



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

SCSJ2203: SOFTWARE ENGINEERING

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**SYSTEM DOCUMENTATION**

REPAIR AND MAINTENANCE FOR KTDI STUDENTS

VERSION 2.0

11 JUNE 2020

SCHOOL OF COMPUTING, FACULTY OF ENGINEERING

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## Revision Page

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### a. Overview

Repair and Maintenance for KTDI Students version 2.0 describes system architectural design which includes architectural style and rationale and the component model of the system. From the component model, we can explain the relationship between the diagram and its complete functionality of the system. The second part is about data design. Data design listing out more about data description and data dictionary from other diagrams that we have been discussed before this. Lastly, we did user interface design together using suitable website for this system includes overview of user interface and its screen images.

### b. Target Audience

Target audiences in this system are for students and college management.

### c. Project Team Members

| Team Members                                       | Roles                                                             | Status    |
|----------------------------------------------------|-------------------------------------------------------------------|-----------|
| Nur Hasanah bin Sariddon<br>(B19EC0033)            | Team leader<br>5.2 Component Model<br>7. User Interface Design    | Completed |
| Muhammad Amirul Fahmi bin Noor Anim<br>(B19EC0018) | 5.1 Architectural Style and Rationale<br>7. User Interface Design | Completed |
| Mohd Anas bin Adnan<br>(B19EC0043)                 | 6.1 Data Description<br>7. User Interface Design                  | Completed |
| Nurul Najiha binti Hamdan<br>(B19EC0047)           | 6.2 Data Dictionary<br>7. User Interface Design                   | Completed |

#### d. Version Control History

| Version     | Primary Author(s)         | Description of Version                                                                                                                                  | Date Completed |
|-------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Version 1.0 | Nurul Najiha binti Hamdan | Combines the part from <1. Introduction> until <Detailed Description of components: 3.1 Complete Package Diagram><br><br>Refines and compile the report | 20/05/2020     |
|             | Mohd Anas bin Adnan       | Continue combining the part starting from <3.2 Detailed Description> until <4. Requirement Matrix>.                                                     | 20/05/2020     |
| Version 2.0 | Nurul Najiha binti Hamdan | Refining and compiling all parts of the report into one full complete report                                                                            | 11/06/2020     |

**Note:**

This System Documentation (SD) template is adapted from IEEE Recommended Practice for Software Requirements Specification (SRS) (IEEE Std. 830-1998), Software Design Descriptions (SDD) (IEEE Std. 1016-1998 1), and Software Test Documentation (IEEE Std. 829-2008) that are simplified and customized to meet the need of SCSJ2203 course at Faculty of Computing, UTM. Examples of models are from Arlow and Neustadt (2002) and other sources stated accordingly.

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## 5. System Architectural Design

### 5.1 Architecture Style and Rationale

For architecture pattern, we choose Layered Architectural style because this is the best design that fit with KTDI Repair and Maintenance System. In layered architecture, we separate user interface from business logic (domain), and business logic from data access logic.

With this architecture style, we can work on different parts of the system parallel with minimal dependencies on other parts. We also can reuse the components in the system. Layered architecture also can helps use to test the component independently on each other. Plus, different component of applications can be independently deployed, maintained, and updated on different time schedules.

### 5.2 Component Model

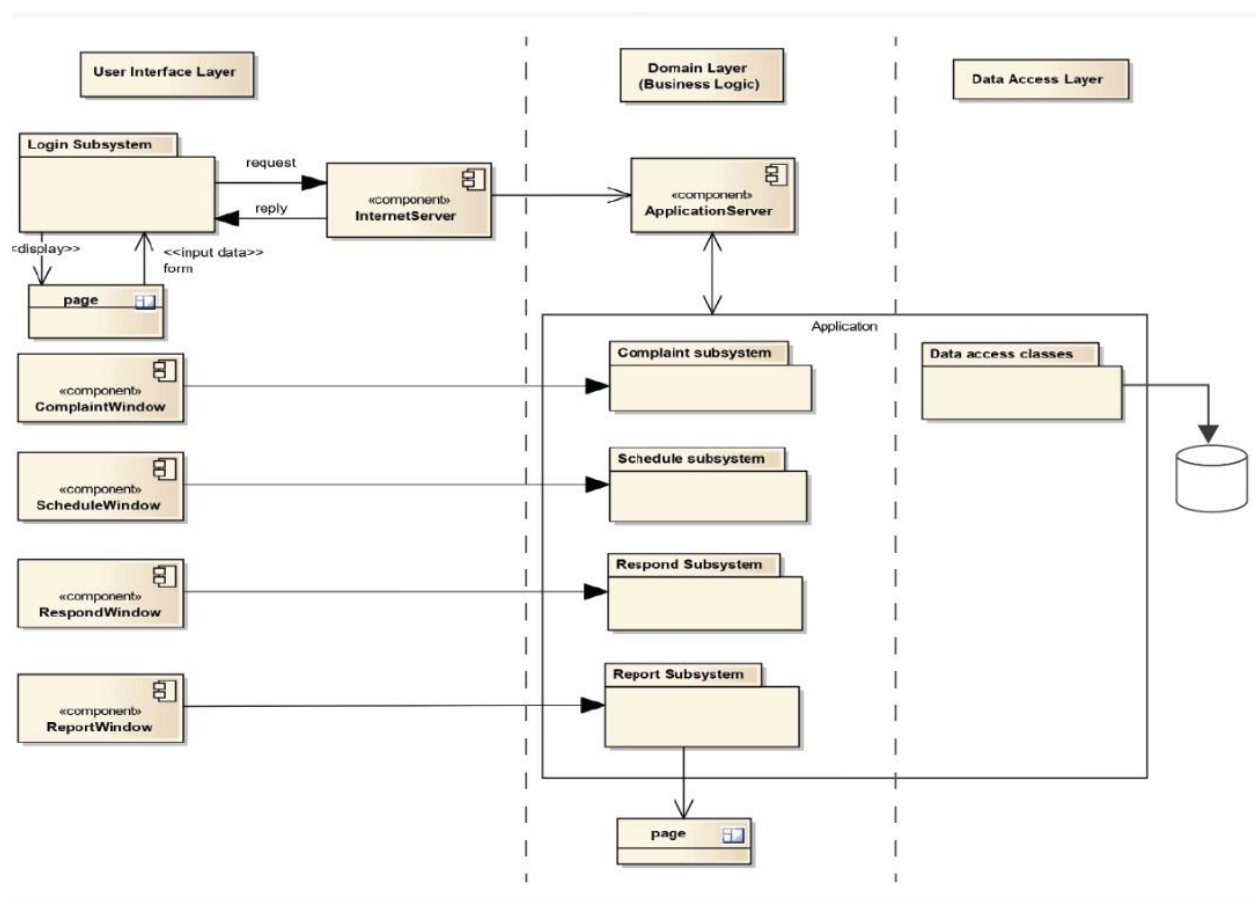


Figure 5.2.1: Component Diagram of <Repair and Maintenance for KTDI Students>

## 6. Data Design

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### 6.1 Data Description

The major data or system entities are stored into a relational database name as Repair and Maintenance of Tun Dr Ismail Collage comprises 8 entities.

| Entity Name        | Description                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Login              | It store all mutables, accessors and function required to log in as student, collage management and technician and access to system. |
| Complaint          | It store all mutables, accessors and function required to access the complaint form.                                                 |
| Schedule           | It store all mutables, accessors and function required to access the schedule management.                                            |
| Respond            | It store all mutables, accessors and function required to access the respond and send to student.                                    |
| Report             | It store all mutables, accessors and function required to access the report.                                                         |
| Student            | It store all mutables, accessors and function required to log in as student and access the system.                                   |
| College Management | It store all mutables, accessors and function required to log in as collage management and access the system.                        |
| Technician         | It store all mutables, accessors and function required to log in as technician and access the system.                                |

### 6.2 Data Dictionary

#### 6.2.1 Entity: Login

| Attribute Name | Type   | Description                     |
|----------------|--------|---------------------------------|
| MatricNum      | String | Student's matric number         |
| Password       | String | Login password for each student |

### 6.2.2 Entity: Complaint

| Attribute Name  | Type   | Description                                            |
|-----------------|--------|--------------------------------------------------------|
| ComplaintID     | String | Unique ID for complaints made                          |
| ComplaintType   | String | Fill in the types of complaints                        |
| Details         | String | Details about the complaints made                      |
| Date            | Date   | Date of complaints filed                               |
| ComplaintStatus | String | Status of complaints either it is approved or rejected |

### 6.2.3 Entity: Schedule

| Attribute Name | Type   | Description                                   |
|----------------|--------|-----------------------------------------------|
| ScheduleID     | String | Unique ID for repair and maintenance schedule |
| Date           | Date   | Date and day for the maintenance              |
| Details        | String | Details about schedule done by who and when   |
| TechnicianName | String | Technician's name for repair and maintenance  |

### 6.2.4 Entity: Response

| Attribute Name | Type      | Description                                                             |
|----------------|-----------|-------------------------------------------------------------------------|
| ComplaintList  | Complaint | Information from Complaint entity/class                                 |
| ResponseStatus | String    | Respond's status about complaints (success or error) sending to student |

### 6.2.5 Entity: Report

| Attribute Name  | Type      | Description                                                               |
|-----------------|-----------|---------------------------------------------------------------------------|
| ComplaintList[] | Complaint | Complaint's list for report                                               |
| Date            | Date      | Date of report made                                                       |
| ResponseStatus  | String    | Status of respond by college management to student (accepted or rejected) |
| ScheduleList[]  | Schedule  | Schedule's list for report                                                |

|                |        |                                                     |
|----------------|--------|-----------------------------------------------------|
| Status         | String | Status of repair and maintenance done by technician |
| TechnicianName | String | Technician's name                                   |

#### 6.2.6: Entity: Student

| Attribute Name | Type   | Description                                        |
|----------------|--------|----------------------------------------------------|
| MatricNum      | String | Unique matric number for all students              |
| Name           | String | Student's name                                     |
| ICNum          | int    | Student's identification card number               |
| Course         | String | Student's course                                   |
| Semester       | int    | Student's semester                                 |
| BlockNum       | String | Student's block number                             |
| RoomNum        | String | Student's room number                              |
| PhoneNum       | int    | Student's phone number for any updates and contact |
| EmailAddress   | String | Student's email address to verify their account    |

#### 6.2.7 Entity: College Management

| Attribute Name | Type   | Description                        |
|----------------|--------|------------------------------------|
| StaffID        | String | Unique ID for all staff            |
| Name           | String | Login password for each student    |
| ICNum          | int    | Staff's identification card number |
| PhoneNum       | int    | Staff's phone number               |
| EmailAddress   | String | Staff's email address              |

### 6.2.8 Entity: Technician

| Attribute Name | Type   | Description                                                   |
|----------------|--------|---------------------------------------------------------------|
| WorkerID       | String | Unique ID for technician                                      |
| Name           | String | Technician's name                                             |
| ICNum          | int    | Technician's identification card number                       |
| SectionWork    | String | Technician's section or department for repair and maintenance |
| PhoneNum       | int    | Technician's phone number                                     |
| EmailAddress   | String | Technician's email address                                    |

## 7. User Interface Design

### 7.1 Overview of User Interface

The user interface used for our website is Graphical User Interface (GUI). GUI is a type of user interface that commonly used among users and people nowadays. It is a user-friendly because of its familiarity by users who are using smartphone, laptop or PC as they interact with GUI in their daily routine. Graphical User Interface has variety of designs which easily attract attention of users either they are beginner or expert ones. The design of website is following the most trendy and famous template as other application and website which consists of drop down list, checkboxes button and maps for direction. Icons and menus are also used as a good metaphor for them to use and recognize easily with great functions for it.

### 7.2 Screen Images

#### 7.2.1: Homepage/ Front page



Figure 7.2.1.1: The header in front page

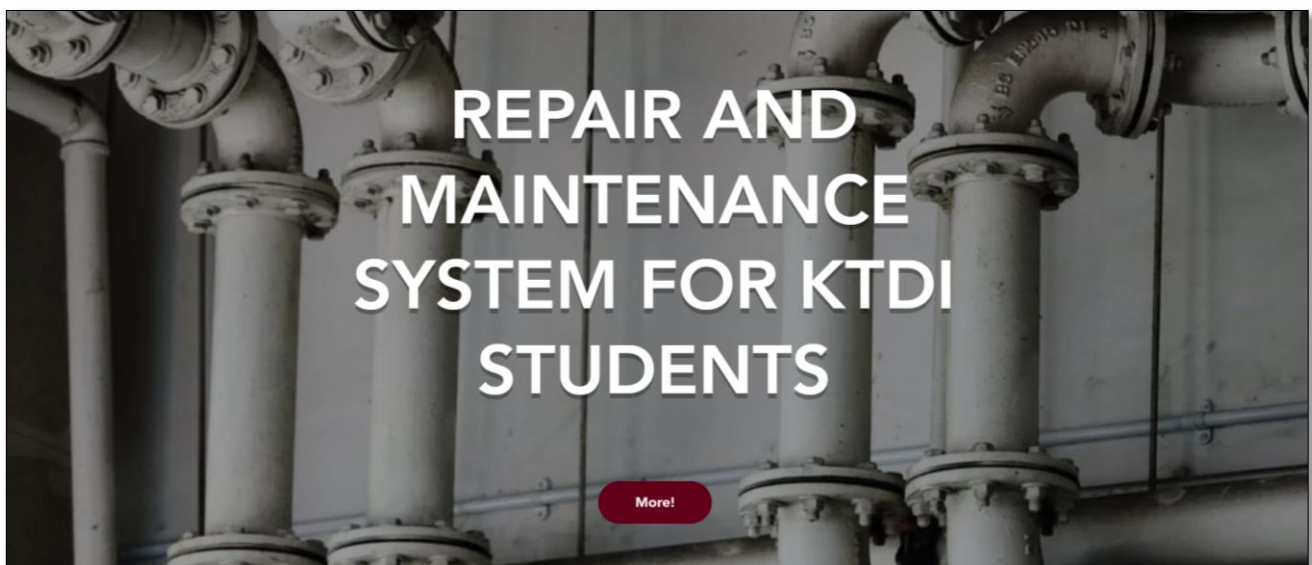


Figure 7.2.1.2: Homepage with “More!” button

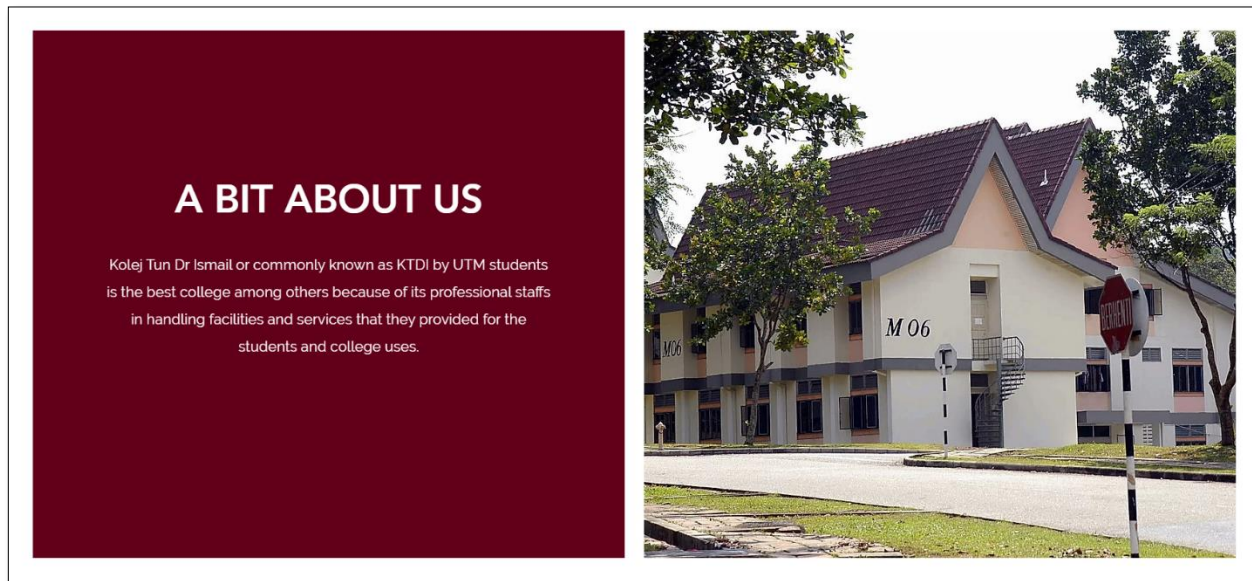


Figure 7.2.1.3: Short description column

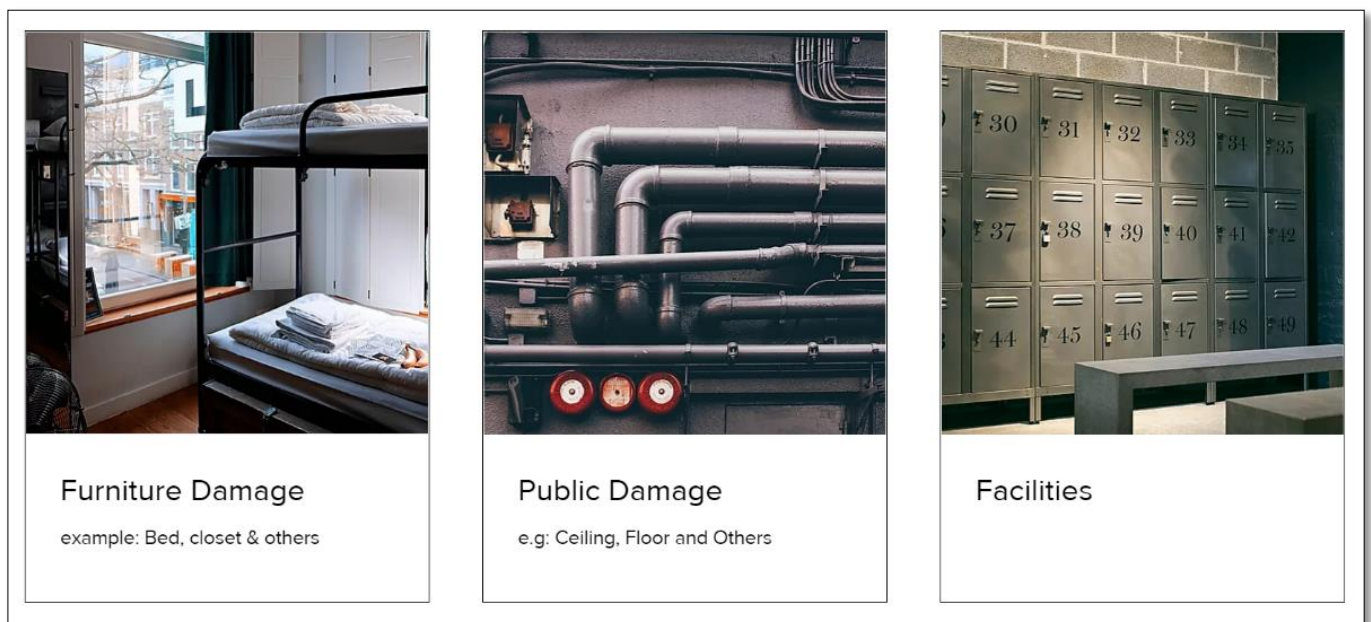


Figure 7.2.1.4: Services columns (Furniture damage, public damage and facilities)

## FIND US!

Blok M01, Kolej Tun Dr Ismail,  
Universiti Teknologi Malaysia,  
Skudai, 80990, Johor Bahru, Johor

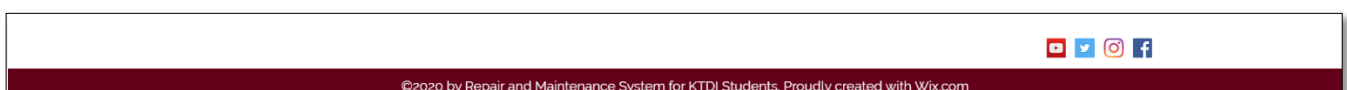
savvytech80@gmail.com

Submit

7.2.1.5: Contact Us form and Address column with email address of the website

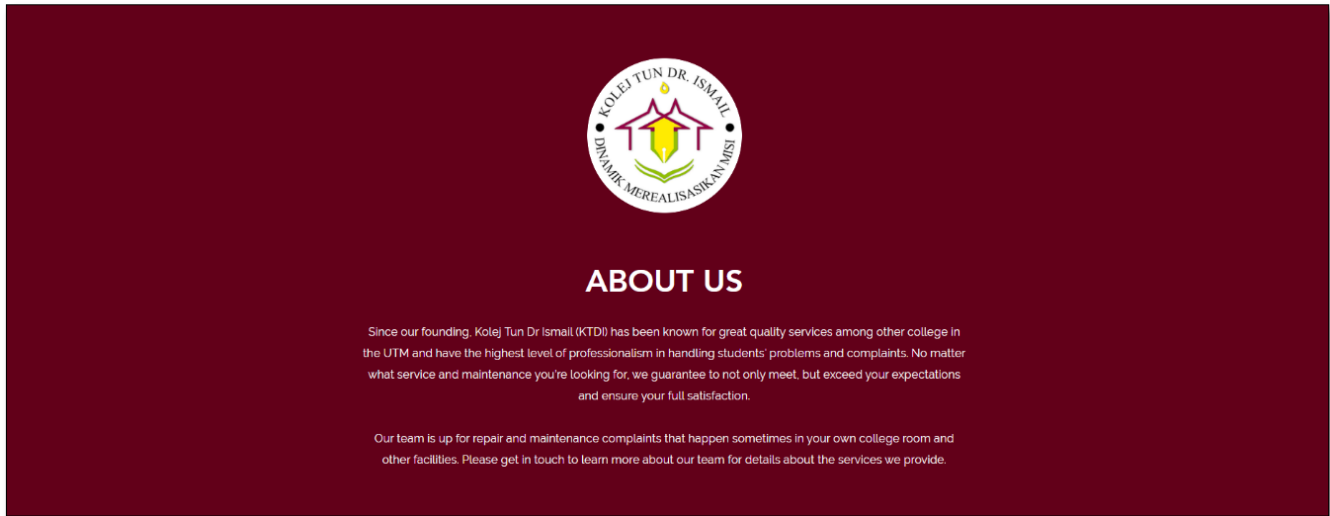


7.2.1.6: Map of KTDI college in the UTMJB



7.2.1.7: KTDI social media platforms

## 7.2.2: About Us page



### 7.2.2.1: About us full description

## 7.2.3: Complaint page: Plumbing subpage

**Public Damage Complaint Form**

|                                          |                                                                  |
|------------------------------------------|------------------------------------------------------------------|
| <input type="text" value="First Name"/>  | <input type="text" value="Last Name"/>                           |
| <input type="text" value="Email"/>       | <input type="text" value="Phone"/>                               |
| <input type="text" value="Room Number"/> | <input data-bbox="810 1317 1023 1357" type="text" value="Blok"/> |

Level: \*

- ☐ First Floor
- ☐ Second Floor
- ☐ Third Floor
- ☐ Forth Floor
- ☐ Fifth Floor

Figure 7.2.3.1: Example of add complaints form

#### 7.2.4: Schedule page

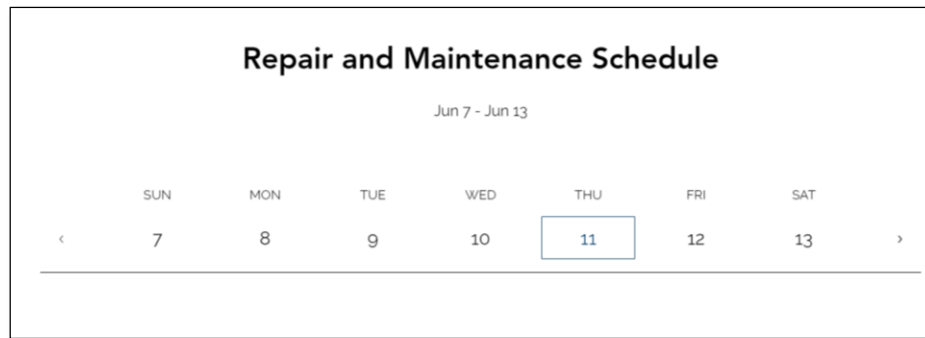


Figure 7.2.4.1: Schedule after filing complaints

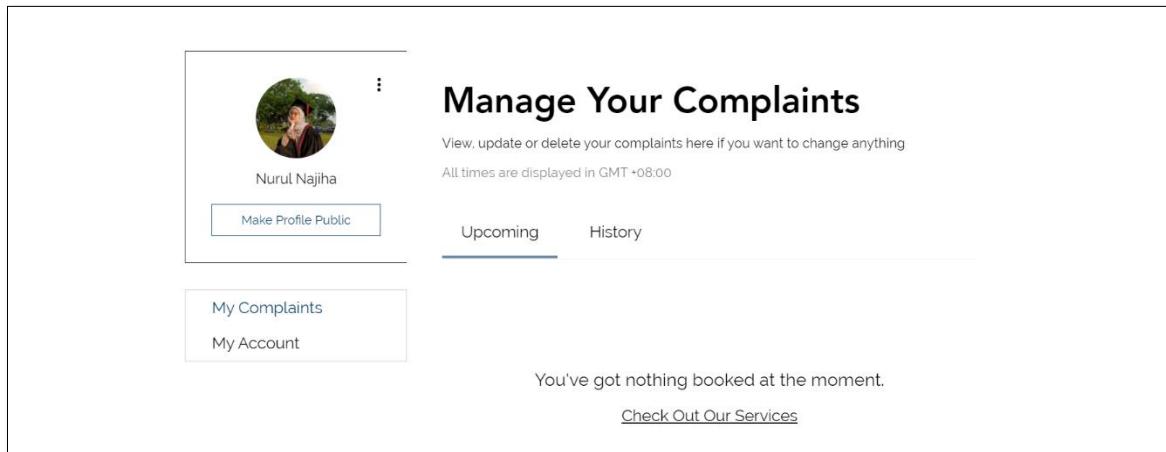
#### 7.2.5: Login page

The "Sign Up" form includes a close button (X) in the top right corner. Below the title "Sign Up" is the text "Already a member? Log In". There are three sign-up options: "Sign up with Facebook" (with Facebook icon), "Sign up with Google" (with Google icon), and "Sign up with email" (with a text input field). The word "or" is centered between the social media buttons and the email option.

The "Log In" form includes a close button (X) in the top right corner. Below the title "Log In" is the text "New to this site? Sign Up". There are three login options: "Log in with Facebook" (with Facebook icon), "Log in with Google" (with Google icon), and "Log in with Email" (with a text input field). The word "or" is centered between the social media buttons and the email option.

Figure 7.2.5.1 and Figure 7.2.5.2: Sign Up and Login page

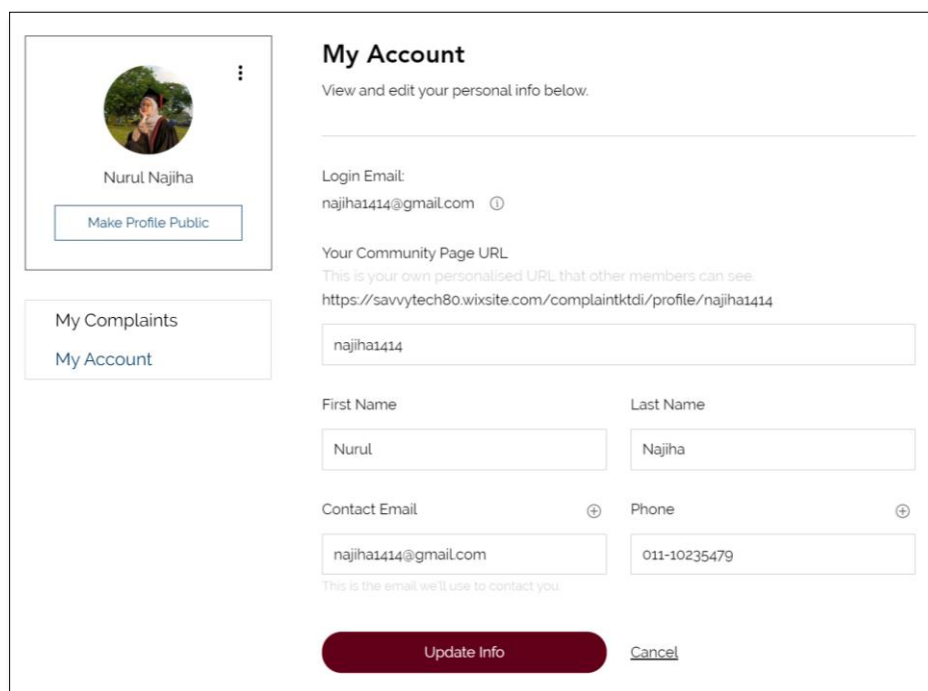
## 7.2.6: My Complaint page



The screenshot shows the 'Manage Your Complaints' page for a user named Nurul Najiha. On the left, there is a profile card with a circular profile picture, the name 'Nurul Najiha', and a 'Make Profile Public' button. Below this card are two links: 'My Complaints' and 'My Account'. The main content area has the title 'Manage Your Complaints' followed by the text 'View, update or delete your complaints here if you want to change anything' and 'All times are displayed in GMT +08:00'. There are two tabs: 'Upcoming' (which is active) and 'History'. Below the tabs, it says 'You've got nothing booked at the moment.' and provides a link 'Check Out Our Services'.

Figure 7.2.6.1: Managing my complaints

## 7.2.7: My Account page



The screenshot shows the 'My Account' page for a user named Nurul Najiha. On the left, there is a profile card with a circular profile picture, the name 'Nurul Najiha', and a 'Make Profile Public' button. Below this card are two links: 'My Complaints' and 'My Account'. The main content area has the title 'My Account' followed by the text 'View and edit your personal info below.' Below this, there are several fields for personal information: 'Login Email' (najiha1414@gmail.com), 'Your Community Page URL' (https://savvytech80.wixsite.com/complaintktdi/profile/najiha1414), 'First Name' (Nurul), 'Last Name' (Najiha), 'Contact Email' (najiha1414@gmail.com), and 'Phone' (011-10235479). At the bottom, there are two buttons: 'Update Info' and 'Cancel'.

Figure 7.2.7.1: My Account in the website