Faculty of Computer Science and Information Technology

# *APPLICATION OF SUPPORT TICKET SYSTEM FOR HOSPITAL SULTAN HAJI AHMAD SHAH*

**Muhammad Mahalil Bin Mohd Ridzuan**

**Bachelor of Computer Science with Honours (Information Systems)**
2019

# *APPLICATION OF SUPPORT TICKET SYSTEM FOR HOSPITAL SULTAN HAJI AHMAD SHAH*

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This project is submitted in partial fulfillment of the
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## Abstract

This project aims to describe the propose of support ticketing system in managing IT issues for Hospital Sultan Haji Ahmad Shah. The Information Technology Department (ITD) of this hospital is currently using support ticketing system that call Manage Engine. This system benefits the IT staffs in managing IT issues and monitoring the assets. The helpdesk are facing a problem in notify the technical staff about the issues. They need to use other medium to notify the technical staff about the issues. The access of existing system also limited to desktop user only. Thus, the idea of proposed system is to improve the management of IT issues.

## Abstrak

Projek ini bertujuan untuk menerangkan mengenai sistem tiket sokongan dalam mengurus isu-isu IT untuk Hospital Sultan Haji Ahmad Shah. Kini, Jabatan Teknologi Maklumat (ITD) hospital ini menggunakan system bantuan tiket yang digelar Manage Engine. Sistem ini memberi manfaat kepada kakitangan IT dalam menguruskan isu-isu IT dan memantau asset-aset. Meja bantuan menghadapi masalah dalam memberitahu kakitangan teknikal tentang isu-isu tersebut. Mereka perlu menggunakan medium lain untuk memberitahu kakitangan teknikal tentang isu-isu tersebut. Akses untuk sistem yang sedia ada juga terhad kepada pengguna komputer sahaja. Oleh itu, idea sistem yang dicadangkan adalah untuk memperbaiki pengurusan dalam isu-isu IT.

# Chapter 1: Introduction

## 1.1 Introduction

Help desk software or ticketing support system refers to a computer program that enable customer care operators to keep track of user request and deal with other customer-care-related issues. Ii is what make customer-care-service efficient and enterprising. This system are includes asset management, IT service management and Technical issues report. Furthermore, application of ticketing system also to organise and keep track issues base on the queries that been request or sent by the user.

Hospital Sultan Haji Ahmad Shah is one the hospitality that have been build under Kementerian Kesihatan Malaysia for Malaysian citizen. This hospital located in Pahang. This hospital have13 management department, 15 clinical department, nine Clinical Support Department, and three Supervision Department. Information Technology Department is one of the Management Department. This organisation maintaining all the system and the assets about the information technology that have been using by the hospitality.

Information Technology Department is an organisation that offers the maintenance and supervision about the system, data and assets about information technology that related to the hospital. There are three main team in the organisation there are helpdesk, technical support team and Assistant Software Engineer (ASE) team. Helpdesk are the front support team in solving IT issues. Anything issues that out of their task will be assigned to technical support team or ASE team.

During the internship at this department, my department are using a support ticket system that call Manage Engine to collect all the user report about IT or system problem. This system also a platform for the user report anything about technical issues that related to the IT. The Manage Engine have been using very well by the helpdesk and technical team. Every issue that report through the helpdesk will be key-in the Manage Engine. The issues will be record and assigned to the related person either technical team or assistant support engineer using the Manage Engine.

## 1.2 Problem Statement

This hospital is using information technology and information system platform to manage data and any issues or problem that related to information technology. Every issue that related to IT will be record and assigned to the IT staff by using support ticket system that call Manage Engine. Manage Engine is IT ticketing system that have been use by the hospital IT staff. The accessible to the web-base system are limited only for the desktop user. Every ticket that produce by the helpdesk using the Manage Engine will be inform to the technical team or ASE team by using Whatapps Application for them to be notify. Not everyone alert with the whatapps group because its not only about work and sometimes more chat about other things and its cause technical team less alert about the issues. They also need to using PC to resolve the issues or update the status of the issues that have been assign and they cannot access the web-base everywhere or anytime they need.

From my observation during the internship, I have seen these as a problem to them in managing IT issues. Besides, there were some deficiency in the current system that cause the efficiency of their work. Furthermore, because of the problem, I decide to help them in improve the current system by enhance the system.

## 1.3 Scope

This project target user are the technical support for IT and IT staff in the hospital. This system will be implement in Hospital Sultan Haji Ahmad Shah. The staff for Information Technology Department (ITD) will be fully using this system. This platform will be collected and produce ticket about all technical issues that happen in the hospital from all departments. There are 40 departments in this hospital. They will be two categories user who be using this system. First are admin part that will be using by helpdesk staff to create the ticket and the second one is technical staff who are receive and updating the ticket status.

1.4 Objective

1. To create a system to manage technical inquiries within the hospital.
2. To design notification feature as means to facilitate quick response from the technical staffs.
3. To evaluate the features of the application using usability testing.

1.5 Brief Methodology

In this project, the methodology that has been chosen is Rapid Application Development (RAD). This method been chosen because it is flexible method and can be adaptive to changing requirement of the user with minimal development time. RAD can reduce development time which is suitable for this project that has short and limited time to develop. Furthermore, this method can help developer to improve the system by getting feedback and suggestion from user and develop higher quality system.

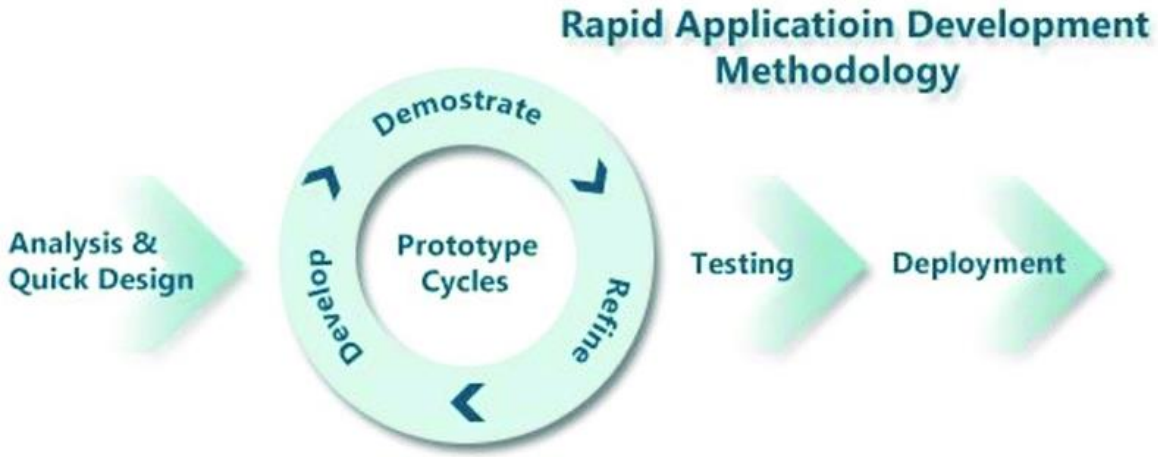



*Figure 1: Rapid application Development (RAD) Model*

The first phase of methodology is analysis and quick design. In this phase, developer will start figuring the purpose of the development. All the information of the hospital and requirement of user need will be collected during this phase. Besides, analysing and review the current existing system for reference will be proceed in this phase. Therefore, the requirement can be more understand and can start on designing the system.

The next phase is prototype cycle. In this phase, develop, demonstrate and refine are the three steps that will keep iterate if changes are required. Once the analysis phase finish, its will be proceed development stage. After development of the system base on requirement, prototype will be demonstrated to the user. This called demonstrate stage one of the stages in prototype cycle. At the refining stage, if any changes are required, the prototype will be refined in terms of interface design, features and concept. Then, prototype is being re-developed again based on the new requirement. During this cycle, the stages will be carried over an over until the system meet the goal and user requirement. In this project, the prototype cycle will repeat two times to full fill the user requirement on the main functions.

After the prototype cycle, development will proceed to testing phase. The prototype of the web application will be tested. This stage to ensure the system is function as expected. The real user will be used the system in real work environment during testing phase.

This phase where the system has been fixed after testing and ready to go online. This system also ready to be use by IT helpdesk and IT staffs.

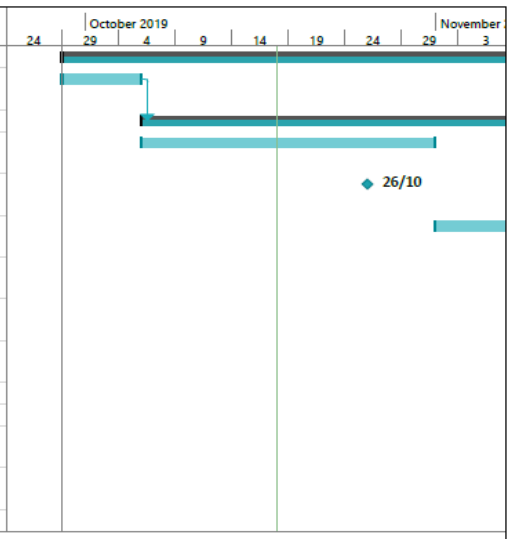
## 1.6 Significance of The Project

All the IT staffs of Hospital Sultan Haji Ahmad Shah are using smartphone in daily life. They also done a lot of things by using the mobile phones and also brings its everywhere either. Mobile phones were the best medium for this project to be implement. The idea developing this project because to let hospital technical staff easy to access the system from mobile phones. They always bring the mobile phones everywhere they go and can access anywhere. Furthermore, the web application will be added push up notification features. This features to facilitate quick response from the technical staffs. Every ticket that produce by helpdesk can be easily known because they can access using mobile phone. Besides, the also can easily update the ticket status. This web application will help the improvement IT management in the hospital be more efficient.

## 1.7 Project Schedule

The estimation of this project is 177 days starting 29/09/2019 until 31/05/2020. The project schedule is base from the RAD methodology. Every phase have their task and duration time to complete the task.

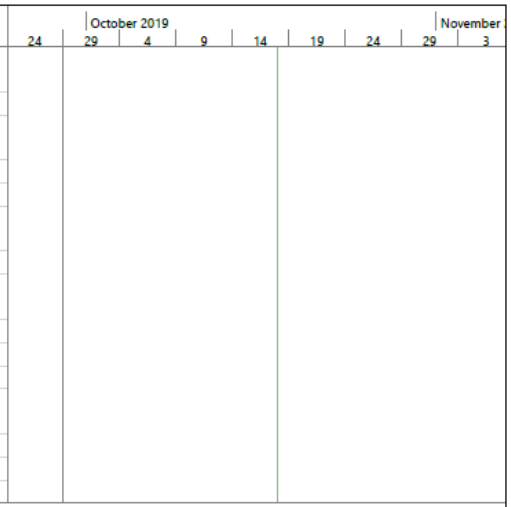
| ID | | Task Mode | Task Name | Duration | Start | Finish |
|---|---|---|---|---|---|---|
| 1 | | | **Final Year Project** | **177 days** | **Sun 29/9/19** | **Sun 31/5/20** |
| 2 | | | Aproval from supervisor | 7 days | Sun 29/9/19 | Sat 5/10/19 |
| 3 | | | **Analysis & Quick Design** | **42 days** | **Sun 6/10/19** | **Sun 1/12/19** |
| 4 | | | Identify problem, objective, purpose. | 20 days | Sun 6/10/19 | Thu 31/10/19 |
| 5 | | | Milestone: Subbmission Chapter 1 | 0 days | Sat 26/10/19 | Sat 26/10/19 |
| 6 | | | Identify user & system requirement | 7 days | Fri 1/11/19 | Sun 10/11/19 |
| 7 | | | Analyse & review existing system | 11 days | Mon 11/11/19 | Sun 24/11/19 |
| 8 | | | Milestone: Subbmission Chapter 2 | 0 days | Sat 16/11/19 | Sat 16/11/19 |
| 9 | | | Summary of user & system requirement | 6 days | Mon 25/11/19 | Sun 1/12/19 |
| 10 | | | **Prototype Cycle 1** | **46 days** | **Mon 2/12/19** | **Sun 2/2/20** |
| 11 | | | **Development** | **36 days** | **Mon 2/12/19** | **Sun 19/1/20** |
| 12 | | | Design a prototype of the system | 36 days | Mon 2/12/19 | Sun 19/1/20 |
| 13 | | | Milestone: Submission Chapter 3 | 0 days | Thu 5/12/19 | Thu 5/12/19 |
| 14 | | | **Demostrate** | **6 days** | **Mon 20/1/20** | **Sun 26/1/20** |




Project: FYP Schedule
Date: Fri 18/10/19

| | | | |
|---|---|---|---|
| Task | Inactive Summary | External Tasks | |
| Split | Manual Task | External Milestone | |
| Milestone | Duration-only | Deadline | |
| Summary | Manual Summary Rollup | Progress | |
| Project Summary | Manual Summary | Manual Progress | |
| Inactive Task | Start-only | | |
| Inactive Milestone | Finish-only | | |

| ID | | Task Mode | Task Name | Duration | Start | Finish |
|---|---|---|---|---|---|---|
| 15 | | | Present the prototype of the system | 6 days | Mon 20/1/20 | Sun 26/1/20 |
| 16 | | | **Refine** | **5 days** | **Mon 27/1/20** | **Fri 31/1/20** |
| 17 | | | Collect and analyze user feedback | 5 days | Mon 27/1/20 | Fri 31/1/20 |
| 18 | | | **Prototype Cycle 2** | **46 days** | **Mon 3/2/20** | **Sun 5/4/20** |
| 19 | | | **Development** | **36 days** | **Mon 3/2/20** | **Sun 22/3/20** |
| 20 | | | Re-develop the prototype of the system | 36 days | Mon 3/2/20 | Sun 22/3/20 |
| 21 | | | **Demostrate** | **6 days** | **Mon 23/3/20** | **Sun 29/3/20** |
| 22 | | | Present latest prototype of the system | 6 days | Mon 23/3/20 | Sun 29/3/20 |
| 23 | | | **Refine** | **6 days** | **Mon 30/3/20** | **Sun 5/4/20** |
| 24 | | | summary user feedback | 6 days | Mon 30/3/20 | Sun 5/4/20 |
| 25 | | | **Testing** | **36 days** | **Mon 6/4/20** | **Mon 25/5/20** |
| 26 | | | Completing the coding and user interface | 31 days | Mon 6/4/20 | Sun 17/5/20 |
| 27 | | | User testing | 5 days | Mon 18/5/20 | Fri 22/5/20 |
| 28 | | | **Deployment** | **5 days** | **Mon 25/5/20** | **Fri 29/5/20** |
| 29 | | | Implement the system | 5 days | Mon 25/5/20 | Fri 29/5/20 |




Project: FYP Schedule
Date: Fri 18/10/19

| | | | |
|---|---|---|---|
| Task | Inactive Summary | External Tasks | |
| Split | Manual Task | External Milestone | |
| Milestone | Duration-only | Deadline | |
| Summary | Manual Summary Rollup | Progress | |
| Project Summary | Manual Summary | Manual Progress | |
| Inactive Task | Start-only | | |
| Inactive Milestone | Finish-only | | |

## 1.8 Expected Outcomes

At the end of this project, there will be Application for the Support Ticket System for the IT staff of Hospital Sultan Haji Ahmad Shah. The system can be access from any medium either smartphones or personal computer. Technical staffs will be more easy to access the system that will fully user requirement. This web application that have notification feature will facilitate quick response from the technical staff. Furthermore, by using this notification features, the support ticket system will be well manage by the IT staffs.

# Chapter 2: Literature Review

## 2.1 Introduction

In this chapter, it covers more on reviewing and discussion of progressive web apps and several existing ticketing support system which are related to the proposed system in order to justify the needs of the proposed system. From the analysis of the system application's features and functionalities, comparison is between two existing system and the proposed system. The comparison and analysing the existing system will give a clearer idea about requirement needed by the user and what improvement will be done to overcome the limitation of the existing system.

## 2.2 Review of Progressive Web Application (PWA)

Progressive Web Application (PWA) are new class of Web applications, enable for the most part by the Service Workers APIs. Service Workers allow apps to work offline allow apps to work offline by intercepting network request to deliver programmatic or cached responses., Service Workers can receive push notifications and synchronize data in the background even when the apps are not running. "Progressive Web Apps (PWA) are regular mobile and desktop web application that are accessible in any web browser. In browsers that support new open web standards, they can provide additional capabilities including offline support and push notifications" (Samsung, 2017).

This approach term coined by Russel and Berriman (2015) in a blog post covering initial design ideas. PWAs are defined by a set of concepts and key words including progressive, responsive, connectivity independent, app-like, fresh, safe, discoverable, re-engageable, installable, and linkable (Osmani, 2015).

Service Worker is responsible for most of the core associated with progressive web apps (Gaunt, 2016). PWA cannot properly work in browsers without Service Worker support. The worker is registered on user's first page visit. It consists of a JavaScript file embodying lifecycle hooks for business logic and cache control. It can be used to handle tasks such as background synchronisation (Archibald, 2016). This core features give a ability to have other features likes

push notification, the capability to display push notification by using Push API to point user to fresh content, even when apps is not running.

## 2.3 Reviews on Existing Applications

### 2.3.1 UNIMAS Portal (UNIMAS Support)

UNIMAS Support is one of example for ticketing support system and it is a part of UNIMAS Portal. This system was developed by Centre for IT Development and Services (CITDS) under University Malaysia Sarawak. UNIMAS Portal is a web-based system where the user are be staffs and student of University Malaysia Sarawak. The user can access directly as long as connected to the internet. User will login using UNIMAS id., this mean only the registered user can access the system.

Furthermore, this system have many functions for the students and staffs. Students can register course, do payments, update profile details and more.

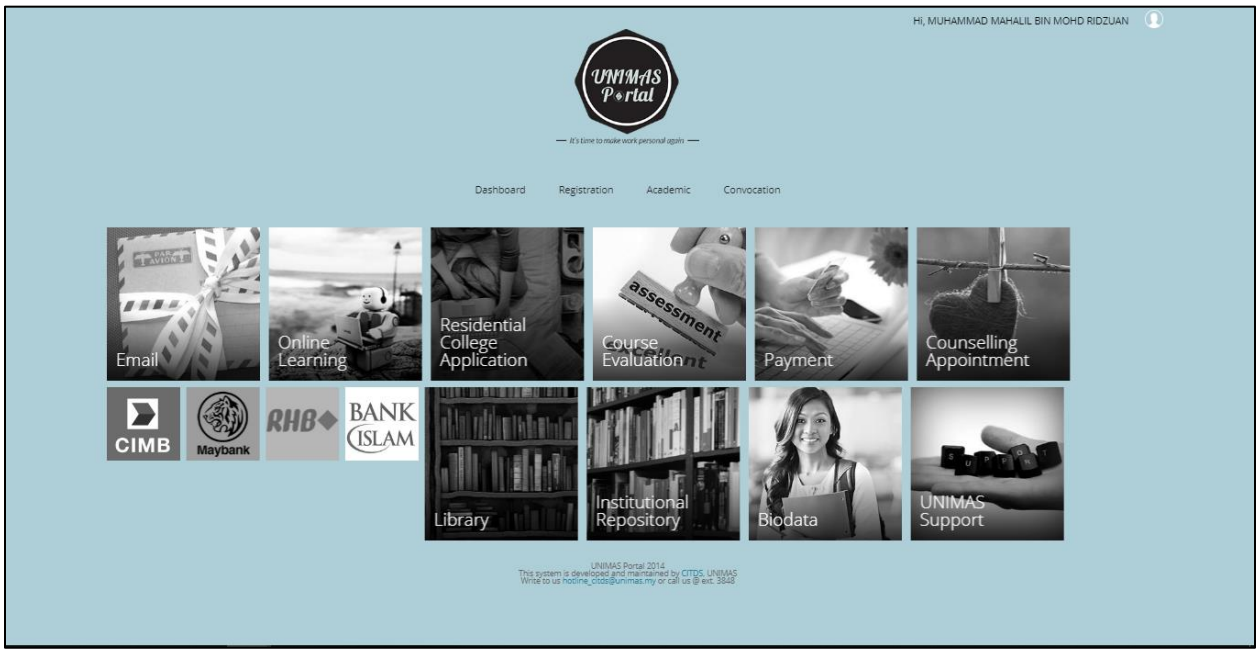



*Figure 2.1: Home Page of UNIMAS Portal*

This is the dashboard page of UNIMAS Portal for the student. From the dashboard page, there is secondary navigation menus. The navigation will lead to different page. Each navigation menu are linked to different system. At the bottom right of the navigation menu, there is UNIMAS Support button. Its will lead to ticketing support system.

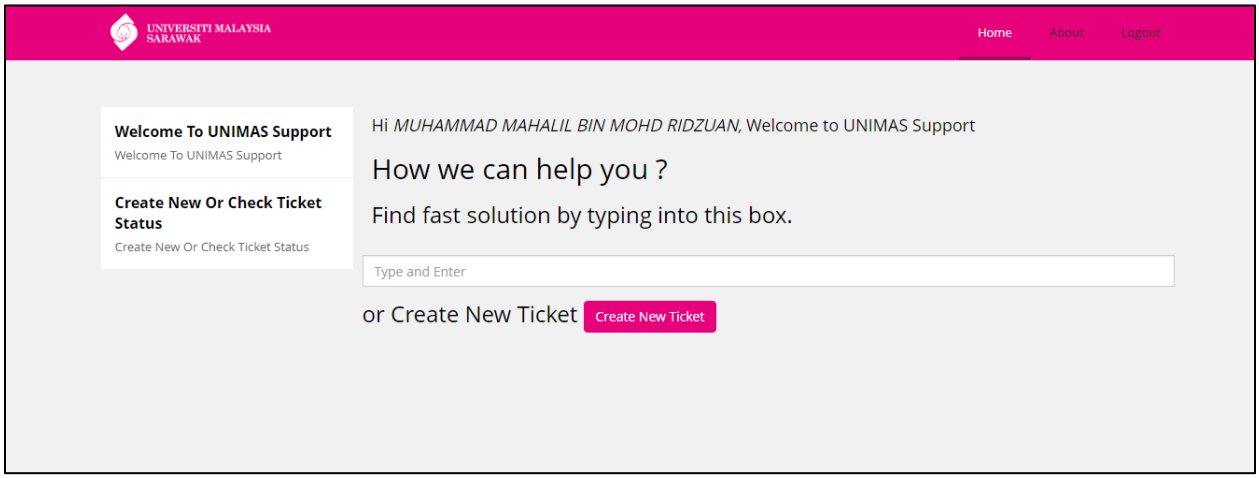



*Figure 2.2: Home Page of UNIMAS Support*

This is the home page of UNIMAS Support system. There will appear the name of the user accounts. There is a box where user can directly type the problem and UNIMAS WIKI will appear with the guideline to solve the problem. The user also can just click “Create New Ticket” button.

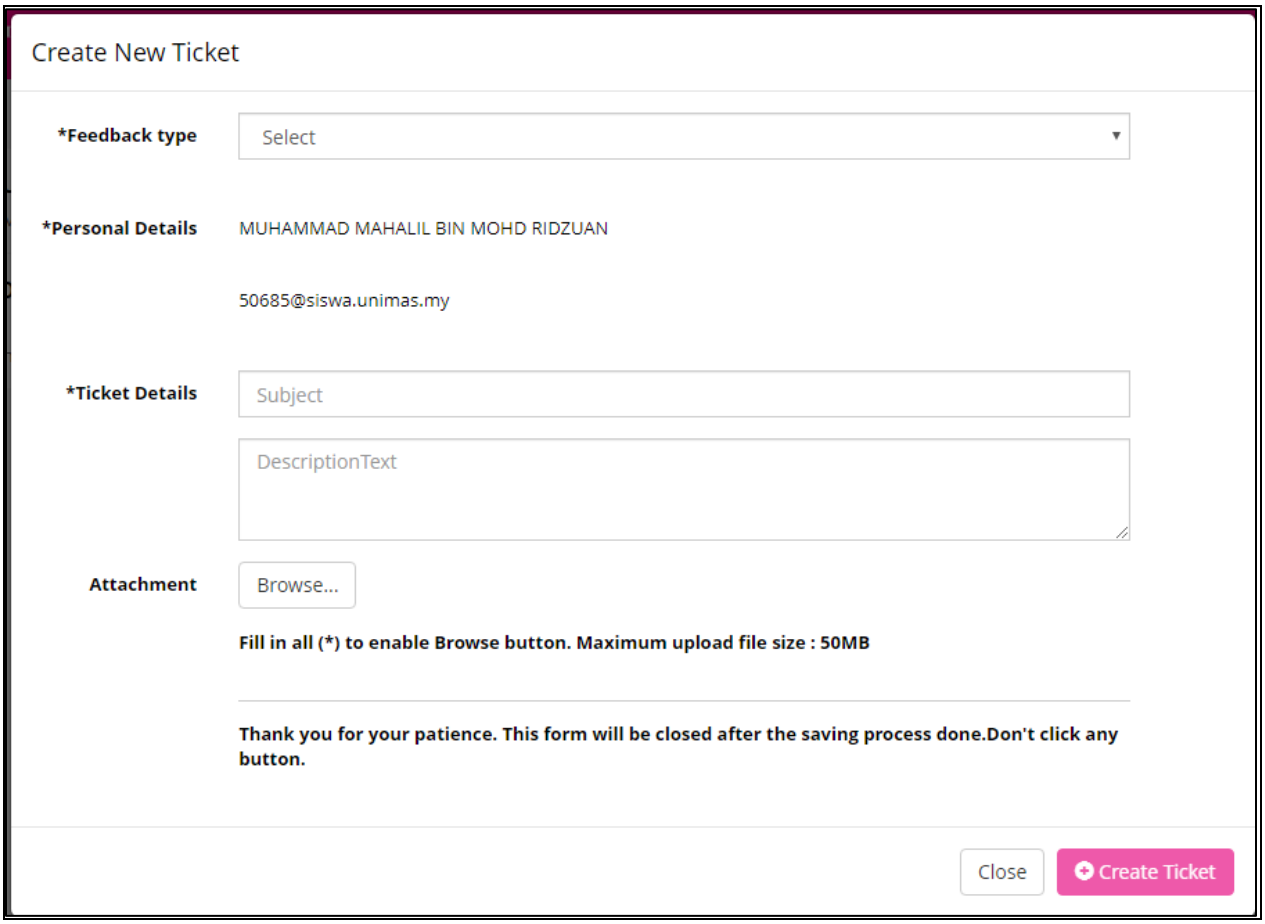



*Figure 2.3: Create Ticket form*

The system also providing a form for student and staff to fill the detail of the problem that there face. From the form, the system are collecting data for the of the issues. The information are needed are Feedback from which department the user want and ticket details. Besides, the system also provide feature where a user can upload the document that related to the tickets into the database system.

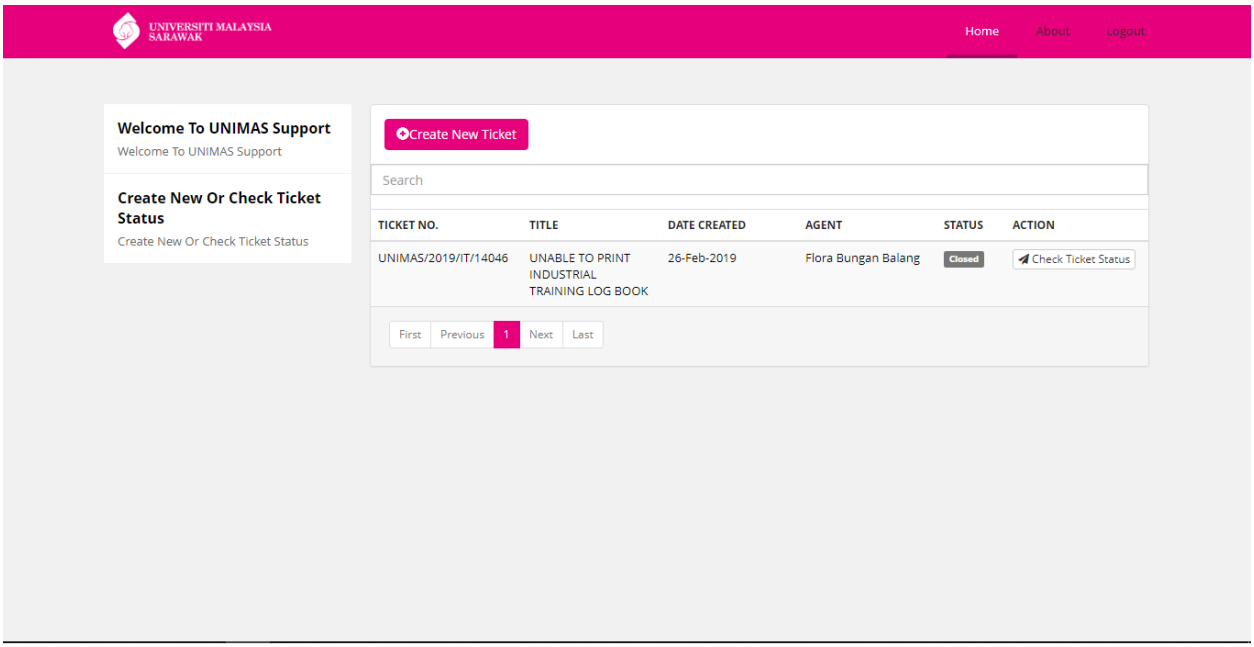



*Figure 2.3: List of the ticket for students and staff accounts*

Every ticket that have been create will be save in ticket list. The user can check the ticket in Ticket List Page. There are the table of the ticket list. Every entry has a reference number. The user check the person who in charge, up to date on the status either its closed or still open and the action that or solution that have been taken on the issues.

### 2.3.2 ManageEngine ServiceDesk Plus of HOSHAS

Ticketing system for Hospital Sultan Haji Ahmad Shah is one of helpdesk software under ManageEngine ServiceDesk Plus. This system have been develop by the company name Zoho Corporation and it is also their brands.