IT Helpdesk for the Ministry of Justice

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IT Helpdesk for The Ministry of Justice

A dissertation submitted for the Degree of Master of Information Technology

W.G.D.P.C. Wijesinghe
University of Colombo School of Computing
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Declaration

The thesis is my original work and has not been submitted previously for a degree at this or any other university/institute.

To the best of my knowledge it does not contain any material published or written by another person, except as acknowledged in the text.

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Mr./Ms. W.G.D.P.C. Wijesinghe under my supervision. The thesis has been prepared according to the format stipulated and is of acceptable standard.

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ABSTRACT

The Ministry of Justice has established to implement constitutional reforms to lawfully protect the people.

IT Division of the ministry of justice basically responsible for the installation and maintenance of computer network systems, maintenance IT related equipment, managing databases of the ministry and other related institutions. Furthermore, division is responsible for managing the Ministry's website and providing technical support for the meetings held at the Ministry of Justice.

'IT help desk' to the Ministry of Justice help related institutions as well as the employees of the ministry to online submit equipment repair requests, network configuration issues, databases problems real-time to the IT Division of the ministry of Justice.

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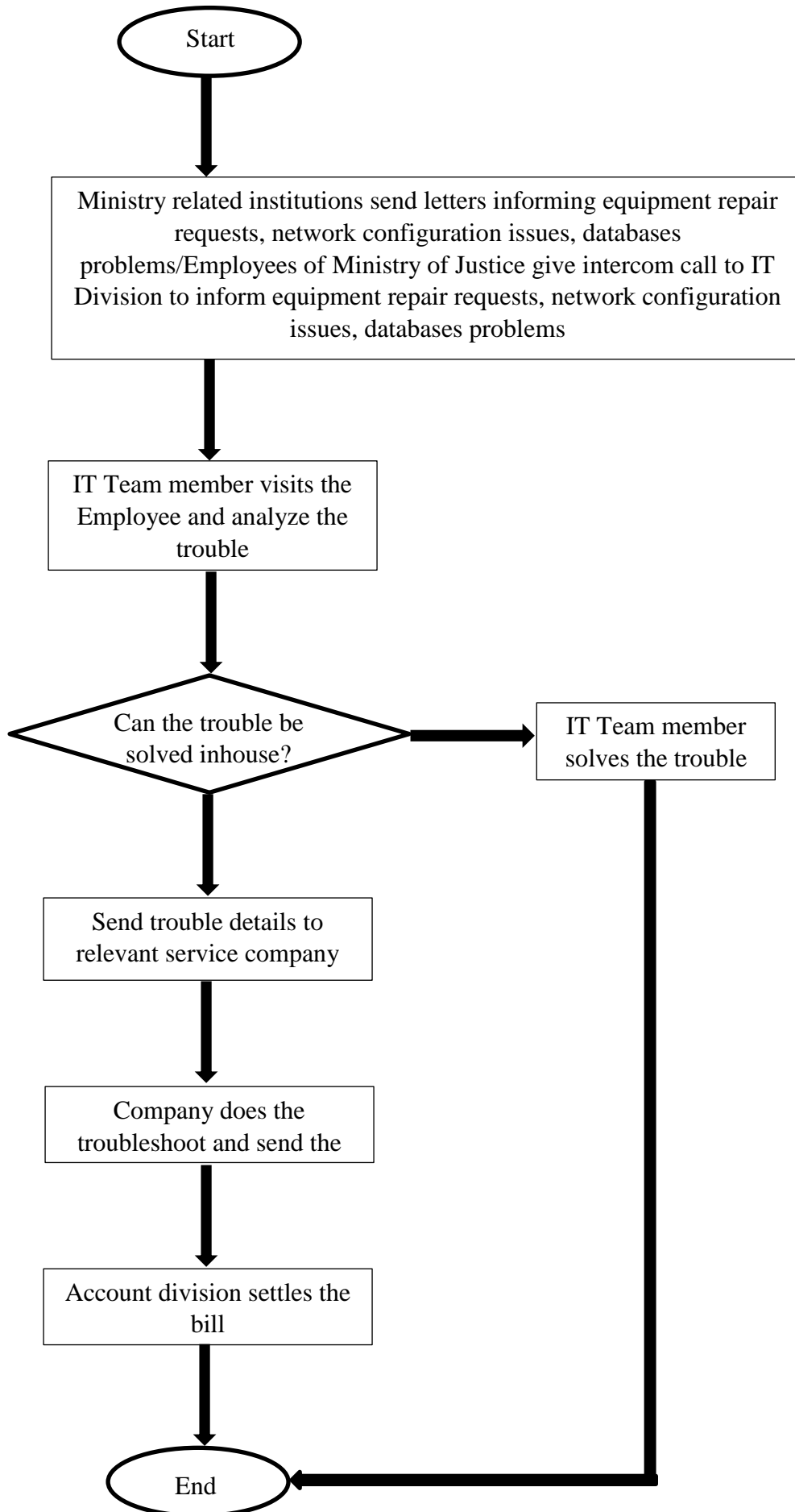
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1. INTRODUCTION

This report is an outcome of the thesis study of the Master of Information Technology program being held by University of Colombo School of Computing. Writer is the ICT officer at the Ministry of Justice Sri Lanka. The motivation for developing this 'IT help desk' is to address current issue faced by the IT unit at the Ministry of Justice.

IT Division of the ministry of justice basically responsible for the installation and maintenance of computer network systems, maintenance IT related equipment, managing databases of the ministry and other related institutions. Furthermore, division is responsible for managing the Ministry's website and providing technical support for the meetings held at the Ministry of Justice.

'IT help desk' to the Ministry of Justice help related institutions as well as the employees of the ministry to online submit equipment repair requests, network configuration issues, databases problems real-time to the IT Division of the ministry of Justice.

1.1 BACKGROUND OF THE EXISTING SYSTEM

IT division of the ministry of Justice per day receives 10-15 troubleshoot requests from ministry employees and other related institutions. Employees of ministry give call to the IT division through intercom and inform their IT related issues to the IT division. Other related institutions send letter to the IT unit of the ministry. Then a member of IT division visits to relevant institute or ministry employee and fix the problem. If troubleshoot cannot be done inhouse problem details are sent to relevant service company. Service company fixes the problem and relevant payment is done by the Account Division.

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                          │  Start  │
                          └────┬────┘
                               │
                               ▼
┌────────────────────────────────────────────────────────────────┐
│ Ministry related institutions send letters informing equipment  │
│ repair requests, network configuration issues, databases        │
│ problems/Employees of Ministry of Justice give intercom call to │
│ IT Division to inform equipment repair requests, network        │
│ configuration issues, databases problems                        │
└────────────────────────────────┬───────────────────────────────┘
                               │
                               ▼
           ┌──────────────────────────┐
           │ IT Team member visits the │
           │ Employee and analyze the  │
           │ trouble                   │
           └─────────────┬────────────┘
                         │
                         ▼
              ◇ Can the trouble be ────────────►  ┌──────────────────┐
                solved inhouse?                    │ IT Team member   │
                         │                         │ solves the trouble│
                         │                         └─────────┬────────┘
                         ▼                                   │
           ┌──────────────────────────┐                     │
           │ Send trouble details to  │                     │
           │ relevant service company │                     │
           └─────────────┬────────────┘                     │
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           ┌──────────────────────────┐                     │
           │ Company does the         │                     │
           │ troubleshoot and send the│                     │
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           ┌──────────────────────────┐                     │
           │ Account division settles │                     │
           │ the bill                 │                     │
           └─────────────┬────────────┘                     │
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                    │   End   │
                    └─────────┘
```

1.1 Work flow of existing manual system

1.2 PROJECT OVERVIEW

'IT help desk' to the Ministry of Justice help related institutions as well as the employees of the ministry to online submit equipment repair requests, network configuration issues, databases problems real-time to the IT Division of the ministry of Justice.

In-charge of the IT division can view all the received requests and assign each of them to a particular IT team member. He /She can solve the issue and mark the status to done. In-charge of the IT division can monitor the time taken. Request submitter can submit their level of satisfaction to the system.

IT division can view equipment repair history.IT team member who solves the issue can put a comment which can be helpful in future when solving similar type of issue.

If the issue will not be solved by the IT team due to some reason (e.g., unavailability of required equipment, item is under its warranty period therefore it is unnecessary do the troubleshoot and etc.) service request status is marked as 'Assign to Offsite'. Account division is able to view the requests which are assigned to off-site and assign them to relevant service company. Once the repair is done relevant payment is done online by the Accounts division.

Whenever IT related equipment is purchased to the ministry details of the device should be entered to the system by the Supply division.

Equipment vise service history reports and IT team member performance reports can be viewed by the system.

1.3 MOTIVATION

Motivation for this project are the drawbacks of the existing manual system.

Current repair requesting mechanism is severely informal. Related institutions send repairs to the ministry via a snail mail. It takes at least two three days for the process. Most of these letters contain unwanted details rather than the required once.

Employees in the ministry inform repair requests via an intercom call. Therefore, it is necessary to keep 1 IT team member at the IT unit only to answer intercom calls. He / She has to answer the phone and write down name of the employee, branch and the trouble.

Some employees just inform the trouble and end the conversation without mentioning their identity or branch, some only mention the trouble and branch. In such situations IT team face difficulties in finding where the troubled device is.

Most of these repair requests either from ministry's employees or from other institutes required details about the trouble are not mentioned. In such situations unrequired branch/related institute visits happen which is a waste of time. On the other hand, when IT team is unaware of the trouble and the device for which repair should be done, team fails to

send the most suitable team member to solve that particular trouble. Furthermore, when team is unaware of the trouble, team member who visits the branch/related institute fails to take the necessary devices and equipment (e.g., relevant software CDs, network cables and etc.) needed at the first visit.

For doing certain repairs it is necessary to know the repair history of that particular device, in this manual system It is impossible to find the device repair history unless team members can memorize it (Which is a critically unstable method).

Furthermore, in this manual system Head of the IT team, does not have a proper method to evaluate the performance of each IT team member. On the other hand, IT team members does not have proper evidence to prove the workload covered by the IT team to the management level due to unavailability of records.

1.4 OBJECTIVES
Objective of this project is to reduce the informality of current manual system.

Introducing proper monitoring system to IT team, having improved resource planning optimizing capabilities and efficiency of the IT team, reducing device repair misses, providing self-evaluation method to IT team members, providing proper evidence about the productivity of IT team to the staff officers when required are also expected

Furthermore, System will enable to prioritize highly sever repairs when there is a huge list of remaining repairs.

In addition, graphical representation of the daily, monthly and yearly productivity of each team members, and providing summary reports are expected.

1.5 BACKGROUND
This system is developed for the Ministry of Justice.

Related institutes to the Ministry of Justice are as below.

- ✓ Attorney General's Department
- ✓ Legal Draftsman's Department
- ✓ Department of Debt Conciliation Board
- ✓ Department of Government Analyst
- ✓ Office of the Registrar of the Supreme Court
- ✓ Law Commission of Sri Lanka
- ✓ Superior Courts Complex Board of Management
- ✓ Legal Aid Commission of Sri Lanka
- ✓ Mediation Boards Commission
- ✓ Council of Legal Education
- ✓ Department of Public Trustee
- ✓ Commercial Mediation Centre of Sri Lanka
- ✓ Sri Lanka International Arbitration Centre (Guarantee) Ltd.
- ✓ Office for National Unity and Reconciliation
- ✓ Office on Missing Persons
- ✓ Office for Reparations
- ✓ National Authority for The Protection of Victims of Crimes and Witnesses

Divisions inside the Ministry of Justice are as below.

- ✓ Administration Division
- ✓ Legal Division
- ✓ Reforms Division
- ✓ Development Division
- ✓ National Integration Division
- ✓ Accounts Division
- ✓ Engineering Division
- ✓ Planning Division
- ✓ Internal Audit Division
- ✓ IT Division

1.6 SCOPE OF THE PROJECT

Employee of the ministry/ Other related institutions

a. Reports the trouble of their device(laptop/desktop/printer/photocopier) to the IT team through the system. Following details should be filled.
  - I. Employee name(mandatory)
  - II. Branch(mandatory)
  - III. Designation
  - IV. Serial no of the device
  - V. Category of the device e.g., laptop, desktop etc. (mandatory)
  - VI. Trouble

In charge of the IT Team

a. Assign repair requests to IT team members
b. View performance reports generated by the system
c. View individual team members equipment repair history
d. View pending repair requests
e. Search repair request history - Head of the IT team can search the trouble shoot history of each device

IT Team member

a. View assigned equipment repair requests
b. View pending equipment repair requests
c. When the repair is done the trouble status is changed to 'Done', if repair cannot be completed onsite status set to 'assign to offsite'.
d. Search equipment repair history - IT team can search equipment repair history of each device
e. Add comments - If the trouble solved IT team member can put a comment which can be useful when similar type of trouble occurs in the future
f. View performance reports generated by the System

Director IT

    a.   View performance reports generated by the system

Accounts Division

    a.   View offsite jobs – Supply section can view the list of 'assign to offsite' troubles and assign them to relevant companies

    b.   Once the repair is done payment can be done to relevant company online

Supply Division

    a.   Add device details. Following details should be filled.

        I.   Serial no of the device
        II.   Category of the device e.g., laptop, desktop etc.
        III.   Brand of the device
        IV.   Model of the device
        V.   Purchased Date
        VI.   Warranty period
        VII. Warranty end date
        VIII. Seller (Company name)

1.7 STRUCTURE OF THE DESERTATION

This dissertation is based IT Help desk for the Ministry of Justice project.

First chapter contains the background, motivation and objectives of the proposed system. Second chapter holds system requirements (Functional and Non-functional). Third chapter covers design architecture including UML diagrams. 4th chapter encloses Management Information System (MIS) report templates. 5th, the last chapter consists of testing and evaluation details. References and appendix have been included at the end of the desertation.

2. BACKGROUND

2.1 INTRODUCTION

This chapter is about functional and nonfunctional requirement of the proposed system. Furthermore, this chapter draws attention to the previous studies or the existing similar systems and why those systems are not suitable for the expected situation. Finally related technologies are discussed.

2.2 REQUIREMENT ANALYSIS

Requirement gathering is the first step of software development life cycle. This section lists functional and non-functional requirements of the expected system.
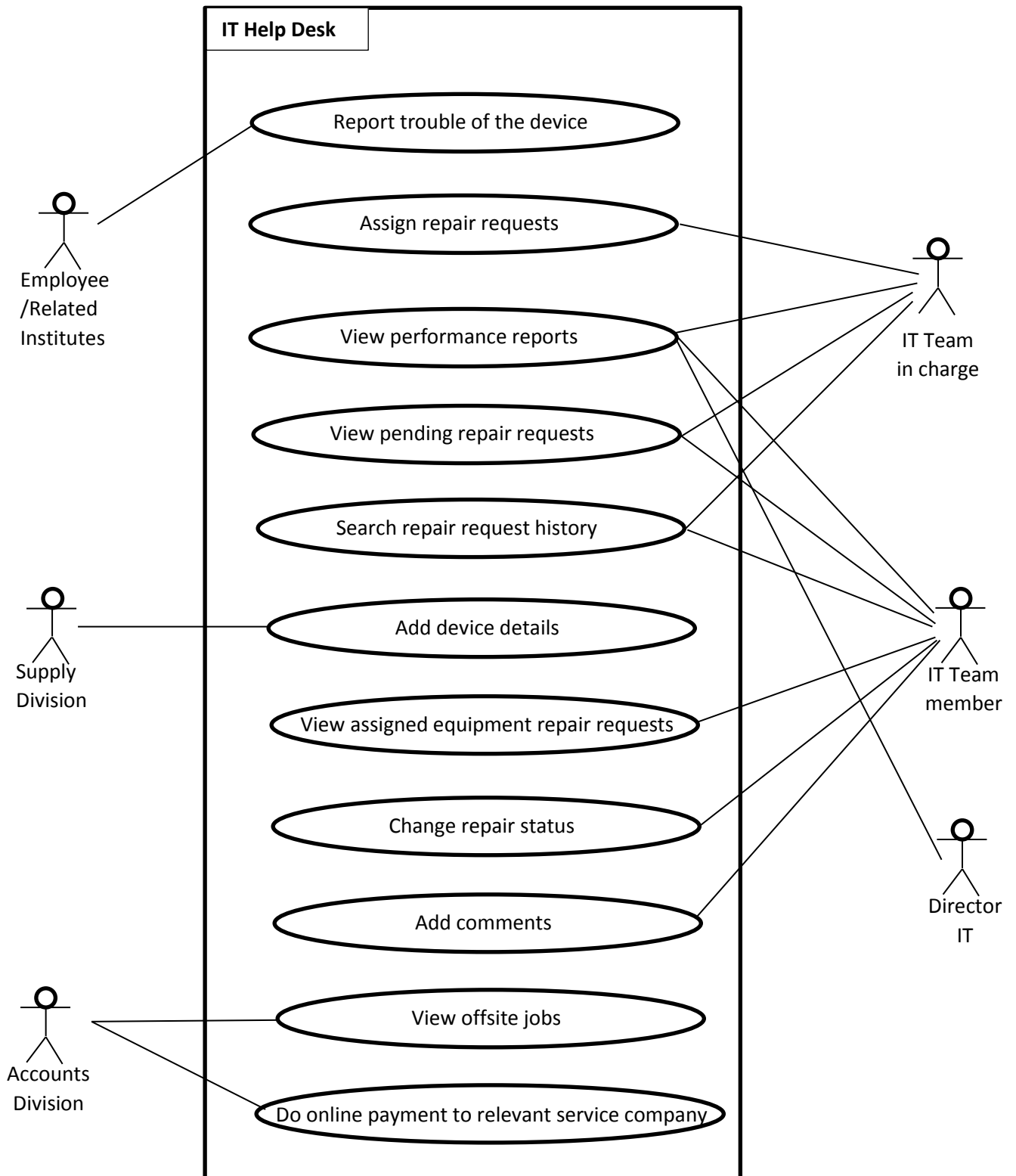
2.1 Use case diagram

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2.2.1 FUNCTIONAL REQUIREMENTS

Functional requirements of a software specify the features, capabilities, and behavior that the software must provide to fulfill its intended purpose. ("The IT Department: What They Do Vs. What Everyone Thinks They Do," n.d.) Functional requirements of the 'IT helpdesk' are as below.

- ✓ Employee should be able to submit repair request to the IT team
- ✓ IT team should be able to view submitted repair requests
- ✓ In charge of the IT team should be able to assign each submitted repair request to a particular IT team member
- ✓ IT team member should be able to change the status of submitted repair request to 'Done' once the job is done.
- ✓ If the repair cannot be done in-house IT team member should be able to change the status to 'Assign to offsite'.
- ✓ IT team should be able to view performance reports
- ✓ IT team should be able to search repair request history
- ✓ Accounts branch member should be able to view list of repair requests which are assigned to offsite
- ✓ Account branch should be able to do the payment to the relevant service company online

2.2.2 NON-FUNCTIONAL REQUIREMENTS

Non-functional requirements of a software specify the qualities or characteristics that the software must possess, in addition to its functional requirements, to be considered effective and usable. These requirements describe how well the software performs its functions and how it meets certain quality attributes such as reliability, security, usability, performance, scalability, maintainability, and compatibility. ("Non-functional requirement," 2022). Non-functional requirements of the 'IT helpdesk' are as below.

- ✓ User friendliness - As system is used even by nontechnical people system should be easy to use. Otherwise, employees have tendency to give-up on the system and go back to manual system.
- ✓ Performance – As system is used by general employee it should be developed in a way to quickly respond even in computes with basic technical requirements (E.g., 4GB RAM).
- ✓ Availability – System should be perfectly available without down times specially in office hours (8.30 A.M. to 4.30 P.M.), Otherwise IT team may get complains.
- ✓ Reliability – System should provide accurate details.
- ✓ Maintainability – As the system is for long-term use system should be easily maintainable.

2.3 REVIEW OF SIMILAR SYSTEMS
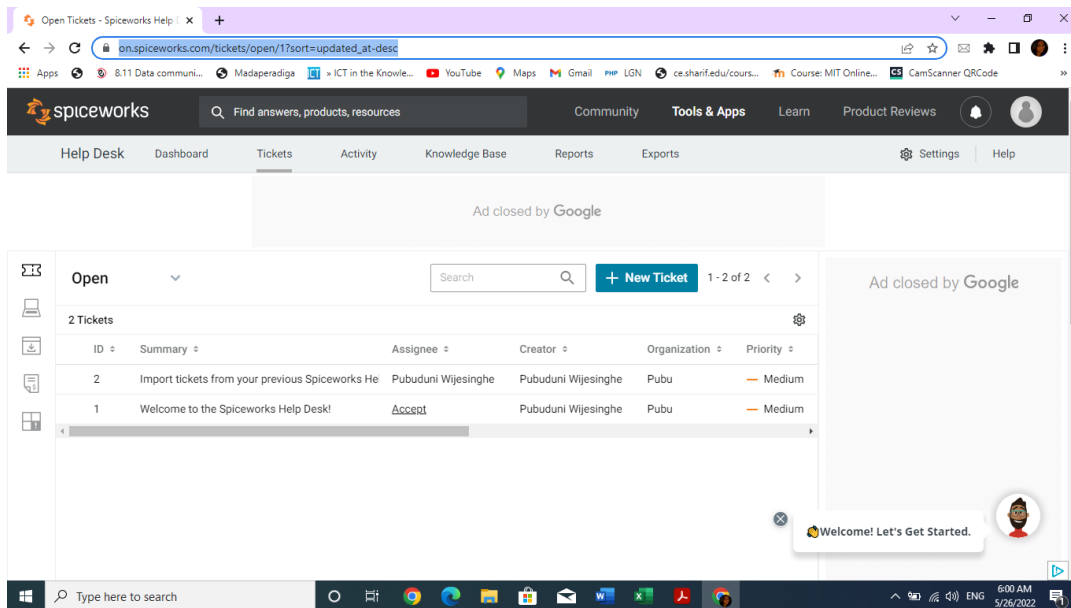
2.2 Similar system reporting interface

This is a freely available IT helpdesk system in internet. In this system user has ability to create new repair requests and assign it to another user. Dashboard facility is also available.
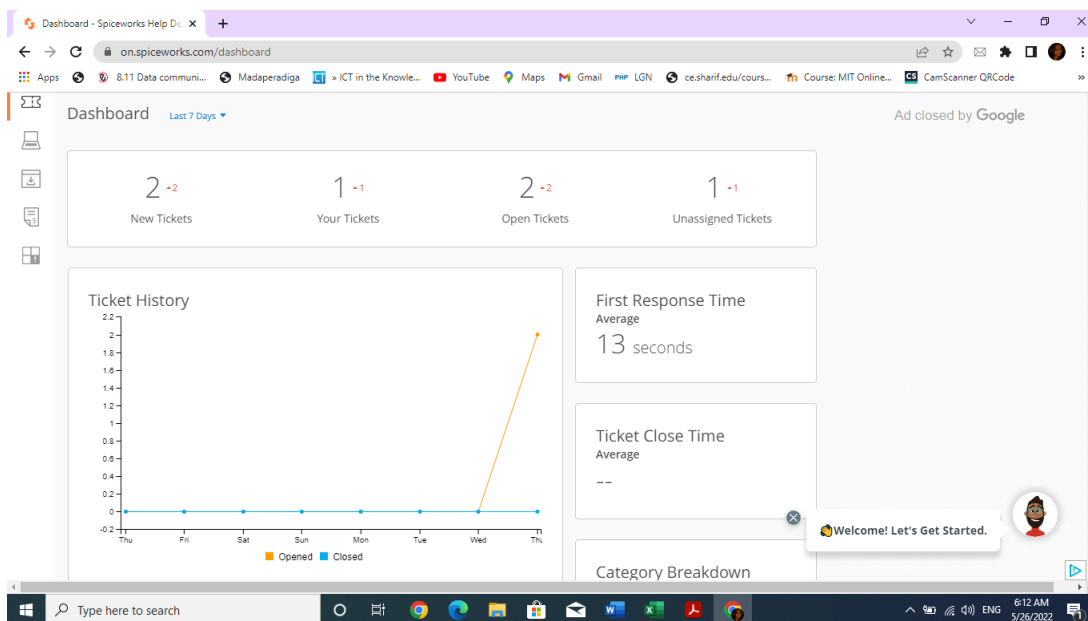
2.3 Similar system dashboard

However, system doesn't match the requirements of the ministry. There are no user levels. All the users have the same privileges. Therefore, system becomes too complicated for a normal user who uses system just to submit a repair request.("Spiceworks," n.d.)

2.4 RELATED TECHNOLOGIES
Technologies used for developing the 'IT Helpdesk' are as below.

- ✓ XAMP server
  Used to locally develop web-based system.

- ✓ MySQL
  For developing database

- ✓ PHP

  To communicate with database

- ✓ HTML

  For developing interface of the system.

- ✓ CSS

  CSS stands for Cascading Style Sheets. It is use to give system its look and layout.

- ✓ Java script

  Used for developing client-side validations.

- ✓ AJAX
  AJAX (Asynchronous JavaScript and XML) is a technique for creating fast and dynamic web pages. AJAX allows web pages to be updated asynchronously by exchanging small amounts of data with the server behind the scenes. This means that it is possible to update parts of a web page, without reloading the whole page.("Getting Started - Developer guides | MDN," n.d.)

- ✓ JQUERY

  jQuery makes it much easier to use JavaScript on websites. jQuery reduces lines of JavaScript codes to a one line.("jQuery Introduction," n.d.)

- ✓ Bootstrap

  Bootstrap is a free and opensource framework to develop front end in an attractive way easily. Core technologies used for this framework are HTML, CSS, and JavaScript. This facilitates creating responsive frontend development.

  ("What is Bootstrap? - Definition from WhatIs.com," n.d.)

3. DESIGN ARCHITECTURE

3.1 INTRODUCTION

This chapter shows the design of the proposed system. It describes related design strategies, system architecture, UML diagrams.

3.2 RELATED DESIGN STRATERGIES

Structured Design

Structured design is a conceptualization of problem into several well-organized elements of solution. It is basically concerned with the solution design. Benefit of structured design is, it gives better understanding of how the problem is being solved. Structured design also makes it simpler for designer to concentrate on the problem more accurately.

Structured design is mostly based on 'divide and conquer' strategy where a problem is broken into several small problems and each small problem is individually solved until the whole problem is solved.

The small pieces of problem are solved by means of solution modules. Structured design emphasis that these modules be well organized in order to achieve precise solution.

These modules are arranged in hierarchy. They communicate with each other. A good structured design always follows some rules for communication among multiple modules, namely –

- Cohesion - grouping of all functionally related elements.
- Coupling - communication between different modules.

A good structured design has high cohesion and low coupling arrangements.

("Software Design Strategies," n.d.)

3.3 SYSTEM ARCHITECTURE

Client-Server Architecture
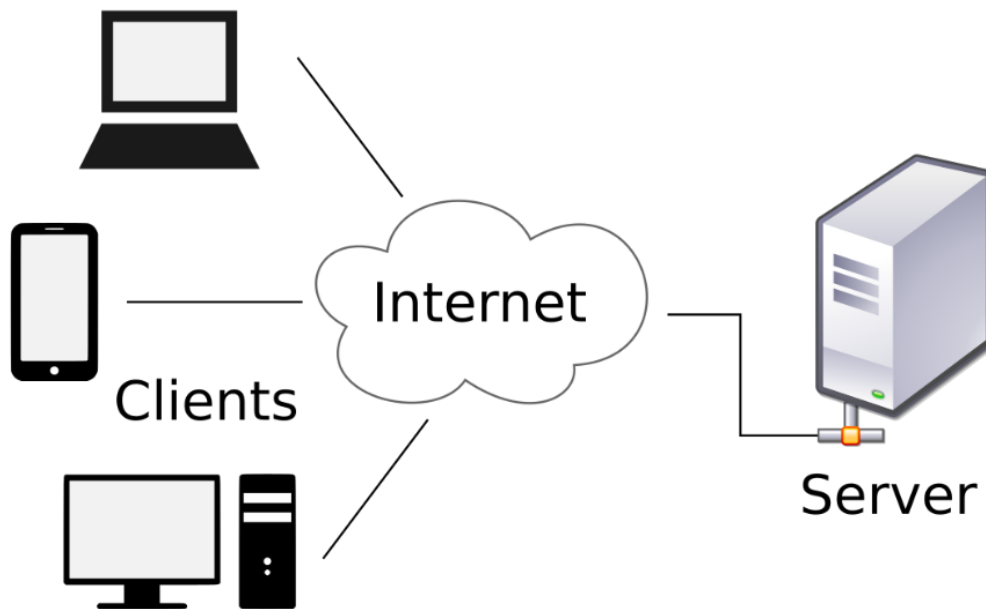
3.1 Client-server Architecture

("Client–server model," 2022)

Client-server architecture is a network architecture in which multiple clients (computing devices) request services and resources from centralized servers. In this architecture, clients and servers have distinct roles, with clients initiating requests for data or services and servers fulfilling these requests. This architecture allows for the efficient distribution of resources, processing and storage capabilities, and allows for clients to access the services and data provided by the server even when located remotely. Client-server architecture is widely used in distributed computing and is a fundamental concept in the design of many computer networks and applications, including the World Wide Web and enterprise-level business systems.("Client Server Architecture - CIO Wiki," n.d.)

3.4 UML DIAGRAMS

UML (Unified Modeling Language) is a standardized visual modeling language used to specify, visualize, and document the artifacts of software systems, including software architecture, data structures, algorithms, and business processes. UML provides a set of graphical symbols and notations that enable the representation of complex systems and relationships between software components. UML is widely used for software design and can be used to communicate design ideas, requirements, and constraints to stakeholders.

("All You Need to Know About UML Diagrams," 2018)

3.4.1 USE-CASE DIAGRAM

A use case diagram is a type of behavioral diagram in Unified Modeling Language (UML) that illustrates the relationships between actors and use cases within a system. It is used to represent the interactions between actors (external entities that interact with the system) and use cases (representing specific actions or processes that the system performs). A use case diagram provides a high-level overview of the functional requirements of a system, and is typically used during the requirements gathering and analysis phases of software development. It is a visual representation of the functional requirements of a system and can be used to communicate the functional requirements of a system to stakeholders.
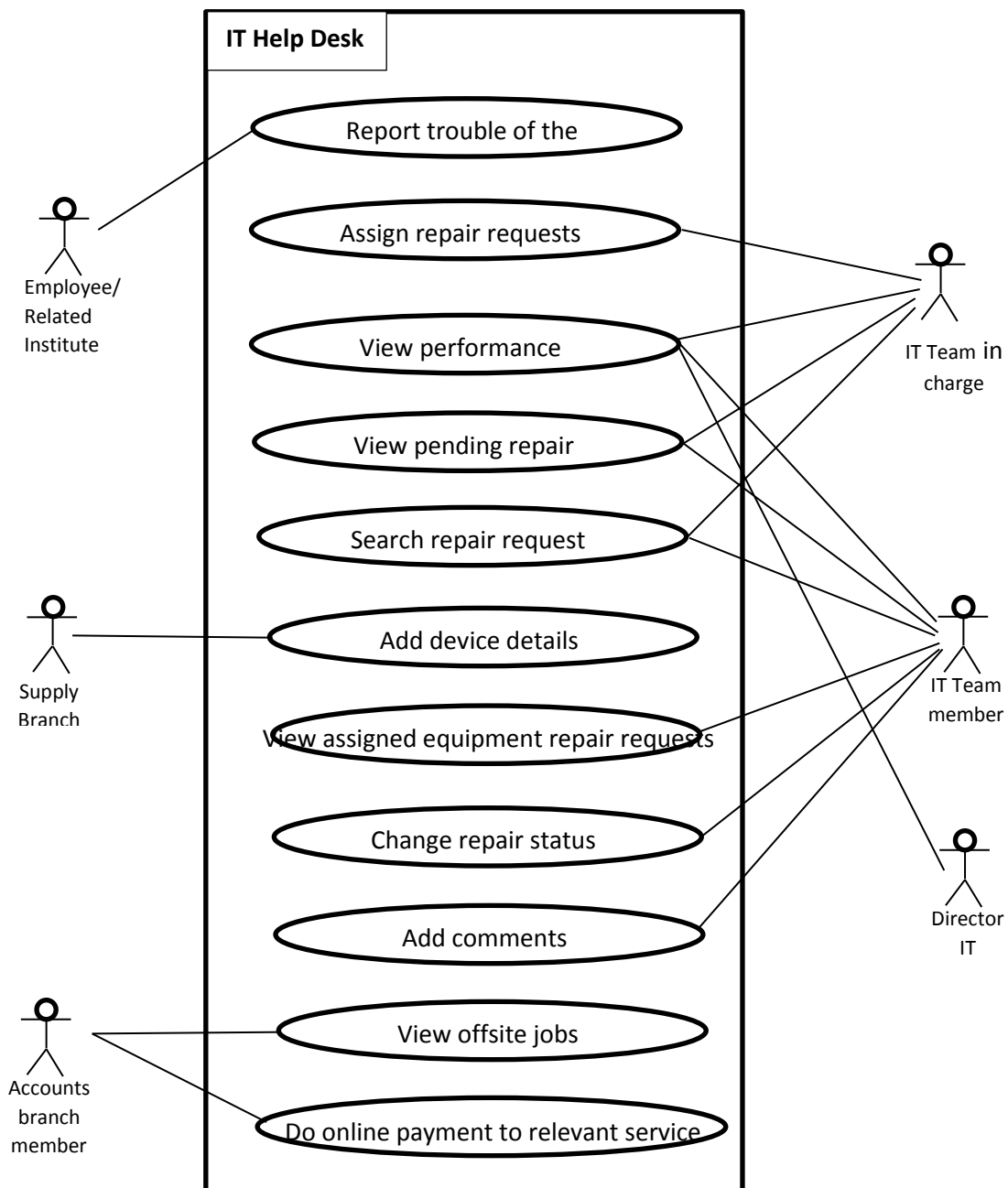
3.2 Use - case diagram

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USECASE NARRATIVES

Table 3.1 Report trouble of the device

Use-case name	Report trouble of the device
Use-case ID	01
Primary Actor	Employee/Related Institute
Precondition	1. Internet Connection
Main flow	1. Employee/related institute enter trouble details to the system. 2. Employee/related institute click on the submit button 3. Trouble details get entered to the system
Alternative flow	1. Employee/related institute enter invalid information in trouble details to the system. 2. Employee/related institute click on the submit button. 3. System prompts an error message. 4. Employee/related institute has to correct the invalid information and click on submit button. 5. Trouble details get entered to the system
Post Condition	1. IT branch can view submitted trouble details

Table 3.2 Assign repair requests

Use-case name	Assign repair requests
Use-case ID	02
Primary Actor	IT team in charge
Precondition	1. Internet Connection 2. IT team in charge should logged into the system
Main flow	1. IT team in charge view unassigned troubles 2. IT team in charge assigns troubles to IT team members
Alternative flow	
Post Condition	1. IT team member can view assigned trouble details

Table 3.3 View performance reports

Use-case name	View performance reports
Use-case ID	03
Primary Actor	Director IT, IT team in charge, IT team member
Precondition	1. Internet Connection 2. Actor should be logged into the system
Main flow	1. Actor can view reports
Alternative flow	
Post Condition	

Table 3.4 Add device details

Use-case name	Add device details
Use-case ID	04
Primary Actor	Supply branch
Precondition	1. Internet Connection 2. Actor should be logged into the system
Main flow	1. Supply branch enter new device details to the system. 2. Supply branch click on the submit button. 3. Device details get entered to the system
Alternative flow	1. Supply branch enter invalid information in device details to the system. 2. Supply branch click on the submit button. 3. System prompts an error message. 4. Supply branch has to correct the invalid information and click on submit button. 5. Device details get entered to the system
Post Condition	1. IT branch can view submitted device details

Table 3.5 View offsite jobs and do online payment to relevant service company

Use-case name	View offsite jobs and do online payment to relevant service company
Use-case ID	05
Primary Actor	Accounts branch
Precondition	1. Internet Connection 2. Actor should be logged into the system
Main flow	1. Accounts branch view offsite jobs. 2. Accounts branch do online payment to relevant service company.
Alternative flow	
Post Condition	
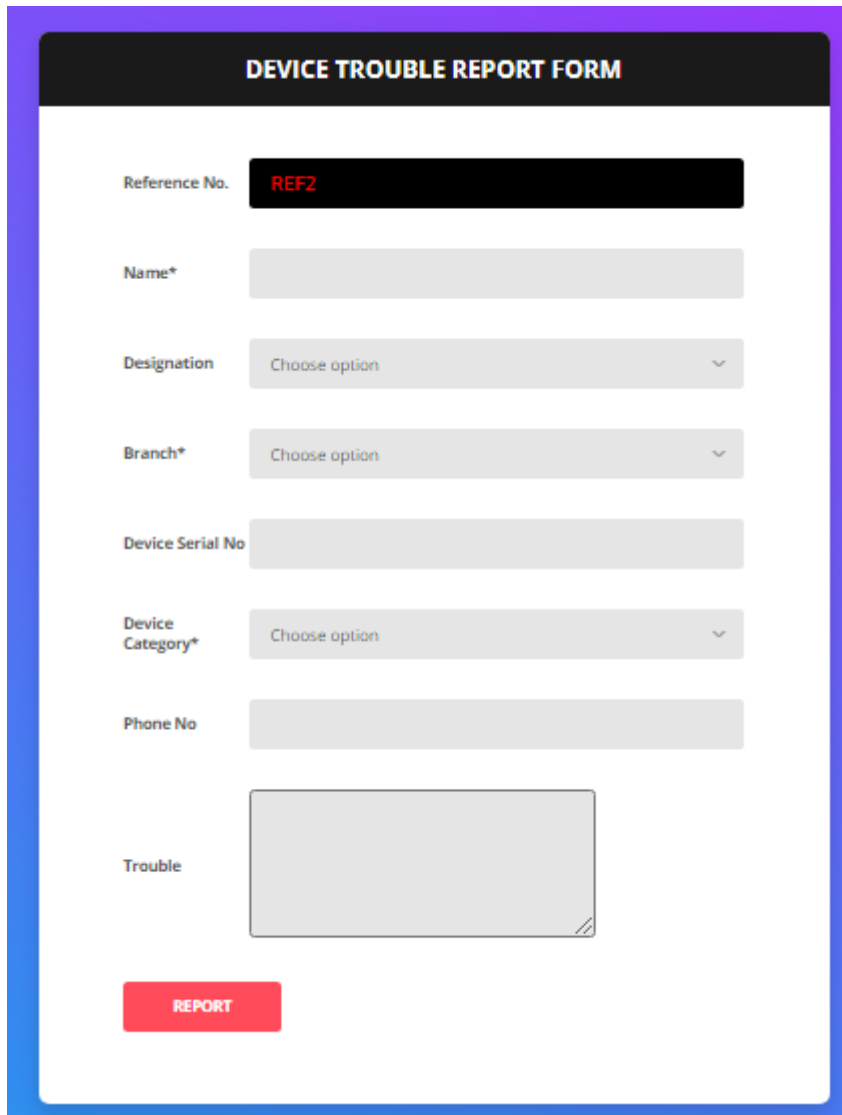
3.4.2 CLASS DIAGRAM
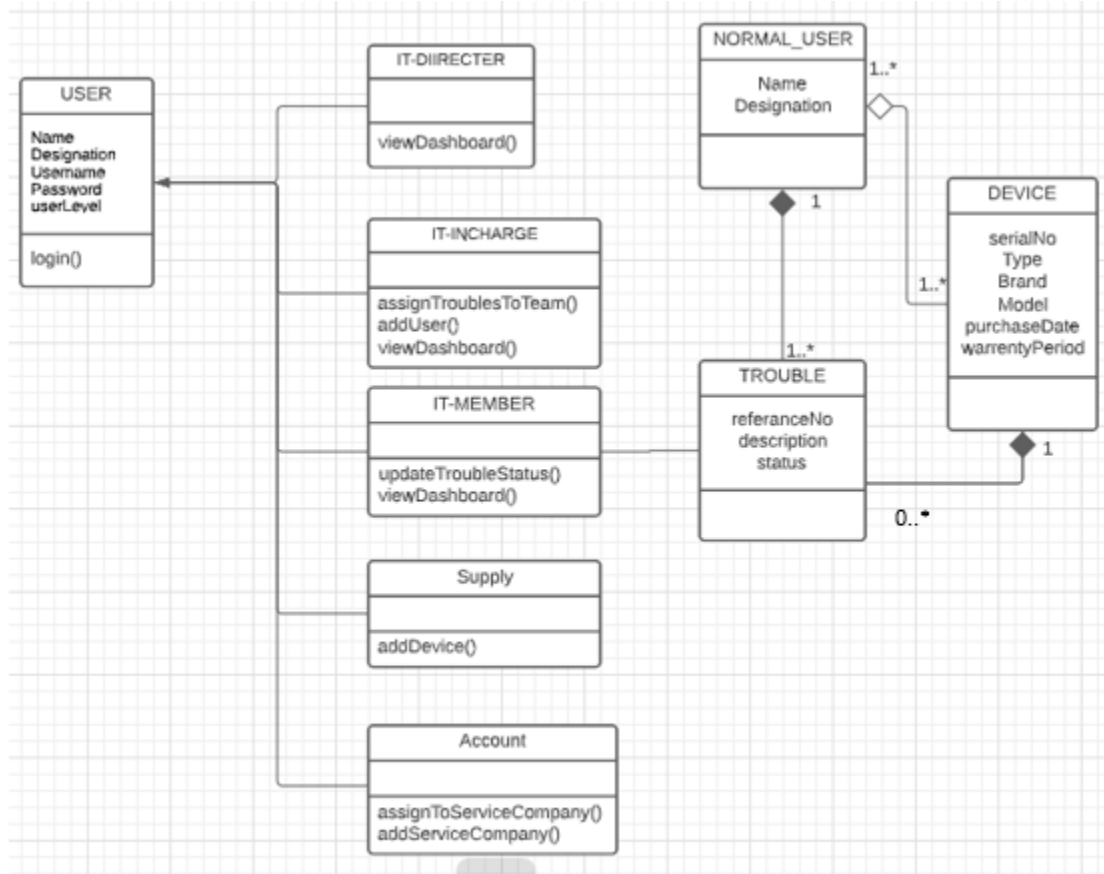
3.3 Class diagram

SAMPLE USER INTERFACES

Role: Normal User

3.4 Trouble reporting interface

Role: IT - In charge

3.5 Assign reported troubles to IT team member's interface

Role: IT – Team Member

3.6 Change status interface

Role: Accounts branch officer

3.7 Assign to service company interface

Role: Supply branch officer

3.8 Add device interface

Role: IT – Director

3.9 Dashboard Interface

3.5 ENTITY-RELATIONSHIP DIAGRAM

An ER diagram (Entity-Relationship diagram) is a graphical representation of entities and their relationships to each other, used in database design to illustrate an organization's data entities and relationships. It provides a visual representation of entities and the relationships between them, and is used to design and document database systems. An ER diagram helps to define data elements and relationships between entities, and can be used to design a database that effectively organizes and stores data.("Entity–relationship model," 2022)

4. MIS Report Templates

4.1 Entity-relationship diagram

1. Branch wise device bar chart
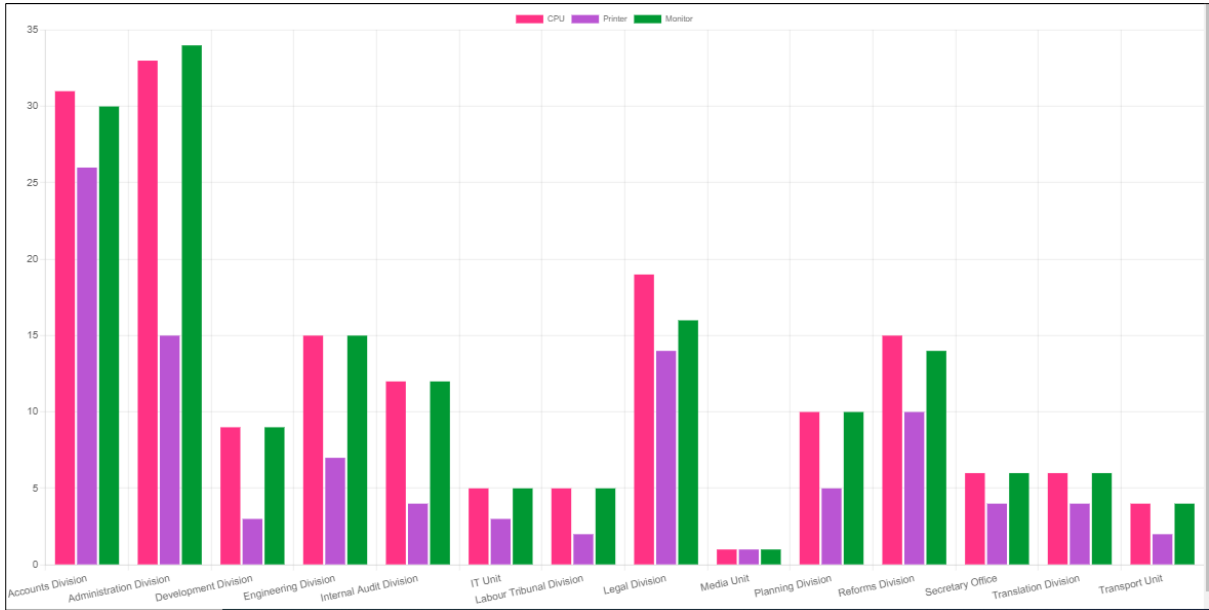
4.2 Branch wise device counts report

2. Branch wise device counts report

4.3 Branch wise device counts report

3. Trouble status summary report

Assigned	Done!!!	Assign to Service Company	Cannot Repair
2	3	2	0
View Details >	View Details >	View Details >	View Details >

🔲 Data Table

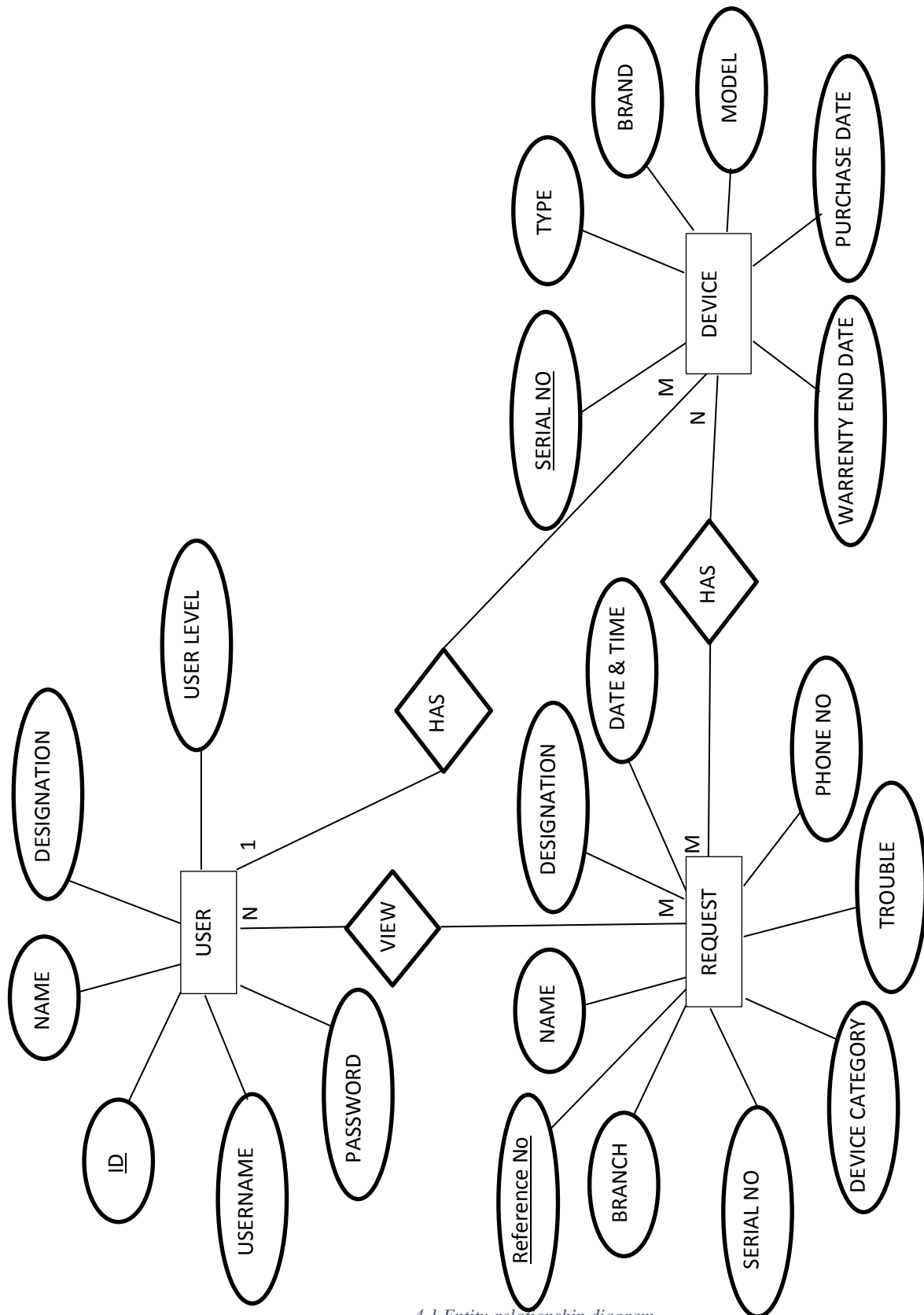Show 10 ∨ entries   Search: [   ]

Reference No.	Name	Designation	Branch	Device Serial No.	Category	Trouble	Phone No	Date	Assignee	Status
1	Wije	Senior Assistant Secretary	Administration	12356784256	Laptop	Doesn't turn on		2022-07-24 23:22:43	itm	Done!!!
2	Wije	Additional Secretary	Administration	12356784256	Laptop	Sound issue		2022-07-26 08:23:59	itm	Assign to Service Company
3	poo	Senior Assistant Secretary	Accounts		Laptop	other selected		2022-07-26 08:24:48	itm	Done!!!
4	yy		Reforms		Printer	Network issue		2022-07-26 08:27:30	itm	Done!!!
5	yyy	Senior Assistant Secretary	Legal		Laptop	Network issue	123	2022-07-26 09:48:13	Choose option	Assign to Service Company

4.4 Trouble status summary report

4. Device wise trouble & cost history reports

Device History

[Print this page]

Serial No.   [Enter serial number to get result]   [Search]

Serial No.	12356784256	Type	Laptop
Brand	HP	Model	
Purchase date	2022-08-17	Warrenty end date	2023-08-17
Seller		Branch	Administration

Reference No.	Name	Designation	Trouble	Phone No	Date	Assignee	Status
1	Wije	Senior Assistant Secretary	Doesn't turn on		2022-07-24 23:22:43	itm	Done!!!
2	Wije	Additional Secretary	Sound issue		2022-07-26 08:23:59	itm	Assign to Service Company

4.5 Device wise trouble & cost history reports

5. TESTING AND EVALUATION

5.1 RELATED TESTING TYPES

System went through lots of testing types through its development. Following are some testing types used.

- Sanity Testing
- Unit Testing
- Integration Testing
- System Testing
- Performance Testing
- Regression Testing

5.2 TEST CASES AND RESULT

Table 5.1 Test cases

Test Scenario	Test Case ID	Test Case	Test Data	Expected Result	Actual Result	Status
		Check home page navigations				
TS_1	1	Report Trouble page	Click on 'Report Trouble' link	Navigate to report trouble page	As expected	Pass
	2	Login page	Click on 'Login' link	Navigate to login page	As expected	Pass
	3	Home page	Click on home icon in 'Report Trouble' and 'Login' pages	Navigate to home page	As expected	Pass
		Check report trouble functionality				
TS_2	4	Report Trouble without filling mandatory fields	1. Fields except 'Name' 2. Fields except 'Branch' 3. Fields except 'Device Category' 4. Fields except 'Trouble'	Error message should appear	As expected	Pass
	5	Report trouble with wrong phone number format	1. 071-777-99999 2. xxx-xxx-xxxx	Error message should appear	As expected	Pass
	6	Report a trouble with all the fields filled with any option other than 'other' selected as 'Trouble' field option	1. Trouble='Doesn't Turn On'	Data should be saved successfully and success message should	As expected	Pass

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				appear		Pass
	7	Report a trouble with all the mandatory fields filled with 'other' selected as 'Trouble' field option	1. Trouble='Other' 2. Trouble Description='Sound issue'	Data should be saved successfully and success message should appear	As expected	Pass
		Check login functionality				
	8	Director Login	Correct username & password 1. username=dir password=dir	Login	As expected	Pass
			Wrong username & password 1. username=inc password=itm	Login Fail	As expected	Pass
	9	IT in charge Login	Correct username & password 1. username=dir password=dir	Login	As expected	Pass
			Wrong username & Correct password 1. username=itm password=inc	Login Fail	As expected	Pass
TS_3	10	IT member Login	Correct username & password 1. username=itm password=itm	Login	As expected	Pass
			Wrong username & Correct password 1. username=incitm password=itm	Login Fail	As expected	Pass
	11	Accounts	Correct username & password 1. username=acc password=acc	Login	As expected	Pass
			Wrong username & Wrong password 1. username=accounts password=itm	Login Fail	As expected	Pass
	12	Supply	Correct username & password 1. username=sup password=sup	Login	As expected	Pass

				Wrong username & Wrong password 1. username=supply password=supply	Login Fail	As expected	Pass
TS_4			Check functionalities of Director				
		13	Navigate and check accuracy of 'Dashboard' menu	'Dashboard' menu	Accurate 'Dashboard'	As expected	Pass
		14	Navigate and check accuracy of 'Device Summary' menu	Device Summary' menu	Accurate 'Device Summary'	As expected	Pass
		15	Navigate and check accuracy of 'Device History' menu	Device History' menu	Accurate 'Device History'	As expected	Pass
		16	Navigate and check accuracy of 'Device Cost History' menu	'Device Cost History' menu	Accurate 'Device Cost History'	As expected	Pass
		17	Navigate and check accuracy of 'View Devices' menu with filters	'View Devices' menu with filters	View accurate 'Devices' according to filters	As expected	Pass
		18	Navigate and check accuracy of 'Users' menu	'Users' menu	Accurate ' 'Users'	As expected	Pass
TS_5			Check functionalities of IT in charge				
		19	Navigate and check accuracy of 'Dashboard' menu	'Dashboard' menu	Accurate 'Dashboard'	As expected	Pass
		20	Navigate and check accuracy of 'Device Summary' menu	Device Summary' menu	Accurate 'Device Summary'	As expected	Pass
		21	Navigate and check accuracy of 'Device History' menu	Device History' menu	Accurate 'Device History'	As expected	Pass
		22	Navigate and check accuracy of 'Device Cost History' menu	'Device Cost History' menu	Accurate 'Device Cost History'	As expected	Pass
		23	Navigate and check 'Assign' menu	1. Assign selected trouble to a IT team member 2. Update some fields of a selected trouble 3. Delete a selected trouble	Success message should be displayed and relevant updates should happen	As expected	Pass

	24	Navigate and check 'Add User' menu	1. Add new user 2. Update a user 3. Delete a user	Success message should be displayed and relevant updates should happen	As expected	Pass
	25	Navigate and check accuracy of 'View Devices' menu with filters	'View Devices' menu with filters	View accurate devices according to filters	As expected	Pass
TS_6		Check functionalities of IT member				
	26	Navigate to all the menus	1. Dashboard 2. Device Summary 3. Device History 4. Device Cost History 5. Assigned to Me 6. View Devices	Should navigate to relevant menu	As expected	Pass
	27	Assigned to me	user='ITM'	Troubles assigned to that particular IT member should display and member should be able to change the status	As expected	Pass
TS_7		Check functionalities of Accounts branch				
	28	View list	View list	All the troubles in the status 'Assigned to Service Company should be displayed	As expected	Pass
	29	Assign to Service Company' menu	Trouble '5'	When the service company selected from drop down menu relevant account number should populate. User should be able to Assign	As expected	Pass

				trouble to a service company, Update, Delete.		
	30	Pay online function in 'Assign to Service Company' menu	Click on pay button	User should navigate to online transfer protocol of relevant bank's website	As expected	Pass
TS_8		Check functionalities of Supply branch				
	31	Navigate and check 'Add Device' menu	1. Add new device 2. Update a device 3. Delete a device	Success message should be displayed and relevant updates should happen	As expected	Pass

5.3 USER EVALUATION

Parameters used for evaluation are as below.

Table 5.2 User evaluation criteria

	Parameter
Functionality	Accuracy of reports
	Accuracy of data displayed
	Error messages
Security	Relevant page appears according to credentials
Usability	Screen are easy to navigate
	Data entry forms are easy to use
	Data validation is satisfactory
Performance	Response time
Appearance	User Interfaces are attractive
	Background colors and color combination matched
	Font face and size are compatible and readable

For user evaluation a google form was used. Users participated in the survey were as below.

Table 5.3 Users participated in the survey

User	Number of users
1. IT Director	01
2. IT in charge	01
3. IT team members	02
4. Accounts branch subject clerk	01
5. Supply branch subject clerk	01
6. Normal user	04
Total	**10**

USER EVALUATION
IT HELPDESK

pchanikawijesinghe@gmail.com (not shared) Switch account

Functionality

	Excellent	Good	Neutral	Poor	Very poor
Accuracy of reports	○	○	○	○	○
Accuracy of data displayed	○	○	○	○	○
Error messages	○	○	○	○	○

Security

	Excellent	Good	Neutral	Poor	Very poor
Relevant page according to credentials	○	○	○	○	○

Usability

	Excellent	Good	Neutral	Poor	Very poor
Screen are easy to navigate	○	○	○	○	○
Data entry forms are easy to use	○	○	○	○	○
Data validation is satisfactory	○	○	○	○	○

Performance

	Excellent	Good	Neutral	Poor	Very poor
Response time	○	○	○	○	○

Appearance

	Excellent	Good	Neutral	Poor	Very poor
User Interfaces are attractive	○	○	○	○	○
Background colors and color combination matched	○	○	○	○	○
Font face and size are compatible and readable	○	○	○	○	○

Submit   Clear form

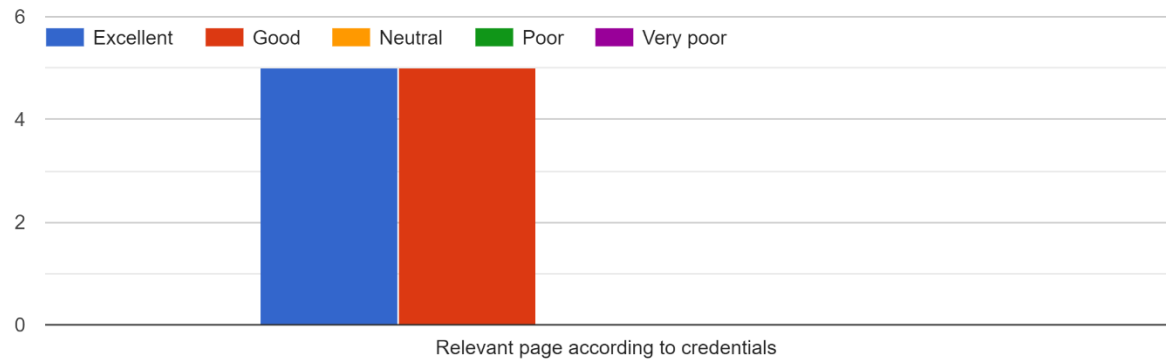*5.1 User evaluation form*

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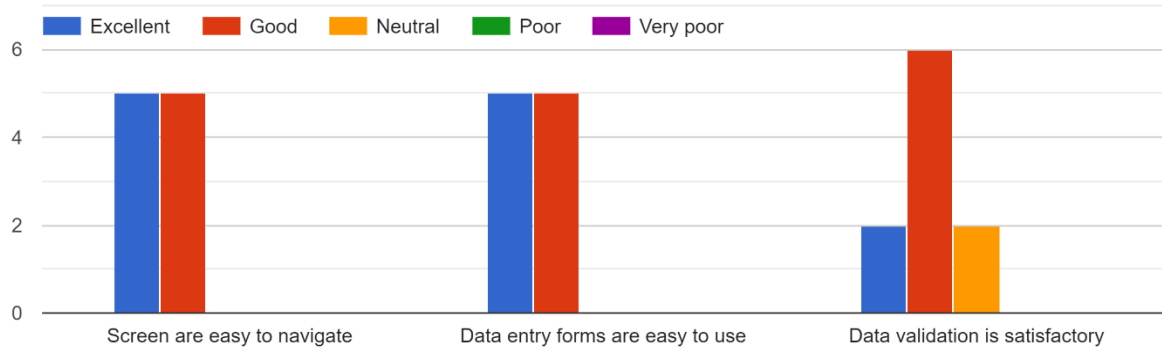# User Response Summary

Functionality
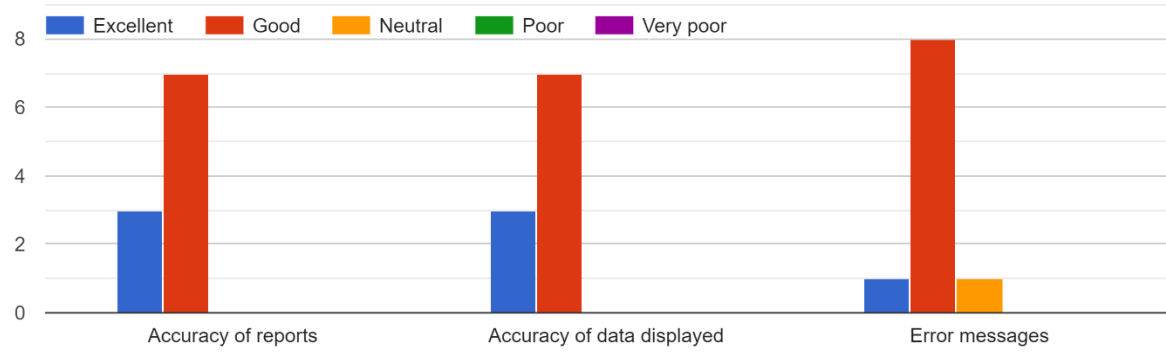
5.2 Functionality evaluation summary
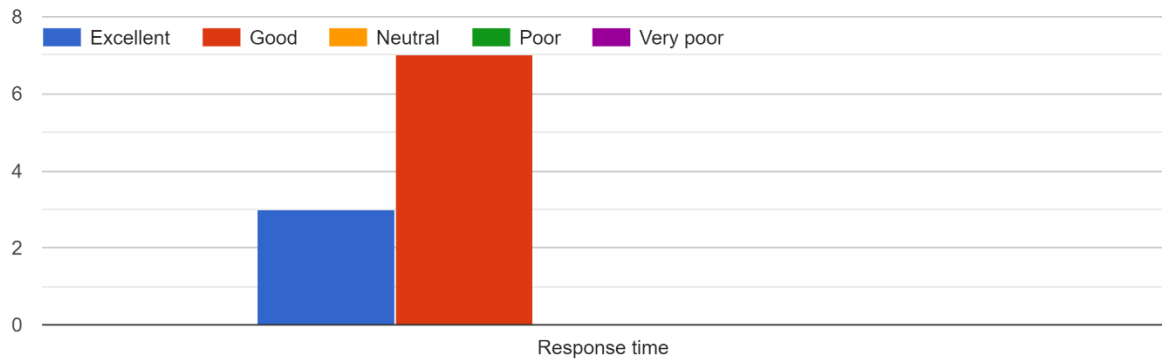
Security

5.3 Security evaluation summary
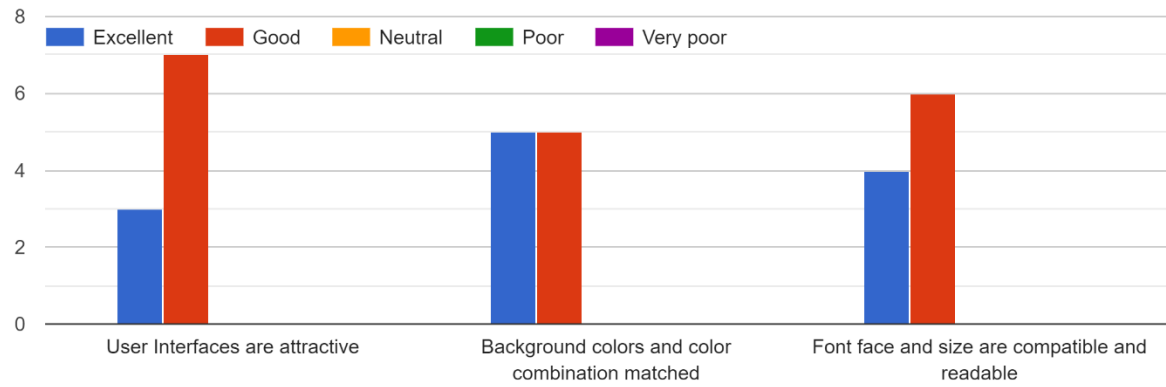
Usability

5.4 Usability evaluation summary

Performance

5.5 Performance evaluation summary

Appearance

5.6 Appearance evaluation summary

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Current Progress / Refined Project timeline

Start	End	October	November	December	January	February	March	April	May	June	July	August	September	October
01/10/2022	30/10/2022	■												
01/11/2022	14/11/2022		■											
15/11/2022	30/11/2022		■											
01/12/2022	14/12/2022			■										
15/12/2022	30/12/2022			■										
01/01/2022	30/01/2022				■									
01/01/2022	15/01/2022				■									
16/01/2022	30/01/2022				■									
01/02/2022	31/07/2022					■	■	■	■	■	■			
01/02/2022	31/07/2022					■	■	■	■	■	■			
01/08/2022	Present											■	■	■
01/08/2023	Present											■	■	■
01/08/2024	Present											■	■	■