection.php";
header('Access-Control-Allow-Origin: *');
header('Access-Control-Allow-Methods: POST, GET, OPTIONS');
header('Content-Type: application/json');

$sql="select `id`,`name` from batches";
$result=mysqli_query($con,$sql);
$outp = array();
$outp = $result->fetch_all(MYSQLI_ASSOC);
echo json_encode($outp);
?>
```

In Mobile Application,

To implement mobile application I used following technologies

- Ionic 2 <https://ionicframework.com>

Ionic is a mobile software development kit and it is open source. It is used for developing native and progressive web apps.

- Angular 2 <https://angular.io/>

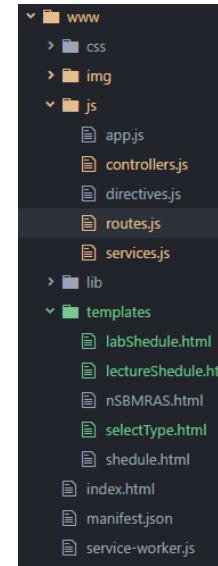
Angular is also a development platform for building mobile and web applications.



## When I developing the mobile application what I learned from this project is,

- **MVC architecture**

Ionic and angular is based on MVC architecture. I learned how Models, Controllers, Routes works



- **http requests**

To retrieve data I had to develop an API. Ionic controller will request particular data from the API and API will respond that request to JSON data

```
.controller('sheduleCtrl', ['$scope', '$stateParams', '$http', // The following
// You can include any angular dependencies as parameters for this function
// TIP: Access Route Parameters for your page via $stateParams.parameterName
function ($scope, $stateParams, $http) {
    var url = 'http://192.168.8.101:8080/nsbmras/api/batches.php';
    url = url + '?id=' + $stateParams.id;

    $http.get(url)
        .then(function (data) {
            $scope.schedule = data.data;
        });
}])
```

← → C | ① localhost:8080/nsbmras/api/batches.php

[{"id": "2", "name": "BSC-PLY-COM-15.1"}, {"id": "5", "name": "BSC-PLY-COM-15.2"}, {"id": "7", "name": "BSC-PLY-COM-16.1"}, {"id": "8", "name": "BSC-PLY-COM-16.2"}, {"id": "9", "name": "BSC-PLY-COM-17.1"}]



- **Display retrieved data**

To display data I used angular directives, \$scope variable and ionic elements.

```
<ion-view title="Lecture Schedule" id="page2">
  <ion-content padding="true" class="has-header">
    <div class="list card" id="shedule-card21" ng-repeat="d in lecture">
      <div class="item item-body" id="shedule-list-item-container2">
        <div id="shedule-markdown2" style="text-align:center;" class="show-list-numbers-and-dots">
          <p style="margin-top:0px;color:#000000;">{{d.date}}</p>
          <strong>{{d.time}}</strong>
        </p>
      </div>
    </div>
    <div id="shedule-markdown3" style="text-align:center;" class="show-list-numbers-and-dots">
      <p style="color:#000000;">{{d.lecturer}}</p>
    </div>
    <ion-item class="positive" id="shedule-list-item10">{{d.module}}</ion-item>
    <span class="item-note">{{d.lechall}}</span>
    <div id="shedule-markdown4" style="text-align:right;" class="show-list-numbers-and-dots">
      <p ng-if="d.status == 1" style="color:#28A111;">
        <strong>Active</strong>
      </p>
      <p ng-if="d.status != 1" style="color:#A1111A;">
        <strong>Canceled</strong>
      </p>
    </div>
  </ion-content>
</ion-view>
```



- **Generate splash screen**

Splash screen is the screen that display when application is opening. Image is designed using Adobe Photoshop and splash screen can generate using terminal

```
$ ionic resources --splash
Ionic splash screen resources generator
uploading android/splash.png...
android/splash.png (2208x2208) upload complete
generating splash android drawable-port-xxxhdpi-screen.png (1280x1920)...
generating splash android drawable-port-xxhdpi-screen.png (960x1600)...
generating splash android drawable-port-xhdpi-screen.png (720x1280)...
splash android drawable-port-xhdpi-screen.png (720x1280) generated
generating splash android drawable-port-hdpi-screen.png (480x800)...
splash android drawable-port-xxhdpi-screen.png (960x1600) generated
generating splash android drawable-port-mdpi-screen.png (320x480)...
splash android drawable-port-xxxhdpi-screen.png (1280x1920) generated
generating splash android drawable-port-ldpi-screen.png (240x320)...
splash android drawable-port-hdpi-screen.png (480x800) generated
generating splash android drawable-land-xxxhdpi-screen.png (1920x1280)...
splash android drawable-port-ldpi-screen.png (240x320) generated
generating splash android drawable-land-xxhdpi-screen.png (1600x960)...
splash android drawable-port-mdpi-screen.png (320x480) generated
generating splash android drawable-land-xhdpi-screen.png (1280x720)...
splash android drawable-land-xhdpi-screen.png (1280x720) generated
generating splash android drawable-land-hdpi-screen.png (800x480)...
splash android drawable-land-xxxhdpi-screen.png (1920x1280) generated
generating splash android drawable-land-mdpi-screen.png (480x320)...
splash android drawable-land-xxhdpi-screen.png (1600x960) generated
generating splash android drawable-land-ldpi-screen.png (320x240)...
splash android drawable-land-mdpi-screen.png (480x320) generated
splash android drawable-land-hdpi-screen.png (800x480) generated
splash android drawable-land-ldpi-screen.png (320x240) generated
```





- **Generate app icon**

Icon is designed using Adobe Photoshop and splash screen can generate using terminal

\$ionic resources -icon



- **Building the application**

Building the application can be done using terminal. It needs latest android SDK.

```
$ ionic run android
Running command: "C:\Program Files\nodejs\node.exe" F:\projects\RASNSBM\git\app\NSBMRAS\hooks\after_prepare\010_add_platform_class.js F:/projects/RASNSBM/git/app/NSBMRAS
add to body class: platform-android
ANDROID_HOME=C:\Users\Lasitha\AppData\Local\Android\sdk
JAVA_HOME=C:\Program Files\java\jdk1.8.0_05
Subproject Path: CordovaLib
Incremental java compilation is an incubating feature.
```

```
BUILD SUCCESSFUL

Total time: 1.856 secs
Built the following apk(s):
F:/projects/RASNSBM/git/app/NSBMRAS/platforms/android/build/outputs/apk/android-debug.apk
ANDROID_HOME=C:\Users\Lasitha\AppData\Local\Android\sdk
JAVA_HOME=C:\Program Files\java\jdk1.8.0_05
```



Index no: 10569206

Name : Wanniarachchi Hansini Himalshi

My contribution to the project is to develop the web front-end, design UML diagrams and documentation.

I used latest web technologies to develop the web user interface. When I designing the user interface I considered about simplicity user friendliness and ability to responsive for various screen sizes. To implement the responsiveness I used **bootstrap** grid system. To ensure eye friendliness I used simple colors such as red, green, yellow, blue, black and gray. When displaying data I decided to use open source “**datatables**” jQuery plugins.

I used following technologies to implement the front- end.

1. HTML5
2. CSS3
3. JavaScript
4. jQuery

I used following **Frameworks**

5. Bootstrap- css framework <https://getbootstrap.com/>

I used following **Plugins**

6. Datatables jQuery Table plugin <https://datatables.net/>

```
<!-- jquery -->
<script src="js/jquery.min.js"></script>

<!-- Bootstrap Core JavaScript -->
<script src="js/bootstrap.min.js"></script>

<!-- Metis Menu Plugin JavaScript -->
<script src="js/metisMenu.min.js"></script>

<!-- Custom Theme JavaScript -->
<script src="js/startmin.js"></script>
```



## 7. Datatables

Datatables will allow user to search and limit showing entries and automatic paginations according to how many entries in the table.

```
<!-- DataTables JavaScript -->
<script src="js/dataTables/jquery.dataTables.min.js"></script>
<script src="js/dataTables/dataTables.bootstrap.min.js"></script>
```

Lecture Hall Table				
Show 10 entries		Search:		
Id	Name	No of Students	#	
2	LEC006	180	<button>Edit</button>	<button>Delete</button>
4	LEC007	220	<button>Edit</button>	<button>Delete</button>
5	LEC008	200	<button>Edit</button>	<button>Delete</button>
6	LEC009	220	<button>Edit</button>	<button>Delete</button>

Showing 1 to 4 of 4 entries

Previous 1 Next

## 8. Metismenu JQuery Menu plugin <https://github.com/onokumus/metismenu>

Metismenu is use to implement side-bar menu. It will allow admins to easily access functions in the system.

The screenshot shows a sidebar menu on a web page. At the top, it says "NSBMRAS". Below that is a list of menu items: "Dashboard", "Lecturers", "Instructors", "Batches", "Modules", "Lecture Halls", "Labs", "Time Table", and "Lab Allocation". The "Time Table" item has a dropdown arrow next to it, indicating it is expanded. Under "Time Table", there are two more items: "Lab Allocation" and "Lecture Allowcation".



## 9. Templates

Open source startmin bootstrap base dashboard template

<https://github.com/secondtruth/startmin>

I designed a class diagram for the proposed system. I listed down what are the attributes and what are the behaviors in each classes and designed it.

When I developing NSBM Resource Allocation System with my colleges I learned lot of new things and it was a great experience. What I learned in this period are listed below.

1. How to use bootstrap grid system to make responsive web pages.

Bootstrap grid system is dividing screens into 12 segments. Then we can access them using <div> tags.

### Large screens

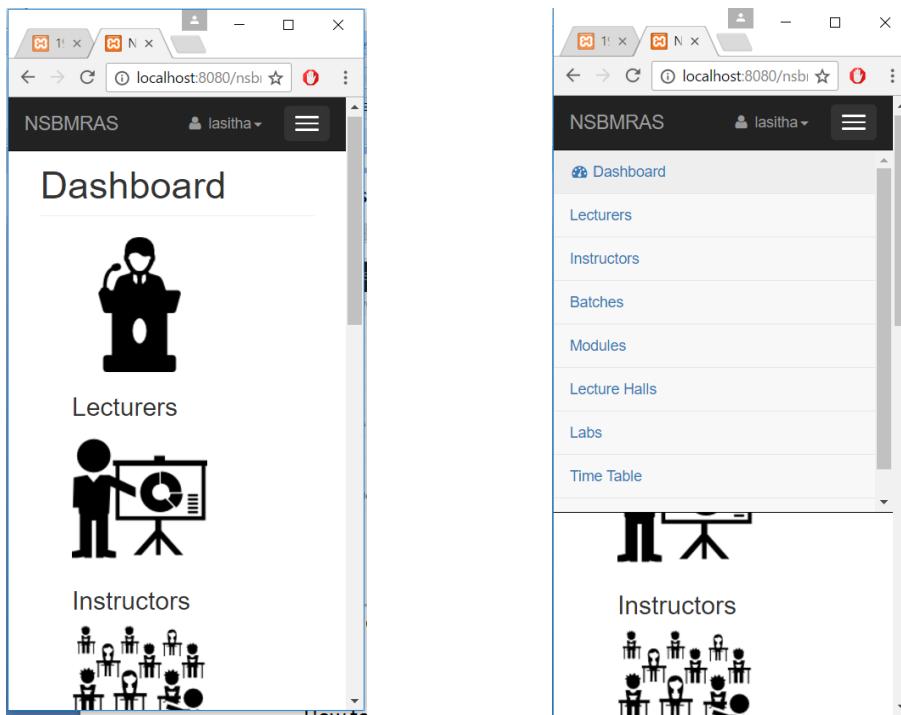
The screenshot shows a web browser window with the URL [localhost:8080/nsbmras/index.php](http://localhost:8080/nsbmras/index.php). The page title is "NSBMRAS". On the left, there is a vertical navigation sidebar with the following menu items: Dashboard, Lecturers, Instructors, Batches, Modules, Lecture Halls, Labs, Time Table, and Time Table. The "Dashboard" item is currently selected. The main content area is titled "Dashboard" and contains eight cards arranged in a 2x4 grid. Each card has an icon and a label:

Category	Icon	Label
Lecturers	Icon of a person at a podium	Lecturers
Instructors	Icon of a person holding a tablet	Instructors
Batches	Icon of people in a classroom	Batches
Modules	Icon of an open book	Modules
Lecture Halls	Icon of a person at a whiteboard with a grid of dots below	Lecture Halls
Labs	Icon of two computer monitors	Labs
Lab Allocation	Icon of a person at a desk with a computer monitor and a calendar	Lab Allocation
Lecture Allocation	Icon of a person at a whiteboard with a grid of dots below	Lecture Allocation

This is how user interface is displaying in large screens. It shows full navigation bar and full side bar.



### Small screens



This is how it displaying in small screen sizes. Screen size is adjusting automatically according to device screen size and it hide side-bar menu and it compress width of the user interface.

And also I learned about,

2. How API works.
3. How to connect to MySQL database in PHP.
4. How to insert update delete SQL records using PHP language.
5. Display SQL data inside html tags using PHP (ex- table data).



Index no: 10569217

Name : Chirath Perera

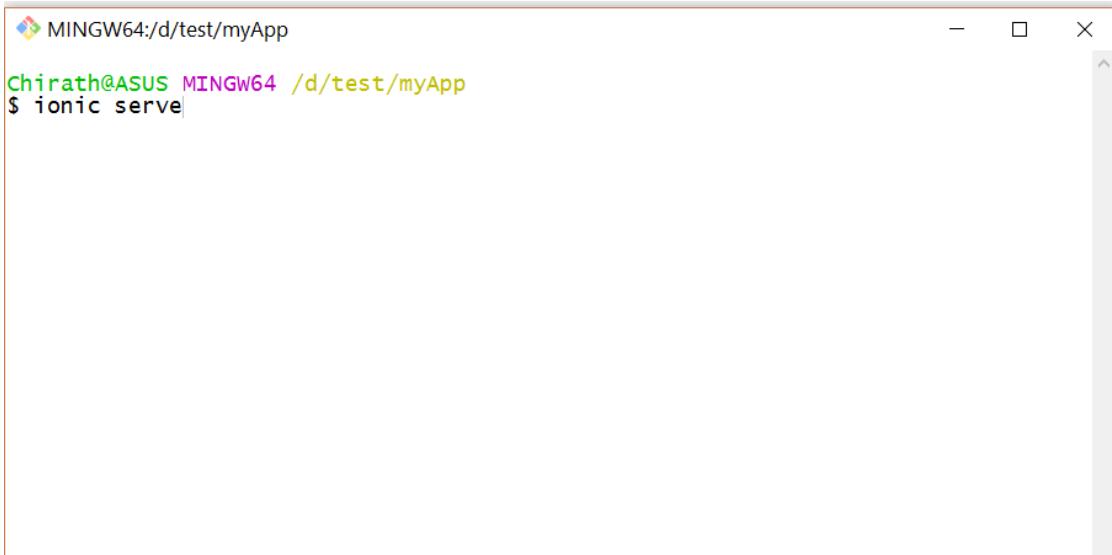
### **IONIC Mobile Application User Interface**

My contribution to this project is to develop a mobile application user interface to a centralized database. Therefore, I used a modern mobile development language called IONIC. This application is viewed by students.

IONIC is a front-end SDK for creating cross-platform mobile applications. The components of IONIC are JavaScript (Apache Cordova), Angular JS. Ionic provides tools and services for developing hybrid mobile application using Web technologies such as CSS, HTML5 and Sass. Those are the front end developing languages.

### **Procedure for developing the IONIC Mobile Application User Interface**

First I installed IONIC for my laptop using command prompt. Then I run my application using command prompt.



The screenshot shows a Windows command prompt window titled 'MINGW64:/d/test/myApp'. The command 'Chirath@ASUS MINGW64 /d/test/myApp \$ ionic serve' is visible at the bottom of the window, with the cursor positioned after the word 'serve'.



Then I used JSON to view the data from database in the mobile application.

reddidata.ts - MyApp - Visual Studio Code

```
File Edit Selection View Go Debug Help
EXPLORER index.html reddidata.ts home.ts app.module.ts
OPEN EDITORS MYAPP
app
  app.component.ts
  app.html
  app.module.ts
  app.scss
  mains
  assets
  pages
    about
    contact
  home
    home.html
    home.scss
    home.ts
  tabs
  providers
    reddidata.ts
  theme
  declarations.d.ts
  index.html
  manifest.json
  service-worker.js
  templates
  www
  assets
  build
    main.css
    main.css.map
    main.js
    main.js.map
    polyfills.js
    sw-toolbox.js
    gitkeep
```

```
1 import { Injectable } from '@angular/core';
2 import { Http } from '@angular/http';
3 import 'rxjs/add/operator/map';
4
5 /**
6   Generated class for the Redditdata provider.
7
8   See https://angular.io/docs/ts/latest/guide/dependency-injection.html
9   for more info on providers and Angular 2 DI.
10 */
11 @Injectable()
12 export class Redditdata {
13   constructor(public http: Http) {
14     console.log('Hello Redditdata Provider');
15   }
16
17   /**
18    * Returns the data from the local database
19    */
20   getLocalData(){
21     this.http.get('/assets/data/redditData.json').map(res =>res.json()).subscribe(data => {console.log(data);
22   });
23 }
24
25
26 }
```

home.ts - MyApp - Visual Studio Code

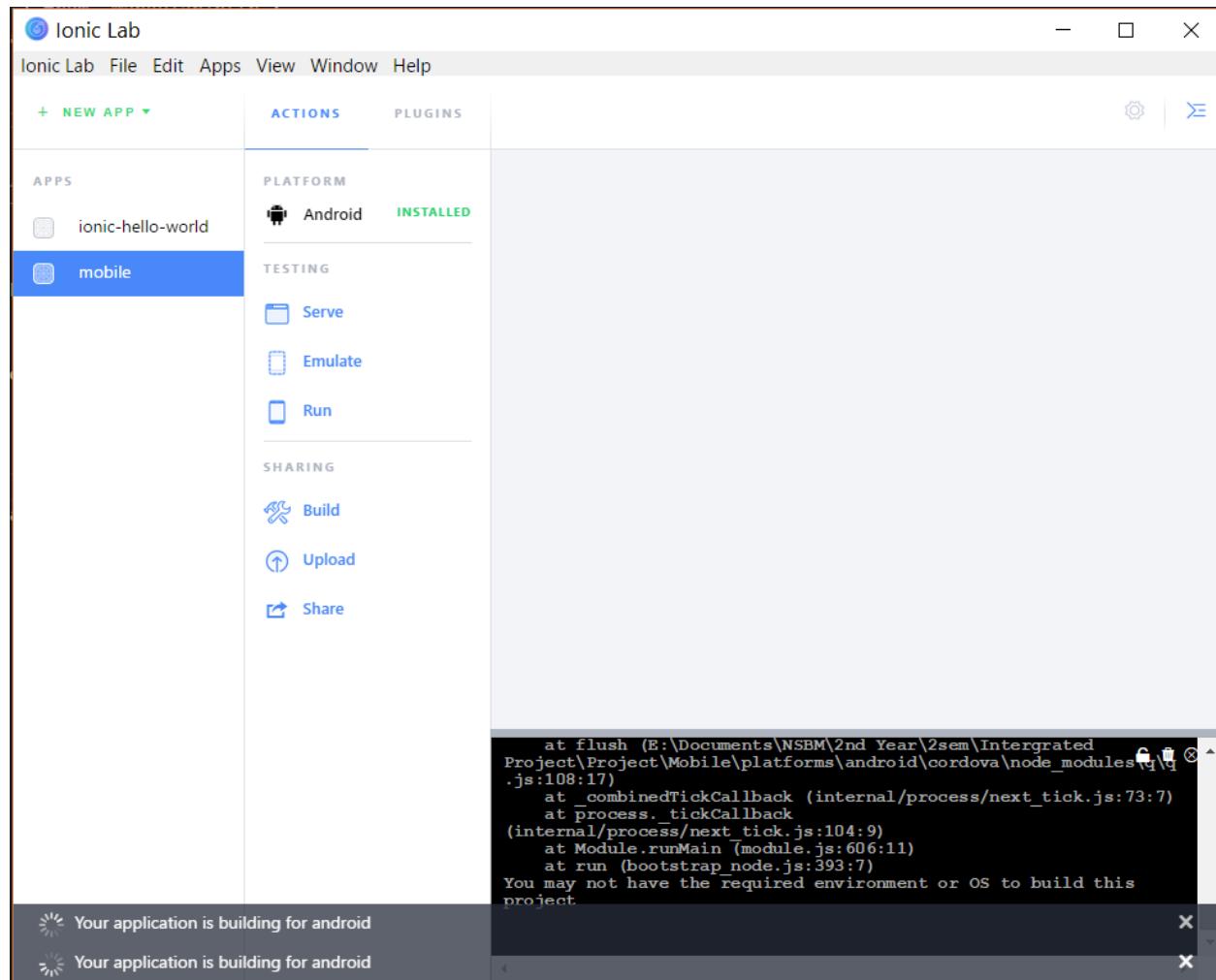
```
File Edit Selection View Go Debug Help
EXPLORER index.html reddidata.ts home.ts app.module.ts
OPEN EDITORS MYAPP
plugins
resources
src
  app
    app.component.ts
    app.html
    app.module.ts
    app.scss
    main.ts
  assets
  pages
    about
    contact
  home
    home.html
    home.scss
    home.ts
  tabs
  providers
    reddidata.ts
  theme
  declarations.d.ts
  index.html
  manifest.json
  service-worker.js
  templates
  www
  assets
  build
    main.css
    main.css.map
    main.js
    main.js.map
```

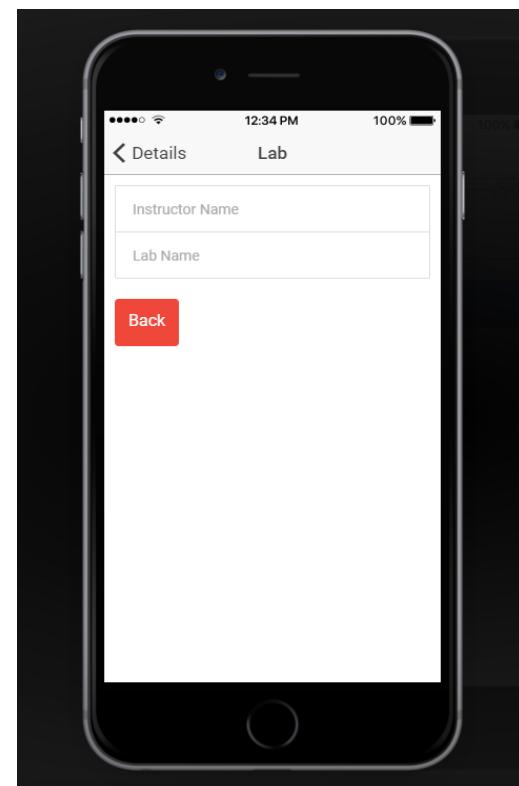
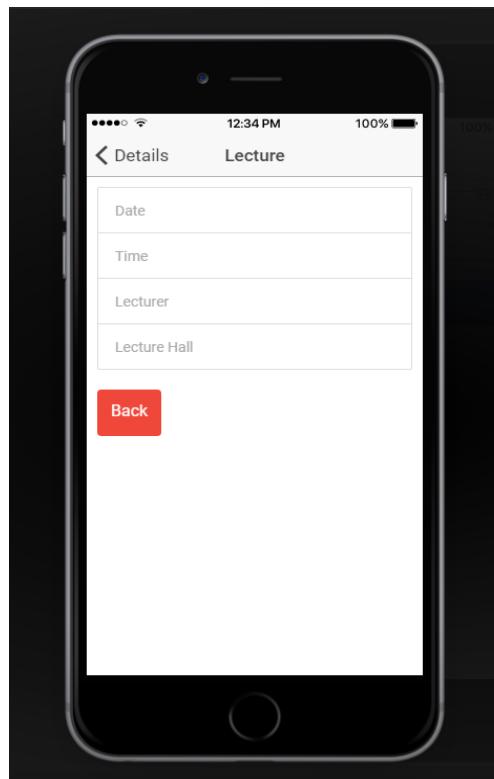
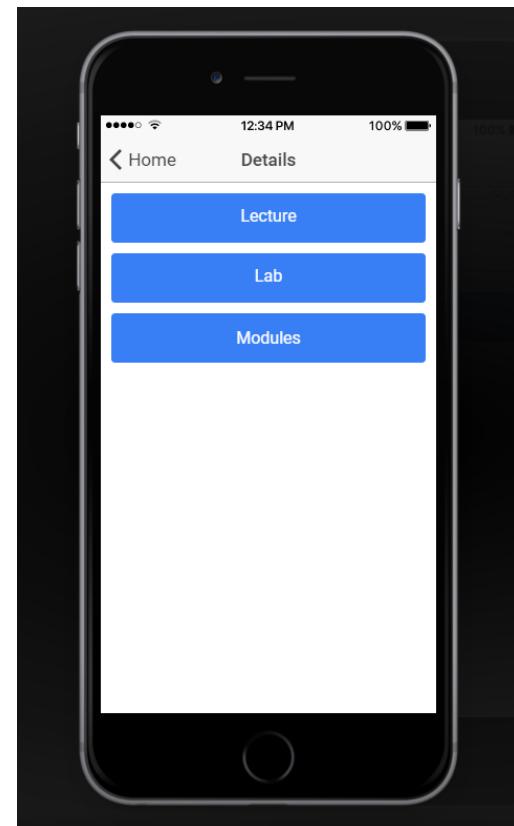
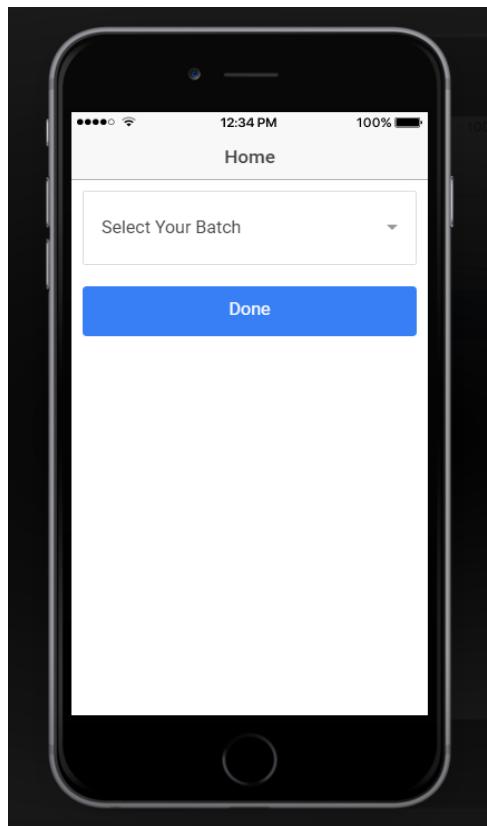
```
1 import { Component } from '@angular/core';
2 import { NavController } from 'ionic-angular';
3 import { Redditdata } from '../../providers/reddidata';
4
5 @Component({
6   selector: 'page-home',
7   templateUrl: 'home.html'
8 })
9 export class HomePage {
10   newsData: any;
11   loading: any;
12
13   constructor(public navCtrl: NavController, private redditService:Redditdata) {
14
15   }
16
17   ionViewDidLoad() {
18     this.redditService.getLocalData();
19   }
20
21   ionViewDidEnter() {
22     []
23   }
24
25
26 }
```

But I couldn't get data using this JSON encoding.



Then I used creator IONIC tool and IONIC lab for develop the IONIC mobile application. When using that tools, I planned how to create components which is used in the mobile application such as buttons, text area, colors etc. Sometimes I used IONIC Book guide to create. When code the ionic once then it's run all mobile devices.





I got knowledge about this project is how to develop a mobile application according to a centralized database, how to use JSON encoding to retrieves the data, what API use for our project and how to use it.

## References

<https://creator.ionic.io/app/designer/f8e4c3a17a6a>

<http://ionicframework.com/getting-started/>

<https://codedump.io/share/Vclo2HTdSIJE/1/ionic-read-a-local-json-file-with-cordovafile>



Index no: 10569058

Name : Wijesekara R W K A I Chathurika

### Design UML diagrams, Database and Documentation

In this assignment mainly my part go through Functional specification and technical specifications, database and documentation.

Creating usecase, Entity Relations diagram and Data Flow Diagram I got an idea for what we design.

Firstly, as our project plan I designed usecase diagram for the system. So in usecase there are two actors like Admin and Student. In web application admin has full authority to access to the web site. Admin can do hall allocation, timetable allocation, cancel allocations and edit modules. Student can only view timetables through mobile application. When design what are the functions for students can do, I have a doubt for whether student need to log in to the system or not. Students can view timetable through the mobile app so login to system is not necessary.

Then I helped to design Entity Relations Diagram. After identification of what are the entities, then we designed the Er diagram. While designing er we got some issues for how to apply relations and cardinalities and I have to change it several times. According to er we are designed the database using phpmyadmin. After creating tables I have to test those web and mobile applications are work with the database.

Using this username and password admin can login to the system.

The screenshot shows a phpMyAdmin interface. At the top, a query is entered: `SELECT * FROM `admin``. Below the query, there are buttons for 'Show all' (unchecked), 'Number of rows' set to 25, and a 'Filter rows' input field containing 'Search this table'. The main area displays a table with the following data:

+ Options				
<input type="button" value="←"/> <input type="button" value="→"/> <input type="button" value="▼"/> id username password				
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	1 lasitha c071dfb2142a330e8ea19181c5c05ce6

At the bottom, there are navigation icons for up, down, left, right, and search, along with buttons for 'Check all', 'With selected:', 'Edit', 'Copy', 'Delete', and 'Export'.



### Batches - Table

SELECT \* FROM `batches`

Show all | Number of rows: 25 ▾ Filter rows: Search

Sort by key: None ▾

+ Options

← T →	id	name	nostd
<input type="checkbox"/>	2	BSC-PLY-COM-15.2	200
<input type="checkbox"/>	5	BSC-PLY-COM-15.1	180

### Lecturers- Table

SELECT \* FROM `lecturers`

Show all | Number of rows: 25 ▾ Filter rows:

Sort by key: None ▾

+ Options

← T →	id	name
<input type="checkbox"/>	1	Chaminda Wijesinghe
<input type="checkbox"/>	3	Manoja Weerasinghe
<input type="checkbox"/>	4	Viraj Edirisinghe
<input type="checkbox"/>	5	Saliya Patabandi
<input type="checkbox"/>	6	Aparajitha Ariyawansa

### Instructors- Table

SELECT \* FROM `instructors`

Show all | Number of rows: 25 ▾ Filter rows: Search

Sort by key: None ▾

+ Options

← T →	ui	id	name
<input type="checkbox"/>	0	3	Ayesh Withanage
<input type="checkbox"/>	0	4	Yasith Basnayake
<input type="checkbox"/>	0	5	Kalani Samarasinghe

### Modules- Table

SELECT \* FROM `modules`

Show all | Number of rows: 25 ▾ Filter rows: Search

+ Options

← T →	id	name	mdcode
<input type="checkbox"/>	2	Computer Networks	CNET255SL

Check all    With selected:  Edit  Copy  Delete



Lechalls - Table

```
SELECT * FROM `lechalls`
```

Number of rows: 25 Filter rows: Search

+ Options

	id	name	nostd
<input type="checkbox"/>	2	LEC006	180

Check All With selected:

Number of rows: 25 Filter rows: Search

Labs- Table

```
SELECT * FROM `labs`
```

Show all Number of rows: 25 Filter

Sort by key: None

+ Options

	id	name	nostd
<input type="checkbox"/>	2	LAB002	50
<input type="checkbox"/>	3	LAB003	40

Timeslots - Table

```
SELECT * FROM `timeslots`
```

Show all Number of rows: 25 Filter

Sort by key: None

+ Options

	id	time
<input type="checkbox"/>	1	09.00AM-12.00PM
<input type="checkbox"/>	2	01.00PM-04.00PM

Lecallocation - Table

```
SELECT * FROM `lecallocation`
```

Show all Number of rows: 25 Filter rows: Search this table

Sort by key: None



## Laballocation- Table

SELECT \* FROM `laballocation`

Show all | Number of rows: 25 | Filter rows: Search this table

Sort by key: None

+ Options

	id	batch	date	timeslot	lab	module	status	groupno	instructor			
<input type="checkbox"/>	<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	1	2	2017-04-27	2	2	2	G1	4			
<input type="checkbox"/>	<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	2	2	2017-04-27	1	2	2	0	G1			3

According to the database then I was created the Data Flow Diagram. In DFD process is a Resource allocation system. Admin, student, lecture allocation and lab allocations are external entities. Then I divide lecture hall, modules, lecturer, instructor, batch, timeslot and lab as data stores.

When it comes to the documentation functional specifications describe using usecase and technical specifications are describe using UML diagrams and non-functional requirements.

In my experience about this system beside my individual part I can learnt about lot of new things. To create mobile application we used ionic and also we used Application Programming Interface to centralize database. Web application is developed using PHP, so I can improve my coding skills. During this process I can improve my IT knowledge.



Index no: 10569137

Name : Dharmagunarathna Sharan S

### **DESIGHN UML DIAGRAMS AND DATABASE, SYSTEM ANALYSIS AND TESTING.**

My task and contribution in this resource allocation system design UML diagrams and create database.

I help to design use case diagram and data flow diagram. We decide only students can view time tables. Therefore we appropriate admin and student as actors in use case diagram.

Then according to the scenario I create entity relationship diagram.

Firstly I design entities

- Admin.
- Lecturer.
- Instructor.
- Lab.
- Lechall.
- Lecallocation.
- Laballocation.
- Modules.
- Batch.
- Timeslot.

Then I create attributes for entities which applicable to our system. I use username and password because in web application admin has login to the system and use id for identify admin by uniquely. For lecturers and instructor I use id and name.id, name and no of students (nostd) use to the lechall and lab. In lab allocation and lecallocation I use id, date and status in laballocation has additional attribute groupno because in lab session students divided for particular groups. Then modules, id name and module code (mdcode) use as attributes. In batch I use id name and no of students (nostd).in time slot have id and name. All the entities id is use to identify specific entity uniquely. After that I drafting how to do relation between entities and how to use cardinalities between entities. During designing our system I have face a problem first I think student have to login access to this system. But we haven't enough time to implement that. Therefore, I recreated an suitable er and databases.

#### Assumptions

- In one lab session there only have one instructor and in one lecture there only have one lecturer.
- System has one admin.



Then I create database using Phpmyadmin.

#### Admin table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	<b>id</b>	int(11)			No	None	AUTO_INCREMENT	Change  Drop  Primary  Unique  Index  Fulltext
2	<b>username</b>	varchar(120)			No	None		Change  Drop  Primary  Unique  Index  Fulltext
3	<b>password</b>	varchar(120)			No	None		Change  Drop  Primary  Unique  Index  Fulltext

Check all With selected: Change Drop Primary Unique Index Add to central columns

#### Lecturer table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	<b>id</b>	int(11)			No	None	AUTO_INCREMENT	Change  Drop  Primary  Unique  Index  Spatial  Fulltext
2	<b>name</b>	varchar(120)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext

Check all With selected: Change Drop Primary Unique Index Add to central columns Remove from central columns

#### Instructor table

← Server: 127.0.0.1 » Database: nsbm » Table: instructors

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	<b>id</b>	int(11)			No	None	AUTO_INCREMENT	Change  Drop  Primary  Unique  Index  Spatial  Fulltext
2	<b>name</b>	varchar(120)	latin1_swedish_ci		No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext

#### Lab table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	<b>id</b>	int(11)			No	None	AUTO_INCREMENT	Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
2	<b>name</b>	varchar(50)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
3	<b>nostd</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values

Check all With selected: Change Drop Primary Unique Index Add to central columns Remove from central columns



## Lechall table

Table structure   Relation view

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	<b>id</b>	int(11)			No	None	AUTO_INCREMENT	Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values  Add to central columns
2	<b>name</b>	varchar(120)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values  Add to central columns
3	<b>nostd</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values  Add to central columns

With selected: Browse Change Drop Primary Unique Index Add to central columns Remove from central columns

## Lecallocation table

Batch table, lecturer table, lechall table, time slot table and module table has relationship with lecallocation table.

Table structure   Relation view

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	<b>id</b>	int(11)			No	None	AUTO_INCREMENT	Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
2	<b>date</b>	date			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
3	<b>timeslot</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
4	<b>batch</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
5	<b>module</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
6	<b>lecturer</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
7	<b>lechall</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
8	<b>status</b>	int(11)			No	1		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values

With selected: Browse Change Drop Primary Unique Index Add to central columns Remove from central columns

## Laballocation table

In here lab allocation table has relationship with batch table, time slot table, lab table ,and instructor table.

Table structure   Relation view

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	<b>id</b>	int(11)			No	None	AUTO_INCREMENT	Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
2	<b>batch</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
3	<b>date</b>	date			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
4	<b>timeslot</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
5	<b>lab</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
6	<b>module</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
7	<b>status</b>	int(11)			No	1		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
8	<b>groupno</b>	varchar(3)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values
9	<b>instructor</b>	int(11)			No	None		Change  Drop  Primary  Unique  Index  Spatial  Fulltext  Distinct values

With selected: Browse Change Drop Primary Unique Index Add to central columns Remove from central columns



## Modules table

The screenshot shows the 'Table structure' tab of the MySQL Workbench interface. It displays the schema for the 'modules' table with three columns: id, name, and mdcode. The 'id' column is defined as int(11) with AUTO\_INCREMENT, 'name' as varchar(120), and 'mdcode' as varchar(50). Each column has 'None' as its Null and Default values, and 'None' under Extra. The 'Action' column provides options for Change, Drop, Primary key, Unique constraint, Index creation, Spatial index, Fulltext index, and other database management actions.

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	int(11)			No	AUTO_INCREMENT		
2	name	varchar(120)			No	None		
3	mdcode	varchar(50)			No	None		

## Batch table

The screenshot shows the 'Table structure' tab of the MySQL Workbench interface. It displays the schema for the 'batch' table with three columns: id, name, and nostd. The 'id' column is defined as int(11) with AUTO\_INCREMENT, 'name' as varchar(200), and 'nostd' as int(11). Each column has 'None' as its Null and Default values, and 'None' under Extra. The 'Action' column provides options for Change, Drop, Primary key, Unique constraint, Index creation, Spatial index, Fulltext index, and other database management actions.

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	int(11)			No	AUTO_INCREMENT		
2	name	varchar(200)			No	None		
3	nostd	int(11)			No	None		

## Timeslot table

The screenshot shows the 'Table structure' tab of the MySQL Workbench interface. It displays the schema for the 'timeslot' table with two columns: id and time. The 'id' column is defined as int(11) with AUTO\_INCREMENT, and 'time' as varchar(20). Both columns have 'None' as their Null and Default values, and 'None' under Extra. The 'Action' column provides options for Change, Drop, Primary key, Unique constraint, Index creation, Spatial index, Fulltext index, and other database management actions.

Timeslot												
Actions		Structure							Privileges	Operations	Tracking	Triggers
		Browse	Structure	SQL	Search	Insert	Export	Import	Privileges	Operations	Tracking	Triggers
Table structure									Relation view			
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action				
1	id	int(11)			No	AUTO_INCREMENT						
2	time	varchar(20)			No	None						

We use centralized database to our system. Therefore web application and mobile application both take data from one database. During creating this web application and mobile application I learnt how to use a centralized database. Then I analysed functional requirements and non-functional requirements. As non-functional requirement I gathered information about how to increase usability and reliability, web application and mobile application's speed, time consuming and cost, and how to increase flexibility.

Finally I tested web application and mobile application several times to find errors and help group members to solve them.

During implementing this web application and mobile app I have experience about learning new things such as how to implement mobile app using ironic cross platform, how to use centralized data base and how to work with API. And I have to improve my knowledge about PHP programming language.

## FUTURE IMPLEMENTATION

1. In web application lab allocation and lecture allocation will generate automatically for all the semesters except the holidays.
2. Tokens using for implement the login in mobile application. Then lecturers, instructors and students have the login features.
3. Instructors can see the lab sessions through the mobile application.
4. Lecturers can see the lecture sessions through the mobile application.
5. Lecture canceling request can send by the lecturers, then admin can approve or decline that request.
6. Students don't want to select their batches because it will automatically select when students login to the application.

## CONCLUSION

The project “Resource allocation system” is designed in order to reduce the burden of maintaining bulk of records of all the resource allocations of the NSBM. Inserting, retrieving and updating the details of hall/lab allocation and modules, and time scheduling are easy when it is compared to the manual feedback and storing. Maintaining the project is also easy which can be easily understandable and less paperwork. Maintaining the details in the database is manageable. The proposed mobile application and web application would enhance the usability with a proper maintenance of university members’ lecture and lab allocation in encouraging the users to make satisfied feedbacks of such requirement.

