

CHAPTER 4

ANALYSIS AND DESIGN

This chapter discusses the findings from the analysis and design process of the Student Talent Profiling App, which follows an object-oriented approach. The system is developed to digitize and streamline the management of student talents within Universiti Tun Hussein Onn Malaysia (UTHM), specifically for the Faculty of Computer Science and Information Technology (FSKTM). This chapter outlines the system modules, functional and non-functional requirements, user requirements, hardware and software specifications, and system design using UML diagrams.

4.1 System Requirement Analysis

Table 4.1 summarises the system's modules. There are 5 modules designed to support three main user roles which is student, lecturer, and office administrator. Each module provides specific functionality to ensure a seamless experience in managing talent profile and achievements.

Table 4.1: System's Module

No	Module	Description
1	Registration and Login Module	<ul style="list-style-type: none">This module facilitates user authentication by allowing new users to register for an account before logging in. Existing users can log in using their ID and password. Upon successful login, valid users are redirected to their dashboard.
2	Profile Management Module	<ul style="list-style-type: none">Enables students to create, view, and update their talent profiles from a mobile device. Lecturers and administrators can view these profiles.

3	Achievement Management Module	<ul style="list-style-type: none"> Provides functionality for students to add, edit, and manage their academic and extracurricular achievements, including supporting documents such as certificates.
4	Reporting and Analytics Module	<ul style="list-style-type: none"> Allow office administrators to generate reports on student achievements, talents, and overall performance for decision-making purposes. Admin can search and filter talented student based on skills to analyse interest student. The report can be generated in graph for better visualisation.
5	Talent Showcase and Posting Module	<ul style="list-style-type: none"> This allows students to upload and post content in various formats such as text, images, and videos to showcase their talents interactively. Lecturers, and student can provide comments and feedback.

4.1.1 Functional and Non-Functional Requirements

Table 4.2 lists functional requirements for this system.

Table 4.1: Functional requirements.

No	Module	Description
1	Registration and Login Module	<ul style="list-style-type: none"> Allow new users to register for a new account before logging in. Allow the existing users to log in with their ID and password. Redirect the valid users to the dashboard after successful login.

2	Profile Management	<ul style="list-style-type: none"> Allow student to create and update their talent profiles. Enable lecturer and admins to view student profiles.
3	Achievement Management	<ul style="list-style-type: none"> Allow students to submit and manage their achievements. Support uploading proof documents through PDF and credential URL
4	Reporting and Analytics	<ul style="list-style-type: none"> Generate reports on student data for administrative use. Provide filtering options (by date, category student, etc). Finding student interest with report data and form question.
5	Talent Showcase and Posting	<ul style="list-style-type: none"> Allow students to post text, images, and videos about their achievements. Enable lecturers and admins to comment or give feedback on posts.

Table 4.2: Non-functional requirements.

No	Requirement	Description
1	Performance	The system should be responsive and capable of handling multiple users simultaneously without significant delay.
2	Usability	The interface must be intuitive and easy to use for all user types, especially students and lecturers.
3	Security	The system must ensure secure user authentication and protect sensitive student data from unauthorized access.
4	Compatibility	The application must be compatible across various devices and browsers, including both Android and web platforms.

4.1.2 User Requirement Analysis

Table 4.1 lists the user requirements for this system. Users of this system includes student, lecturer, and administrator.

Table 4.3: User requirements.

No	Requirement
1.	All users must have a registered account with valid credentials.
2.	Students must be able to create and update their talent profile.
3.	Students must be able to submit and manage their achievements.
4.	Students must be able to post media (images, videos) to showcase their talents.
5.	Lecturers must be able to view student profiles and achievements.
6.	Lecturers must be able to comment or provide feedback on posted content.
7.	Administrators must be able to manage all records and user accounts.
8.	Administrators must be able to generate reports for planning and analysis.
9.	The system must provide role-based access control.
10.	Users must be able to access the system remotely at any time.
11.	Data must be stored securely using cloud-based storage.
12.	The app must support real-time updates and notifications.
13.	The system must be accessible via both mobile and web interfaces.
14.	The system must allow file uploads for achievement verification.
15.	The system must allow filtering and searching of student data by lecturers and admins.

4.1.3 Hardware and Software Requirements

Table 4.5 lists the hardware and software requirements of the developed system.

Table 4.4: Hardware and software requirements

Aspect	Requirement
Operating system	Window 10 and above
CPU	Minimum 2GHz
Memory	Minimum 8GB RAM
Internet connection	Wi-Fi or hotspot connection
Web browser	Google chrome, Internet explorer or Microsoft edge

Development Tools	Flutter, HTML, CSS, JavaScript (For web dashboard only)
Backend	Firebase (Cloud-based database and authentication)
