

**PERSONALITY PREDICTION SYSTEM BASED ON FINGERPRINT
DETECTION**

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PERSONALITY PREDICTION SYSTEM BASED ON FINGERPRINT DETECTION

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**Report Submitted to Fulfil the Partial Requirements for
the Bachelor of Information Technology (Hons) In
Software Engineering University Kuala Lumpur**

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DECLARATION

I declare this report is my original work and all references have been cited adequately as required by the University.

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APPROVAL PAGE

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ABSTRACT

This project is a sophisticated web application using the Streamlit framework, designed for efficient management, analysis, and reporting of user data with a focus on fingerprint images. It incorporates secure user authentication, data collection, and image processing, allowing users to upload and store fingerprint images in a SQLite database. The application generates detailed PDF DISC reports with a clear, structured layout and enhances user experience through custom CSS and Lottie animations. Addressing challenges in data management, it offers efficient storage, retrieval, and organization of large image data volumes while laying the groundwork for future scalability, data analytics, and UI improvements. This project significantly advances fingerprint data management, making it a valuable tool for healthcare, security, and education sectors.

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CHAPTER 1: Introduction

1.1 Introduction

In the rapidly evolving landscape of technology and biometrics, this research explores an unconventional intersection: the correlation between fingerprint patterns and personality traits. While fingerprints are traditionally used for identity verification, our study investigates the potential link between distinct fingerprint features and individual behavioral characteristics.

Motivated by the limitations of conventional personality assessment methods, such as self-reporting, this research seeks to develop a Personality Prediction System (PPS) based on fingerprint detection. By leveraging the uniqueness of fingerprint patterns, we aim to create a more objective and reliable approach to predicting personality traits. This exploration not only contributes to the fields of biometrics and psychology but also holds implications for diverse areas such as criminology and human-computer interaction. Through this study, we aim to provide a novel perspective on the relationship between physical and psychological dimensions of human identity.

1.2 Project Background

In the realm of healthcare and personal development, understanding individual traits and predispositions plays a crucial role in optimizing well-being and potential. Traditional methods of personality assessment and genetic analysis often fall short in providing comprehensive, personalized insights. The Personality Prediction System Based on Fingerprint Detection (PPFD) project aims to bridge this gap by leveraging advanced biometric technology to offer a deeper understanding of individual personalities and potential health risks.

The proposed PPFD system aims to streamline this process by using fingerprint detection to predict personality traits and potential health issues. This innovative approach seeks to reduce the time and effort required for assessments while providing more accurate and objective results. By integrating biometric data with advanced analytical techniques, the PPFD system offers a quick, reliable, and non-invasive method of personality and health assessment.

The PPFD project addresses several key areas:

1. **Enhanced Personal Insights:** Traditional assessment methods can be frustrating and inconclusive for individuals seeking personal insights. The PPFD project aims to provide clearer, more accurate personality predictions and health risk assessments using fingerprint detection technology.
2. **Resource Optimization:** In both healthcare and educational settings, efficiently allocating resources based on individual needs is crucial. The system will help optimize resource allocation by providing detailed insights into individual traits and predispositions, aiding in personalized care and education plans.
3. **Flexibility and Scalability:** The project envisions a system that can adapt to various settings, from hospitals to schools, ensuring it can scale to meet the demands of different environments. The flexibility of the PPFD system allows it to be tailored to specific needs, providing valuable insights across a range of applications.

By addressing these needs, the PPFD project aims to revolutionize the current state of personality and health assessment, leading to improved individual satisfaction, better resource utilization, and enhanced overall outcomes. This innovative system exemplifies the potential of modern technology to transform personal insights and healthcare management.

1.3 Problem Statement

1.3.1 Accuracy and Reliability

In the pursuit of developing an accurate and reliable Personality Prediction System, our primary focus lies in guaranteeing the quality and dependability of the gathered fingerprint data. This involves meticulous attention to data quality, utilizing precise machine learning algorithms, and subjecting the system to rigorous validation procedures, including cross-validation and real-world testing.

1.3.2 Correlation between Fingerprint Patterns and Personality Traits

To establish a meaningful correlation between fingerprint patterns and personality traits. Achieving this correlation requires a collaborative effort between psychologists, biometric experts, and data scientists. Longitudinal studies will be conducted to track individuals over time, providing insights into the evolution of fingerprint patterns. Moreover, a multifactorial analysis will be employed, exploring various fingerprint features to ensure a comprehensive approach to personality prediction.

1.3.3 Ethical Considerations

To obtaining informed consent from individuals, ensuring a thorough understanding and agreement to the use of their fingerprint data. Data security measures, encompassing secure storage and transmission protocols, will be implemented to safeguard personal information. Privacy protection is prioritized to minimize the risk of misuse, and strict adherence to regulatory compliance ensures that the system operates within legal and ethical frameworks. These ethical considerations are integral to building trust and facilitating the responsible deployment of the Personality Prediction System.

1.4 Aims and Objectives

1.4.1 Aim

The aim of the Personality Prediction System Based on Fingerprint Detection (PPFD) project is to develop an advanced biometric system that utilizes fingerprint analysis to accurately predict individual personality traits and potential health risks, thereby enhancing personal insights, optimizing resource allocation, and improving overall outcomes in healthcare and educational settings.

1.4.2 Objectives

- To design and develop a website tailored to the unique fingerprint captured for behavior prediction.

Objective: Create a user-friendly website that can capture fingerprint data and utilize it for behavior prediction.

- To design a website with advanced security to secure the data which is the data gathered for the website usage is confidential and in need to keep the data safe.

Objective: Ensure the confidentiality and security of the data collected from users.

- To enhance the current system to be able to access from anywhere with a load of database online

Objective: Upgrade the existing system to support remote access and scalability.

- To automate the fingerprint data and generate DISC Report “(D) Dominance, (I) Influence, (S) Steadiness, (C) Conscientiousness “ based on fingerprint captured.

Objective: Automate the process of analyzing fingerprint data to generate detailed DISC reports.

- To integrate the fingerprint capture device with website

Objective: Seamlessly integrate the fingerprint capture device with the website for real-time data capture and analysis.

1.5 Scope of the project

1.5.1 Scope of Users

Users of the system are:

- Practitioner (User)
- Analyst (Admin)

1.5.2 Scope of the System

1.5.2.1 Practitioners

- **Assessment Conductibility:**

Practitioners are able to seamlessly conduct personality assessments through the utilization of advanced fingerprint detection technology.

- **Results Interpretation:**

Practitioners are able to interpret comprehensive assessment results, gaining valuable insights for client interactions.

- **Client Interaction Enhancement:**

Practitioners are able to engage with clients more effectively by leveraging stored client-specific data for personalized counseling.

1.5.2.2 Analyst

- **User Management Capability:**

Analysts are able to efficiently manage Practitioner accounts, exercising control over user profiles through creation, modification, or removal.

- **System Configuration Flexibility:**

Analysts are able to configure system parameters and preferences, ensuring adaptability to evolving requirements.

- **Security Oversight Authority:**

Analysts are able to implement robust security measures, ensuring the integrity and confidentiality of sensitive information.

- **Comprehensive Reporting Functionality:**

Analysts are able to generate detailed DISC reports, offering insights into system usage, assessment outcomes, and overall system performance.

1.6 Expected Project

Modules	Description
Registration	User can register their account by filling in their phone number, password, full name and email.
Login	Authentication mechanism allowing authorized access for both Practitioners and Analysts to the system.
Main Menu	User-friendly interface for Practitioners to input and manage client data, ensuring a seamless user experience.
Search Function	Advanced search functionality for Analysts to efficiently locate specific client data based on various criteria.
Fingerprint Check	Specialized module for Analysts to verify the quality and adherence to the required format of captured fingerprints.
Generate DISC Report	Automated generation of detailed assessment DISC reports, providing insights into personality traits for analysis.
Contact Me by Email	Practitioners able to enter the details and submit the request
Logout	User and Admin can log out from the system by clicking the logout button.

Table 1: Modules for Web-Based Application

1.7 Conclusion

In conclusion, the introduction lays the groundwork for understanding the significance and objectives of the Personality Prediction System based on Fingerprint Detection. This project responds to the evolving landscape of personality assessment by harnessing the unique biometric features present in fingerprints. The integration of fingerprint patterns and personality traits holds immense potential for refining existing methodologies and opening new avenues of research.

CHAPTER 2: Literature Review

2.1 Introduction

The literature review is a critical component of this research, offering a comprehensive examination of existing knowledge and research in the realm of biometrics, personality assessment, and the fusion of the two. This chapter delves into an extensive analysis of scholarly articles, research papers, and advancements in fingerprint-based personality prediction systems.

The synthesis of literature will not only provide a foundation for the development of the Personality Prediction System but also guide the research methodology, ensuring that our approach aligns with the latest insights and methodologies in this interdisciplinary field. The literature review sets the stage for a deeper understanding of the contextual landscape in which our project operates, paving the way for informed analysis and innovative contributions.

2.2 Web Application

2.2.1 What is Web Application

A web application, commonly referred to as a web app, is a software application that runs on web browsers, accessible through the internet or an intranet. Unlike traditional desktop applications, web apps do not need to be installed on users' devices but can be accessed through a web browser, providing a platform-independent experience. They utilize a combination of server-side scripts, databases, and client-side scripts to deliver dynamic and interactive content to users.

2.2.2 Advantage of Web Application

1. **Accessibility:** Web applications can be accessed from anywhere with an internet connection, allowing users to engage with the application on various devices, including computers, tablets, and smartphones.
2. **Cross-Platform Compatibility:** Since web apps run on browsers, they are compatible with different operating systems, eliminating the need for platform-specific development.

3. **Easy Updates:** Updates and modifications to web applications can be implemented on the server, ensuring that users always access the latest version without requiring manual updates.
4. **Centralized Data Management:** Data is stored on servers, enabling centralized data management, security, and backup procedures.
5. **Cost-Effective Deployment:** Users do not need to install software locally, reducing deployment and maintenance costs for both developers and end-users.

2.2.3 Disadvantages of Web Applications

1. **Internet Dependency:** Web applications rely on an internet connection, and users may face limitations or interruptions if their connection is unstable or unavailable.
2. **Performance:** The performance of web applications can be influenced by factors such as network speed and server responsiveness, potentially leading to slower interactions compared to native applications.
3. **Limited Device Capabilities:** Web apps may have limitations in accessing certain device features compared to native applications, as they operate within the constraints of web browsers.
4. **Security Concerns:** As web applications involve data transmission over the internet, there are inherent security concerns. Proper security measures, such as encryption and secure coding practices, are crucial to mitigate risks.
5. **Browser Compatibility:** Ensuring compatibility across different web browsers can be challenging, requiring additional efforts for testing and optimization.

2.3 List of Existing Application to Study

- a. Cliniko
- b. Salesforce
- c. MindPrint

2.4 Study on the Existing Application

2.4.1 Cliniko

Link: <https://www.cliniko.com/>



Figure 1: *Cliniko Application*

Cliniko is a web-based clinic management software designed to streamline administrative tasks and enhance patient care. The system primarily focuses on appointment scheduling, client records management, and overall practice management for healthcare professionals.

1. Appointment Scheduling:

- Efficient scheduling of patient appointments with customizable time slots.
- Calendar view for easy visualization of upcoming appointments.

2. Client Records Management:

- Comprehensive client profiles with detailed demographic and medical information.
- Secure storage of patient records, treatment plans, and medical history.

3. Billing and Invoicing:

- In-built billing and invoicing features for managing financial aspects of the clinic.
- Integration with payment gateways for seamless transactions.

2.4.2 Salesforce

Link: <https://www.salesforce.com/>

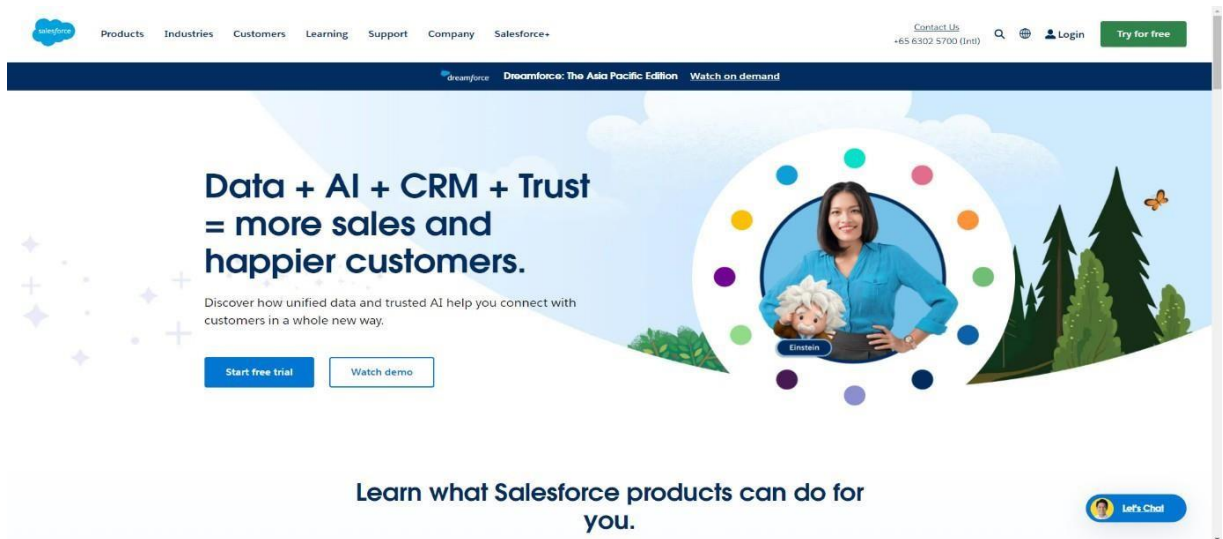


Figure 2: Salesforce Website

Salesforce is a leading customer relationship management (CRM) platform that revolutionizes how businesses manage their interactions and relationships with customers and prospects. The platform offers a cloud-based solution that encompasses various aspects of customer engagement, including sales, marketing, customer service, and analytics.

1. Comprehensive Customer 360 View:

- Salesforce provides a unified platform that consolidates customer interactions and data from various touchpoints.
- Real-time access to customer preferences, history, and needs contributes to more effective communication and relationship-building.

2. Scalable and Customizable:

- Salesforce is designed for scalability, accommodating increasing data volumes and expanding user bases.
- Businesses can adapt Salesforce to fit unique processes, ensuring a seamless integration with existing operations.

3. Advanced Analytics and Reporting:

- Salesforce offers a sophisticated analytics and reporting suite for data-driven decision-making. Users can create custom reports, dashboards, and visualizations to track key performance indicators (KPIs).

2.4.3 MindPrint

Link: <https://v1.mindprintlearning.com/helping-child-succeed-school/>

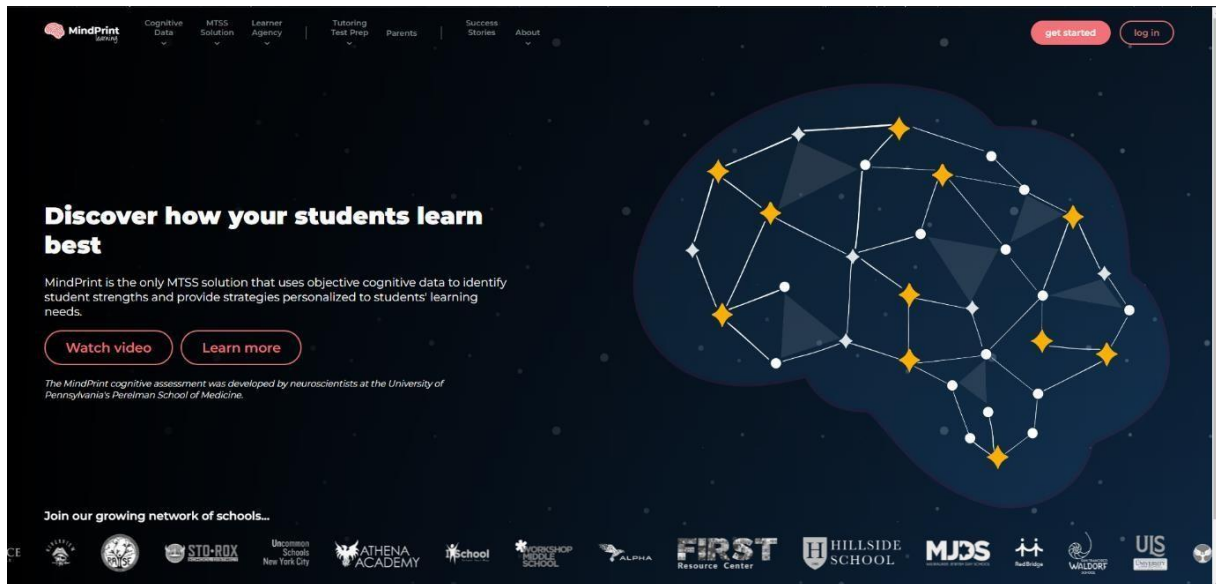


Figure 3: MindPrint Interface

MindPrint is a mobile application that leverages fingerprint detection technology to provide users with personalized insights into their personality traits. The app combines biometric data analysis with psychological profiling to generate accurate personality assessments.

1. Fingerprint Personality Analysis:

- Users can capture their fingerprints using the device's fingerprint scanner.
- The app analyzes fingerprint patterns and correlates them with established personality traits.

2. Psychological Profiling:

- Incorporate psychological models such as the Big Five Personality Traits or Myers-Briggs Type Indicator (MBTI) to categorize users based on their fingerprints.

3. Personalized Reports:

- Generate detailed personality reports outlining strengths, weaknesses, and behavioral tendencies.
- Provide insights into areas such as communication style, decision-making preferences, and interpersonal relationships.

4. Interactive Dashboards:

- Present personality insights through user-friendly dashboards for easy comprehension.
- Visualize personality traits in charts and graphs to enhance user engagement.

2.5 **Comparison of Existing Application**

Features	Cliniko	Salesforce	MindPrint
Platforms	Web, iOS, Android	Web, iOS, Android	Web, iOS, Android
Information	Patient Records	Customer Data	Personality Traits
Secure Data	HIPAA Compliant	SSL Encryption	Advanced Encryption
User-Friendly	Intuitive UI/UX	Customizable UI	User-Centric Design
Report Generate	Yes	Yes	Yes
Free or Paid	Paid Subscription	Paid Subscription	To be Determined

Table 2: Comparison of Existing Application

2.6 **Conclusion**

In this chapter, it conducted an in-depth literature review to explore existing applications relevant to our project, including Cliniko, Salesforce, and the MindPrint. Each application serves distinct purposes in various domains.

Comparing these applications based on platforms, report generation, information handling, data security, user-friendliness, and pricing models revealed their unique strengths and weaknesses. The insights gained from this review will guide the development of our system, ensuring it addresses key features while learning from the successes and limitations of existing solutions.

CHAPTER 3: Methodology

3.1 Introduction

This chapter outlines the methodology employed for the development and implementation of the Personality Prediction System Based on Fingerprint Detection. The systematic approach detailed here encompasses the processes of system design, data collection, and analysis, providing a clear understanding of the development lifecycle. The transparency and replicability of the research outcomes rely on a comprehensive comprehension of the steps and techniques used throughout the project.

Additionally, the methodology acknowledges the interdisciplinary nature of the project, bridging the realms of biometrics, personality psychology, and software development. This convergence facilitates a holistic approach to the implementation of an innovative and accurate personality prediction system.

3.2 Research Methodology Structure

The research methodology for developing the Personality Prediction System Based on Fingerprint Detection adopts the Rapid Application Development (RAD) model. RAD is a dynamic and iterative approach that prioritizes rapid prototyping and feedback cycles. This model is particularly suitable for projects with a clear understanding of user needs and a focus on achieving quick deliverables.

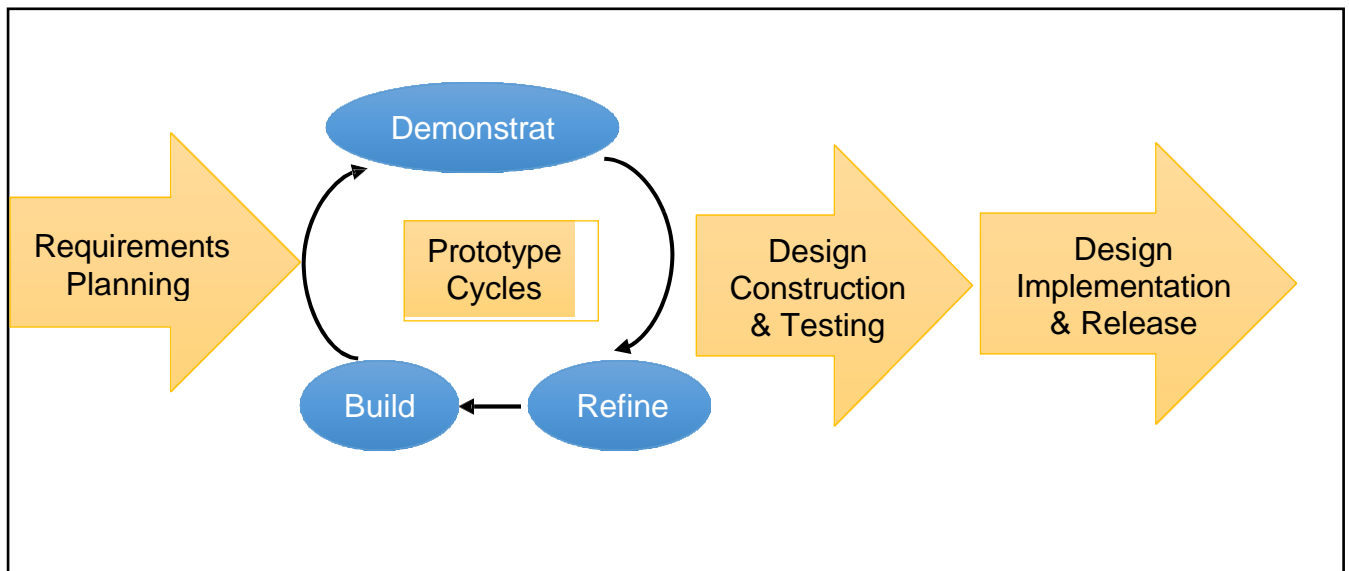


Figure 4: RAD MODEL Methodology

3.2.1 Advantages and Disadvantages of the Methodology

Advantages of RAD Model	Disadvantages of RAD Model
Rapid Prototyping: Quick creation of functional prototypes accelerates development.	High Dependency on User Involvement: Continuous user participation is crucial, and their unavailability may lead to delays.
Early User Feedback: Regular feedback from users allows for quick adjustments and improvements.	Complexity in Large Systems: RAD may face challenges in managing complex and large-scale projects.
Reduced Development Time: Iterative cycles lead to faster development and quicker product delivery.	Not Suitable for Low Budget Projects: The model may require significant resources, making it less feasible for projects with budget constraints.
Flexibility and Adaptability: RAD adapts well to changes in requirements during the development process.	Requires Skilled Developers: The success of RAD relies on the expertise of the development team, and lack of skills can hinder progress.
Improved Quality: Continuous testing helps identify and address issues, contributing to higher overall quality.	Potential for Scope Creep: The focus on user involvement may lead to scope creep as new features are continuously introduced.
Enhanced User Satisfaction: Regular user participation ensures the system meets user expectations.	Limited Reusability: Components may not be reusable across different projects due to their project-specific nature.
Cost-Efficiency: Early detection of issues reduces the cost of fixing defects in later stages.	Incomplete System at Early Stages: Initial prototypes may lack full functionality, and the complete system is developed over iterations.
Strong Communication: Collaborative development encourages effective communication among team members.	Dependency on Tools: RAD success relies on the availability and effectiveness of prototyping and development tools.

Table 3: Advantages and Disadvantages of the methodology

3.2.2 Requirements

In the Requirements Planning phase of the RAD Model, the project team collaboratively identifies and defines project goals, functionalities, and constraints. The process involves conducting user workshops, interviews, and brainstorming sessions to gather detailed requirements. Key stakeholders actively participate in this phase, fostering a shared understanding of the project's scope and objectives. The emphasis is on clear communication and documentation of requirements to serve as a foundation for subsequent phases.

Deliverables: Comprehensive Requirements Document, Project Scope Document, requirement analysis, functional and non-functional requirement.

3.2.3 Quick Design and Prototyping

After the initial requirements are gathered, the RAD Model emphasizes a swift transition to the design and prototyping phase. The design activities involve creating a preliminary design that captures the system's architecture and high-level structures. Prototyping is a pivotal aspect of this phase, allowing for the rapid development of working models or prototypes. An additional point to note is the "Demonstrate-Refine-Build" cycle, which involves showcasing the prototype to stakeholders, refining it based on feedback, and then building upon the refined version. This iterative process ensures that the evolving system aligns with user expectations.

Deliverables: Interactive Prototypes, User Feedback Reports

3.2.4 Construction of Components

The construction phase involves the actual coding and integration of system components. Developers work on individual modules, and continuous testing is performed to identify and address issues early in the development process. This iterative construction process ensures that each component meets specified requirements and seamlessly integrates into the overall system.

Deliverables: Codebase, Integrated System Components, Continuous Integration Reports

3.2.5 Implementation of Final System

As the system components are constructed, the focus shifts to the integration of these components into the final system. Rigorous testing is conducted to validate system functionality and performance. User acceptance testing ensures that the system aligns with user expectations. The iterative nature of the RAD Model allows for ongoing adjustments during this phase, facilitating a responsive and adaptive development process. The implementation phase concludes with the delivery of the final system to end-users.

Deliverables: Final System Build, System Testing Reports, User Acceptance Test (UAT) Outcomes, Deployment Plan

3.3 Project Timeline

In the project timeline, a Gantt chart is used to track the progress of each project activity and determine their expected completion dates. The Gantt chart visually represents the timeline for completing the system as a whole. By using this chart, tasks or activities can be planned and scheduled to start and finish at the right times, making sure that there are no unnecessary delays.

BIL	TASK	FYP 1							FYP 2						
		W1	W3	W5	W7	W9	W11	W14	W1	W3	W5	W7	W9	W11	W14
1	Requirement Planning														
	• Finding Project Title														
	• Proposal Making														
	• Define Project Requirement														
	• Proposal Documentation														
	• Meeting with Client														
	• Proposal Defence														
	• SRS Documentation														
2	• STP Documentation														
	Prototype Cycles														
	• Designing system prototype														
	• Create a basic prototype of the software														
	• Gather feedback from stakeholders and analyze														
3	• Integrate the changes and enhancements														
	Design Construction & Testing														
	• Detailed design and construction														
	• Develop the architecture and design of the final software														
	• Review Coding														
	• Conduct testing														
4	• Perform User Acceptance Testing (UAT)														
	Design Implementation & Release														
	• Deployment and release processes														
	• Real Time using the complete system														
	• Gather feedback and make necessary improvements														
	• Finalize Documentation														
	• Stakeholder review / check-in														

Figure 5: Gantt chart for PERSONALITY PREDICTION SYSTEM BASED ON FINGERPRINT DETECTION

3.4 Requirement Specification

Hardware Requirements for Project Requirements

Hardware
Windows 10 PC Memory: 16 GB RAM Processor: AMD Ryzen 5 5600 Internal Hard Drive: 1 TB Internal SSD: 250 GB

Table 4: Hardware requirements

Software Requirements for Project Requirements

Software Requirements	
Programming Language	<ul style="list-style-type: none">• Python• Streamlit• ImageMagick
Development Tools	<ul style="list-style-type: none">• Visual Studio Code• Microsoft 365• Internet Browser• Notepad++
Database	<ul style="list-style-type: none">• MySql

Table 5: Software requirements

3.5 Budget and Costing

No.	Item	Description	Price
1	Computer <ul style="list-style-type: none"> • AMD Ryzen 5 5600 • 16GB RAM • 250GB SSD • 1TB HDD • RTX 2060 	Personal computer that used for the system development and testing	RM4000
2	Scanner <ul style="list-style-type: none"> • Fingerprint Scanner 	A scanner that will provided by CareXera	RM 0
3	Internet Connection <ul style="list-style-type: none"> • Unifi Home Internet 300Mbps 	Internet connection for research development and connection to the database	RM 300.00/month x 6
TOTAL AMOUNT			RM 5800.00

Table 6: Budget and costing for the project

3.6 Conclusion

In conclusion, the Rapid Application Development (RAD) Model offers a dynamic and iterative approach to software development, emphasizing quick prototyping, user feedback, and incremental releases. This methodology's strength lies in its adaptability to changing requirements, efficient resource utilization, and collaborative project teams. By breaking down the development process into key phases, including Requirements Planning, Quick Design and Prototyping, Construction of Components, and Implementation of the Final System, the RAD Model promotes flexibility and responsiveness to stakeholder needs.

This methodology aligns well with the nature of our project, allowing it to deliver a user-centric, adaptable, and efficient system that meets the evolving needs of both practitioners and administrators.

CHAPTER 4 : PROTOTYPE DEVELOPMENT

4.1 Introduction

In this chapter describes more about the implementation involved during the development of the project. Implementation are carried out to ensure that the system developed according to the main objective of the system and to achieve user requirement. This chapter include hardware and software requirement used in this project. Functional requirement of the system also will be explained in this chapter using case diagram. This chapter will give the result of the Final Year Project of PERSONALITY PREDICTION SYSTEM BASED ON FINGERPRINT DETECTION that has been develop.

4.1.1 Product Requirement

This section explains the hardware and software requirement used during the system development.

For the project, both hardware and software requirements are clearly defined to ensure optimal performance and efficiency. The hardware requirement includes a computer featuring an AMD Ryzen 5 5600 processor, 16 GB of RAM, 250 GB SSD, 1 TB HDD, and an RTX 2060 GPU.

The software requirements encompass development tools such as Visual Studio Code, Microsoft 365, and an internet browser, Notepad++, Streamlit, and SQLite3. This comprehensive set of hardware and software tools is essential to support the project's development, design, documentation, and database management needs effectively.

4.1.2 Functional Requirement (Use Case Diagram)

Functional requirements are a statement that describes how the system should behave while the use case diagram is a description of the function and scope of the system. In a use case diagram, we identify the interaction between the system and its actors. A use case diagram could help the developer to understand how the system should work and what the system should do.

4.1.2.1 Use case Diagram and Description

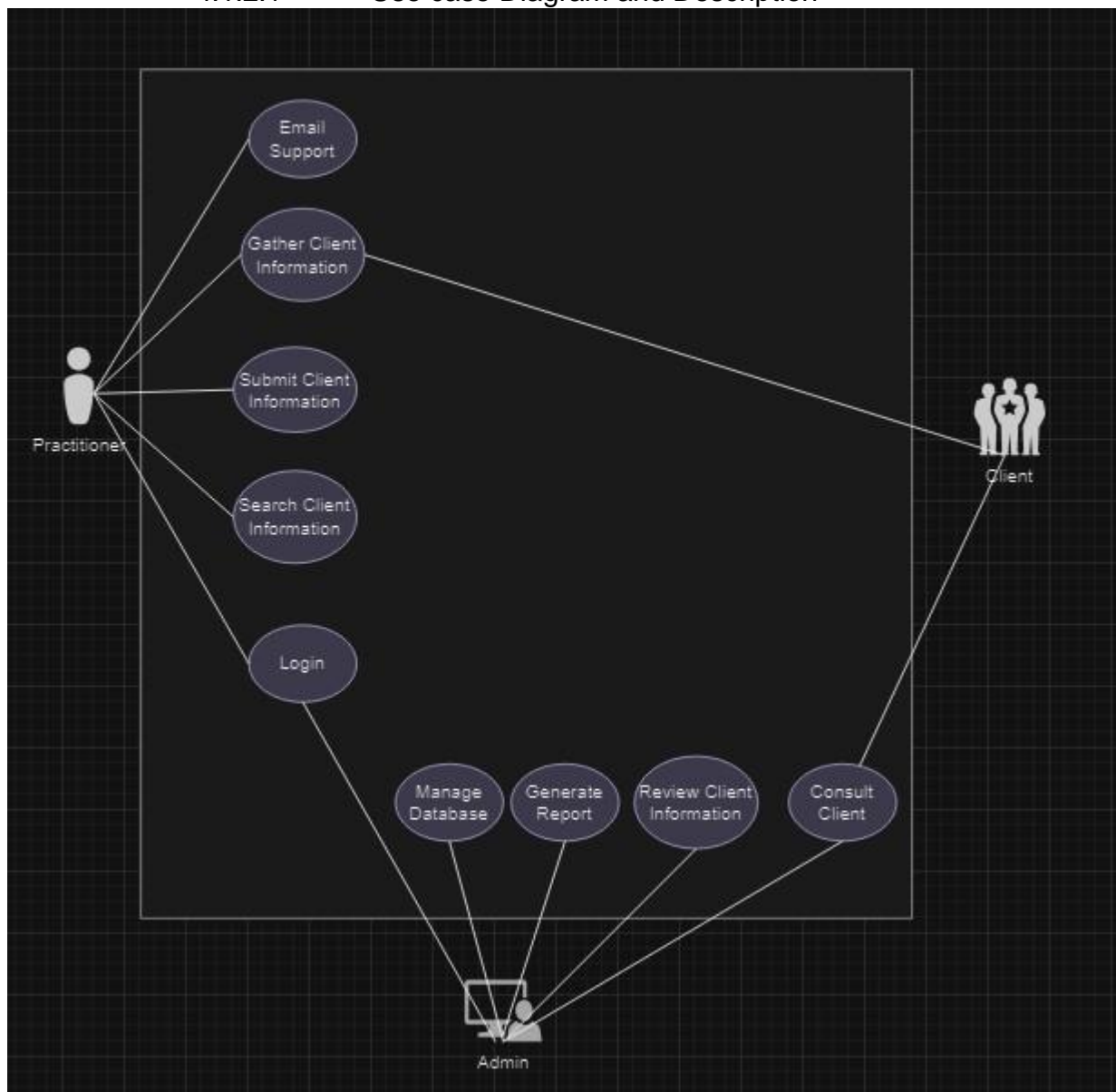


Figure 6: Use Case Diagram

Table 7: Description Use Case Diagram for Web

Modules	Description / System Responsibility
Login	Admin/ Practitioner can login by inserting email and password.
View Menu	Admin/ Practitioner can choose what they going to do when using the application
Email Support	Practitioner can email support from Admin
Gather/submit Client Information	Practitioner can gather Client Information and submit Client Information
Search Client Information	Practitioner Search Client Information from the website retrieve from database
Manage Database	Admin able to manage the database and website
Generate Report	Admin able to generate DISC report
Review Client Information	Admin able to review client information with search function
Consult Client	After the report has been generated admin can consult with the client

4.2 Application Interface

4.2.1 User Interface

The image shows a login interface for a system named 'PPFD'. The background is a dark navy blue. In the top left corner, the text 'PPFD' is displayed in a bold, white, sans-serif font. Below it, in a smaller white font, is the instruction 'Please Enter Valid Username & Password'. Further down, the word 'Login' is written in a bold white font. Underneath 'Login', the label 'Username:' is followed by a long, empty text input field with a light blue border. Below the username field, the label 'Password:' is followed by a long, empty password input field with a light blue border and a small white eye icon on the right side to toggle visibility. At the bottom left of the form area, there is a small, rounded rectangular button with the word 'Login' in white text.

Figure 7: Login Page

When Admin/ practitioner get in to the website, first thing first they need to login using the correct username and password.

Main Menu

Log Out

Enter Client ID

Enter Name

Enter Address

Enter Email

Enter Phone Number

Submit

Upload Images

Drag and drop files here

Limit 200MB per file • JPG, PNG, JPEG, BMP

Browse files

Figure 8: Main Menu Page

After login, the website will redirect to Main Menu Page, which is on this page, Admin/ Practitioner able to key in the client information including 30 fingerprint and submit, the data will be save in the database.

A dark blue header bar containing a search interface. On the left, the text "Search by Name or ID" is displayed in a small, light blue font. To its right is a long, horizontal, light blue search input field with a thin white border. Below the input field, on the left side, is a small, rounded rectangular button with the word "Search" in white text.

Figure 9: Search Page

Admin/ Practitioner able to search the client information using Name or Id using this search function.

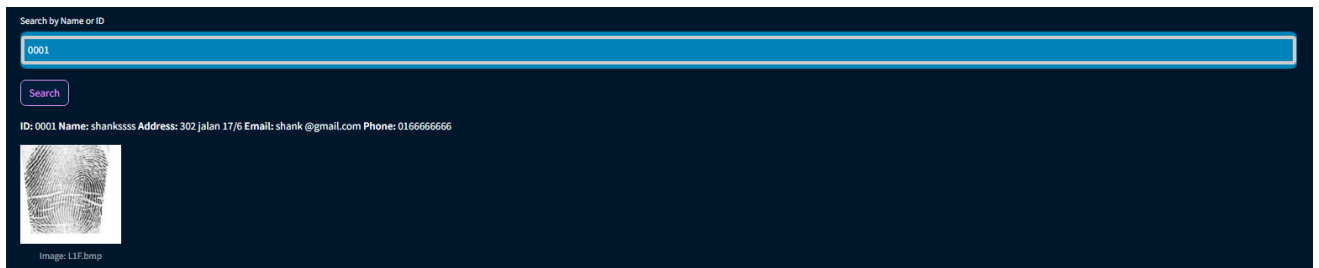


Figure 10: Search Result Page

After success search the client information using Name or ID, the information will be retrieved from the database and displayed in the website.



Figure 11: Delete and Edit Page

After success search the client information, Admin/ Practitioner able to Delete or Edit client information based on what they need to change from the database information.

Editing User ID: 0001

Edit Name
shankssss

Edit Address
302 jalan 17/6

Edit Email
shank@gmail.com

Edit Phone Number
0166666666

Save Changes

Figure 12: Editing Page

In this page, Admin/ practitioner able to make changes and edit the client information.

Generate PDF Report

Enter User ID for Report Generation:

Generate Report



Download PDF Report

PDF Report generated successfully. You can download it above.

Figure 13: Generate PDF Report Page

In this page, Admin/ Practitioner able to generate the PDF Report from the database so that data analyst can review all the fingerprint.

About Us



WELCOME TO CAREXERA || PREDICT || PREPARE || PRESERVE

CareXera's Aspiration is To Provide The Most Affordable Personalized Predictive Genetic Testing And End To End Solution For All Healthcare Professionals In Preventing Chronic Diseases Among Corporate Employees And The Public As Well As Enhancing Personalized Childhood Development And Education In Achieving Malaysia's Sustainable Development Goals (SDG 3 and SDG 4).

<https://carexera.com>

Introduction To CareXera Health

CareXera Sdn. Bhd., established in August 2021, is the first company in Malaysia that provides DNA and Epigenetics Profiling with Personalized Healthy Lifestyle Coaching program. Our aspiration is to empower the current and future generations by preventing chronic diseases, promoting longevity and enhancing childhood learning through genetic profiling. Moreover, we aim to offer the most affordable predictive tools equipped with personalized end to end solutions to help individuals achieve optimal health, physical, mental and being and empowered to work the performance better. We are working in tandem with medical and healthcare professionals to provide personalized predictive, preventive and protective intervention programs, advisory, training, products and services. In addition, we are collaborating with educational institutions to empower parents in enhancing their children's talent, IQ, EQ, and Personality by implementing personalized learning and development based on our Child DNA profiling.

<https://carexera.com/faq>

Figure 14: About Us Page

Contact Us for Assistance with Any Issues

Figure 15: Contact Us Page

Tables (1)

Name	Type	Schema
users		CREATE TABLE users (id TEXT PRIMARY KEY, name TEXT, address TEXT, email TEXT, phone TEXT, picture_data TEXT, picture_names TEXT)
id	TEXT	"id" TEXT
name	TEXT	"name" TEXT
address	TEXT	"address" TEXT
email	TEXT	"email" TEXT
phone	TEXT	"phone" TEXT
picture_data	TEXT	"picture_data" TEXT
picture_names	TEXT	"picture_names" TEXT

Figure 16: Database Page

4.3 Limitation of Prototype Development

In this section, the limitation of prototype development refers to the system functions that are unable to achieve or meet the requirements, and this limitation can be considered as the problem of the system. These are the limitations for this system:

PPFD System

1. **Fingerprint Image Quality:** The system's accuracy is heavily dependent on the quality of the fingerprint images, which can be affected by various factors such as skin condition and sensor quality.
2. **Limited Personality Trait Predictions:** The prototype currently predicts a limited set of personality traits and may not cover the full spectrum of human personality.
3. **Data Security:** The prototype lacks advanced security measures for storing and transmitting sensitive fingerprint data.
4. **User Interface:** The current user interface is basic and may not provide the most intuitive experience for users.

4.4 Conclusion

In conclusion, prototype development is a crucial phase in the product development lifecycle, bridging the gap between initial concepts and full-scale production. By creating tangible models, prototypes allow designers and developers to explore ideas, identify potential issues, and validate functionality before committing significant resources. This iterative process enables early feedback and adjustments, ensuring the final product meets user needs and expectations more accurately.

For the PPFD system, the prototype development has provided valuable insights into the challenges and opportunities of fingerprint-based personality prediction. Despite its limitations, the prototype has demonstrated the potential of this innovative approach and has set the stage for further refinement and enhancement. As we continue to address the limitations and incorporate feedback, we move closer to realizing a robust and reliable system that meets the needs of users and stakeholders effectively.

CHAPTER 5 : TESTING AND RESULT

5.1 Introduction

This chapter will explain the testing phase of the software development process for the PPF (Personality Prediction from Fingerprint Data) project. There are many ways to test a system. In this project, every component, integrated component, and the entire system are tested to ensure the system meets the requirements and is error-free. Before releasing a good product, testing is crucial to reducing bugs and other defects. It is less expensive to remedy any system problems during development than it is to do so after the system has been developed; hence, the testing part of the development process is cost-effective.

5.1.1 Advantages of Testing

There are several significant advantages of testing that can produce a magnificent software application with supreme quality. These are the numerous advantages that can be extracted from testing:

- **Increased Quality:** Testing indirectly increases the quality of the software by detecting and correcting defects earlier prior to delivery. Additionally, testing improves process quality since defects are documented, allowing for analysis, processing, and reuse of solutions to prevent the same errors in the future.
- **Boosted Confidence:** Testing boosts the confidence of all stakeholders, positively affecting the perception of team management regarding the software's quality and robustness due to the detection of very few or no failures.
- **Risk Mitigation:** Testing acts like liability insurance; it may cost significantly, but it ensures that all stakeholders can be at ease by covering and mitigating all possible risks.
- **Cost Reduction:** Successful testing leads to a major reduction in costs, as defects can cause huge expenses if not detected.

5.1.2 Testing Principles

There are seven testing principles that this organization applies, based on ISTQB standards:

- **Principle 1: Testing shows the presence of defects** testing can determine and reveal defects but cannot verify and identify that no defects are present at all. As Edsger W. Dijkstra stated in 1970, "Program testing can be used to show the presence of bugs, but never to show their absence!"
- **Principle 2: Exhaustive testing is impossible** complete exhaustive testing is not feasible except in trivial situations. Risk-based testing will be used to perform risk analysis to determine the priorities of feature modules that need to be tested.
- **Principle 3: Early testing** is not a phase that happens at the end of software development; it should start as early as possible. Early testing (such as static testing and reviews) takes place parallel to development activities, detecting defects earlier and costing less to fix.
- **Principle 4: Defect clustering** Testing effort should be focused proportionally to the expected and observed defect density of modules. A small number of modules often contain most of the defects discovered during pre-release testing or are responsible for most operational failures.
- **Principle 5: Repetitions have no effects – Pesticide Paradox** Repeating tests brings no new insight; thus, test cases need to be regularly reviewed, revised, and modified. We need to avoid executing the same tests and test cases repeatedly, requiring changes.
- **Principle 6: Testing is context-dependent** Testing depends on the context of the software's usage. For example, safety-critical software systems are tested differently (more intensively) from commercial applications.
- **Principle 7: Absence of errors fallacy** A system without failures does not imply that it will meet user expectations. Sometimes, even with no errors and failures, the functionalities provided may not be what the user wants and expects.

5.1.3 Test Mission & Objectives

The goal of this organization is to deliver a software product of the highest quality, where the functional and quality attributes are satisfactory, defects are minimal, and testing activities are conducted systematically.

5.2 Testing Approach

The test approach or strategy that will be used for the PPF system is User Acceptance Testing (UAT). The system developers will test the system. For the testing type, the system will be tested functionally using Functional Testing.

5.2.1 Test Details

The main objective of the test plan is to ensure that the system meets the requirements, including quality requirements (both functional and non-functional), fits the criteria for each quality requirement, satisfies use case scenarios, and maintains the quality of the project. By the end of the project development cycle, the user should find that the project has met or exceeded all their expectations as detailed in the requirements.

5.2.2 Test Objectives

The main objective of the test plan is to assure that the system meets the requirements, including the quality requirements (functional and non-functional), fits the criteria for each quality requirement, satisfies the use case scenarios, and maintains the quality of the project. By the end of the project development cycle, the user should find that the project has met or exceeded all their expectations as detailed in the requirements.

5.2.3 Test Process

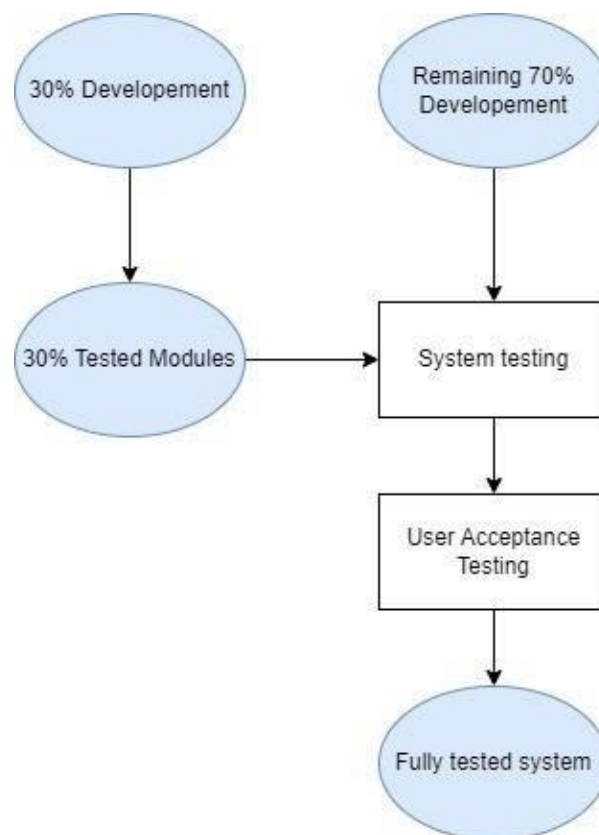


Figure 17: Test Process

The diagram above outlines the Test Process approach that will be followed.

- a. 30% development – Focus on the first 30% of module development, which covers the test sequence of Login, Main Menu and Database
- b. 70% development – Focus on the remaining 70% of module development after completing the first 30%. It covers the rest module for web-based application.
- c. System Testing – In system testing, it focuses on assessing the non-functional attributes of the system for example performance and security.
- d. User Acceptance Testing – In user acceptance testing, it focuses on the assessment of the system by the user in accordance with their satisfaction.

5.3 Functional Testing Approach

5.3.1 Black Box Testing

Black box testing for the PPFD (Personality Prediction from Fingerprint Data) project involves evaluating the software's functionality without delving into its internal code or logic. Testers treat the PPFD platform as a "black box," focusing solely on its external behaviour. The primary goal is to validate that the PPFD system performs in accordance with specified requirements, covering various functionalities like fingerprint data input, personality trait prediction, and result reporting. This testing method ensures seamless integration and operational efficiency within user environments, prioritizing user expectations, data accuracy, and resilience to potential real-world issues.

In the black box testing process for PPFD, test cases are designed to simulate diverse user interactions and scenarios, validating data accuracy and assessing the system's responses. This approach allows for thorough testing of different modules within PPFD without inspecting the underlying codebase. The significance lies in the identification of potential defects, ensuring software reliability, and delivering a robust Personality Prediction System tailored to the specific needs of its users.

5.3.2 Functional Testing

Functional testing is a comprehensive test type employed in the black box testing approach to rigorously assess the PPFD system's functionalities. This testing methodology addresses both functional and non-functional requirements, ensuring a thorough evaluation of the system's capabilities. Functional testing specifically focuses on validating the software's expected behaviours, features, and functionalities as outlined in the project requirements.

This process involves executing test cases that simulate various user interactions and scenarios to confirm that the PPFD platform performs reliably and meets the intended specifications. By scrutinizing both functional and non-functional aspects, functional testing plays a crucial role in verifying the overall effectiveness and performance of PPFD in real-world user settings.

5.3.3 Risk Based Testing

5.3.3.1 Test Schedule

Table 8: Test Schedule

Task	Milestone	Days	Date
Planning	Completion of Section 1 and 2	1	20/6/2024
Analysis and Design	Completion of Section 3	11	21/6/2024
Test Environment Set-Up	Completion of Section 4	5	31/6/2024
Test Implementation	Completion of Section 5	14	4/6/2024

5.3.3.2 Risk Table

Table 9: Risk Table

Label	Probability Range
Very Low	1 in 100
Low	1 in 10
Medium	1 in 15
High	1 in 2
Very High	≥ 1 in 2

5.3.3.3 Test Cases and Data Requirement

(Test Case for PPFD)

Table 10: Test Case for Login

Tested By:	Muhammad Akram Buqhari Bin Mohd Adli
Test Type	Black box testing-Functional testing
Test Design Technique	Use case testing
Risk Number	RS_001
Test Case Number	TC_001
Test Case Name	Login
Requirement Traceability	
Test Case Description	To test login for Admin/ Practitioner
Item(s) to be tested	
1	Admin/ Practitioner Username
2	Admin/ Practitioner Password
Pre-condition:	
Specifications	
Input	Expected Output/Result
Username: Admin Password:123	All input shall be able to be entered
Null Value	System display error message
Test Procedure Steps	
1	Fill in all the details such as Username and Password
2	Click login button
Post-condition : Admin/ Practitioner able to login into the system	
Actual Result: Admin/ Practitioner enters correct credentials and is successfully logged in and redirected to the admin dashboard.	

Table 11: Test Case for Logout

Tested By:	Muhammad Akram Buqhari Bin Mohd Adli
Test Type	Black box testing-Functional testing
Test Design Technique	Use case testing
Risk Number	RS_002
Test Case Number	TC_002
Test Case Name	Login
Requirement Traceability	
Test Case Description	To test logout for Admin/ Practitioner
Item(s) to be tested	
1	NA
Pre-condition:	
Specifications	
Input	Expected Output/Result
NA	NA
Test Procedure Steps	
1	Click logout button
Post-condition : Admin/ Practitioner able to logout from the system	
Actual Result: Admin clicks the logout button, and the system logs out the user and redirects to the login page.	

Table 12: Test Case for Main Menu

Tested By:		Muhammad Akram Buqhari Bin Mohd Adli
Test Type		Black box testing-Functional testing
Test Design Technique		Use case testing
Risk Number		RS_003
Test Case Number		TC_003
Test Case Name		Main Menu
Requirement Traceability		
Test Case Description		To test Admin/ Practitioner able to submit data
Item(s) to be tested		
1	Client ID	
2	Name	
3	Address	
4	Email	
5	PhoneNumber	
Pre-condition:		
Specifications		
Input		Expected Output/Result
Client ID:0001 Name:Muhd Shank Address:302 Jalan 17/6 Email:shank@gmail.com PhoneNumber: 0169550585		All input shall be able to be entered
Null Value		
		System display error message
Test Procedure Steps		
1	Fill in all the details	
2	Click submit button	
Post-condition : Admin/ Practitioner able to submit data		
Actual Result: Admin fills out the form, clicks submit, and receives a confirmation message: "Data submitted successfully."		

Table 13: Test Case for Upload Image

Tested By:		Muhammad Akram Buqhari Bin Mohd Adli
Test Type		Black box testing-Functional testing
Test Design Technique		Use case testing
Risk Number		RS_004
Test Case Number		TC_004
Test Case Name		Upload Image
Requirement Traceability		
Test Case Description		To test Admin/ Practitioner able to upload image
Item(s) to be tested		
1	JPG PNG JPEG BMP	
Pre-condition:		
Specifications		
Input		Expected Output/Result
JPG PNG JPEG BMP		All input shall be able to be entered
Null Value		System display error message
Test Procedure Steps		
1	Fill in all the details	
2	Click submit button	
Post-condition : Admin/ Practitioner able to submit image		
Actual Result: Admin selects an image, clicks submit, and receives a confirmation message: "Image submitted successfully."		

Table 14: Test Case for Search Name or ID

Tested By:	Muhammad Akram Buqhari Bin Mohd Adli
Test Type	Black box testing-Functional testing
Test Design Technique	Use case testing
Risk Number	RS_005
Test Case Number	TC_005
Test Case Name	Search Name or ID
Requirement Traceability	
Test Case Description	To test Admin/ Practitioner able to search Name or ID
Item(s) to be tested	
1	Name
2	Client ID
Pre-condition:	
Specifications	
Input	Expected Output/Result
Name: Shank Client ID:0001	All input shall be able to be entered
Null Value	System display error message
Test Procedure Steps	
1	Fill in all the details
2	Click submit button
Post-condition : Admin/ Practitioner able to search Name or ID	
Actual Result: Admin enters a Name or ID, clicks search, and the system displays the correct information for that Name or ID.	

Table 15: Test Case for Delete Data

Tested By:	Muhammad Akram Buqhari Bin Mohd Adli
Test Type	Black box testing-Functional testing
Test Design Technique	Use case testing
Risk Number	RS_006
Test Case Number	TC_006
Test Case Name	Delete Data
Requirement Traceability	
Test Case Description	To test Admin/ Practitioner able to Delete Data
Item(s) to be tested	
1	NA
Pre-condition:	
Specifications	
Input	Expected Output/Result
NA	NA
Test Procedure Steps	
1	Click delete button
Post-condition : Admin/ Practitioner able to delete data from search function	
Actual Result: Admin searches for a record, selects it, clicks delete, and receives a confirmation message: "Record deleted successfully."	

Table 16: Test Case for Edit Data

Tested By:		Muhammad Akram Buqhari Bin Mohd Adli	
Test Type		Black box testing-Functional testing	
Test Design Technique		Use case testing	
Risk Number		RS_007	
Test Case Number		TC_007	
Test Case Name		Edit Data	
Requirement Traceability			
Test Case Description		To test Admin/ Practitioner able to Edit Data	
Item(s) to be tested			
1	NA		
Pre-condition:			
Specifications			
Input		Expected Output/Result	
NA		NA	
Test Procedure Steps			
1	Click edit button		
Post-condition : Admin/ Practitioner able to edit data from search function			
Actual Result: Admin searches for a record, selects it, clicks edit, makes changes, and receives a confirmation message: "Record updated successfully."			

Table 17: Test Case for Generate PDF Report

Tested By:	Muhammad Akram Buqhari Bin Mohd Adli
Test Type	Black box testing-Functional testing
Test Design Technique	Use case testing
Risk Number	RS_008
Test Case Number	TC_008
Test Case Name	Generate PDF Report
Requirement Traceability	
Test Case Description	To test Admin/ Practitioner able to Generate PDF Report
Item(s) to be tested	
1	NA
Pre-condition:	
Specifications	
Input	Expected Output/Result
NA	NA
Test Procedure Steps	
1	Click Generate PDF Report button
Post-condition : Admin/ Practitioner able to Generate PDF Report	
Actual Result: Admin clicks generate, and receives a downloadable PDF report.	

Table 18: Test Case for Download PDF Report

Tested By:	Muhammad Akram Buqhari Bin Mohd Adli
Test Type	Black box testing-Functional testing
Test Design Technique	Use case testing
Risk Number	RS_009
Test Case Number	TC_009
Test Case Name	Download PDF Report
Requirement Traceability	
Test Case Description	To test Admin/ Practitioner able to Download PDF Report
Item(s) to be tested	
1	NA
Pre-condition:	
Specifications	
Input	Expected Output/Result
NA	NA
Test Procedure Steps	
1	Click Download PDF Report button
Post-condition : Admin/ Practitioner able to Download PDF Report	
Actual Result: Admin generates the report, clicks the download button, and the PDF report is downloaded successfully.	

Table 19: Test Case for About Us Link

Tested By:		Muhammad Akram Buqhari Bin Mohd Adli
Test Type		Black box testing-Functional testing
Test Design Technique		Use case testing
Risk Number		RS_010
Test Case Number		TC_010
Test Case Name		About Us Link
Requirement Traceability		
Test Case Description		To test Admin/ Practitioner able to open About Us Link
Item(s) to be tested		
1	NA	
Pre-condition:		
Specifications		
Input		Expected Output/Result
NA		NA
Test Procedure Steps		
1	Click on the link provided	
Post-condition : Admin/ Practitioner able to open About Us Link		
Actual Result: Admin clicks on the "About Us" link, and the page opens with relevant information displayed.		

Table 20: Test Case for Service Desk

Tested By:	Muhammad Akram Buqhari Bin Mohd Adli
Test Type	Black box testing-Functional testing
Test Design Technique	Use case testing
Risk Number	RS_011
Test Case Number	TC_011
Test Case Name	Contact Us
Requirement Traceability	
Test Case Description	To test Admin/ Practitioner able to use Contact Us
Item(s) to be tested	
1	Name
2	Email
3	Message
Pre-condition:	
Specifications	
Input	Expected Output/Result
Name: Shanks Email: shank@gmail.com Message: Hi, I need help with the system	All input shall be able to be entered
Null Value	System display error message
Test Procedure Steps	
1	Fill in all the details
2	Click send button
Post-condition : Admin/ Practitioner able to send the message and receive the message by the Admin	
Actual Result: Practitioner sends a message to the Admin, and it is successfully delivered without errors.	

5.4 Questionnaire Findings

Questionnaire finding has been done in UNIKL MIIT involving 20 Clients. Each of them has been testing the PPFD system.

Gender

20 responses

 Copy

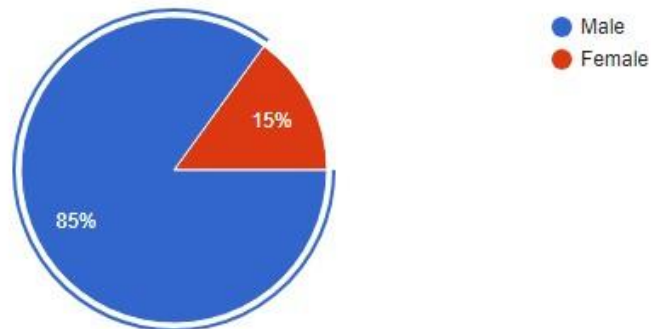


Figure 18: Questionnaire 1

Figure 18 shows 85% are male and 15% are female.

Age

20 responses

 Copy

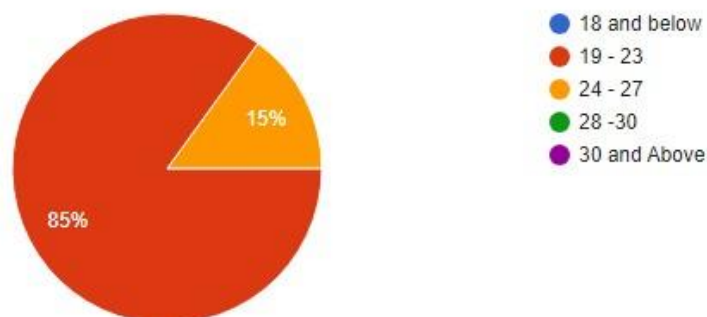


Figure 19:: Questionnaire 2

Figure 19 shows 85 % respondents age are between 19-23, and 15% age between 24-27.

Is it easy to navigate the PPFD web?

 Copy

20 responses

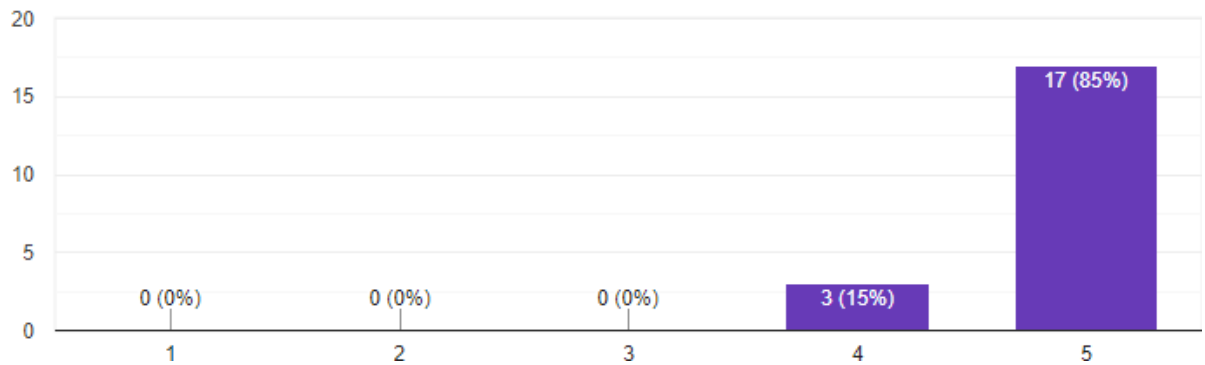


Figure 20: Questionnaire 3

There are 85% respondents votes score for 5 and 15% vote score for 4.

How would you rate overall experience with the PPFD web?

 Copy

20 responses

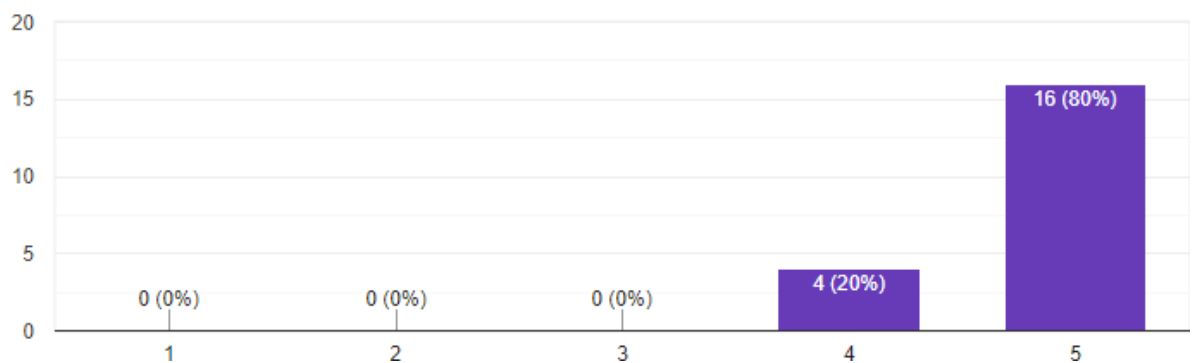


Figure 21: Questionnaire 4

Figure 21 shows 80% respondents score 5 rate overall experience with PPFD web and another 20% score 4.

Does the functionality of system satisfied you?

 Copy

20 responses

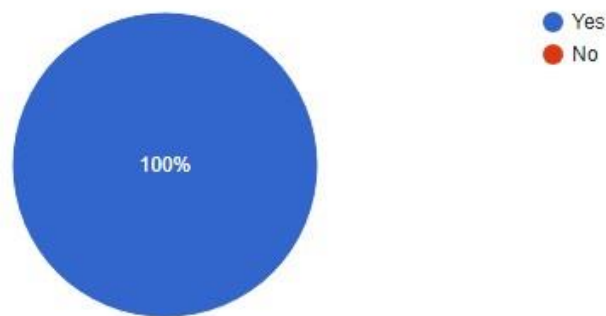


Figure 22: Questionnaire 5

Figure 22 shows that 100% respondents satisfied with the system.

How user-friendly did you find from PPFD Web?

 Copy

20 responses

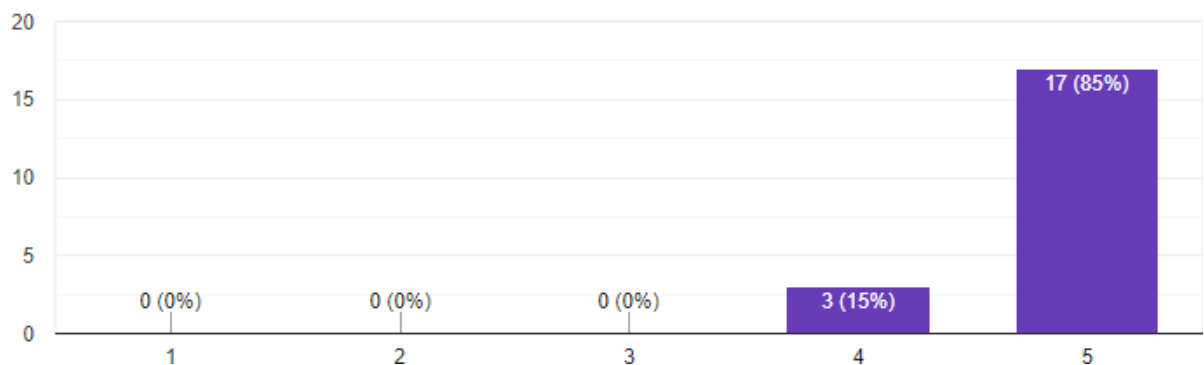


Figure 23: Questionnaire 6

Figure 23 shows that 85% respondents votes for 5 to describe the system user-friendly with the system and 15% votes for 4.

5.5 Conclusion

In conclusion, this chapter thoroughly details the testing methodology and results from the various testing phases conducted for the PPFD (Personality Prediction based on Fingerprint Detection) project. The approach begins with unit testing to ensure each system component functions correctly. It progresses through integration testing to monitor data flow between modules, followed by system testing to evaluate overall system functionality. Each phase is carefully structured to identify and rectify potential issues, ensuring the development of a reliable and robust system.

User Acceptance Testing (UAT) is pivotal in validating the system's alignment with user requirements. Feedback from testers during UAT is included, showcasing successes and pinpointing any discrepancies that require attention. The results indicate that the system meets performance expectations, with minor issues identified during UAT being swiftly addressed. This comprehensive and meticulous testing approach guarantees the system is user-ready and prepared for deployment.

The thorough testing ensures that the PPFD system accurately predicts personality traits from fingerprint data, providing users with reliable and insightful results. The process emphasizes the importance of user satisfaction, system reliability, and overall performance, leading to a successful deployment and high user acceptance. The efforts put into testing have significantly enhanced the quality and robustness of the PPFD system, making it a valuable tool for users.

CHAPTER 6: CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter serves as a comprehensive summary and overview of the study conducted, encapsulating the essence of each chapter, and highlighting key issues discussed throughout. Beginning with a summary of each chapter, it underscores the main topics addressed and their significance in the context of the study. It is concluded that the development of the PPFD (Personality Prediction from Fingerprint Data) system has been successfully completed and well-executed. Notably, all intended users were able to utilize the system effectively during the User Acceptance Testing phase, indicating its usability and functionality. The system underwent rigorous testing by multiple users, yielding positive feedback and affirming its effectiveness in meeting user needs.

6.2 Recommendations

The recommendations of this project are based on what this study regards as critical areas for improving the project to enhance the system features that will benefit the user in the future.

1. **Reinforcing Security Measures:** It is crucial for administrators to safeguard sensitive user data and ensure compliance with privacy regulations. Implementing robust encryption and access control measures can protect against unauthorized access and data breaches.
2. **Enhanced Data Storage and Management:** Automating the storage and management of user data, including historical data, can streamline processes and improve the overall user experience. This includes implementing secure cloud storage solutions and efficient data retrieval mechanisms.
3. **Integration of Advanced Analytics:** Introducing advanced analytics capabilities can provide deeper insights into the fingerprint data and personality predictions. Machine learning algorithms and AI techniques can enhance the accuracy and reliability of predictions.

4. **User Interface and Experience Improvements:** Continuously refining the user interface to make it more intuitive and user-friendly can significantly enhance user satisfaction. This includes responsive design, clear navigation, and personalized user experiences.
5. **Expanding Language Options:** Expanding language options to cater to a broader user base with diverse linguistic backgrounds will promote inclusivity and accessibility. This ensures that users from different regions can effectively utilize the system.
6. **Virtual Assistant Feature:** Introducing a virtual assistant feature could offer interactive support within the system, enhancing user assistance and accessibility. This can guide users through the system, answer queries, and provide real-time support.
7. **Regular Updates and Maintenance:** Ensuring that the system undergoes regular updates and maintenance can address any emerging issues, improve performance, and incorporate new features based on user feedback and technological advancements.

These recommendations aim to enhance the system's performance and user satisfaction, guided by proactive administration.

6.3 Conclusion

The PPF system redefines the approach to personality prediction through its seamless integration of advanced fingerprint analysis technology and user-friendly interfaces. By leveraging real-time data processing and sophisticated algorithms, the PPF system provides accurate and reliable personality insights. Its robust analytics offer actionable insights, empowering users to make informed decisions about personal development and career planning. Adaptable to various applications, from educational settings to professional environments, the PPF system enhances user understanding of personality traits and behaviours.

In today's data-driven world, the PPF system stands as a strategic asset, providing a scientific approach to personality assessment and fostering personal and professional growth. The successful deployment and positive feedback from users underscore its potential to revolutionize personality prediction and offer valuable insights into human behaviour.

REFERENCES

- [1] Mantra Softech India Pvt Ltd. (n.d.). Biometric fingerprint scanner. Retrieved from <https://www.mantratec.com/products/Fingerprint-Sensors>
- [2] CareXera – Your DNA Makes You Unique. (n.d.). Retrieved November 9, 2023, from <https://carexera.com/>
- [3] The Economic Times. (n.d.). What is rapid application development? Retrieved from <https://economictimes.indiatimes.com/definition/rapid-application-development>
- [4] McAndrew, Frank T., Ph.D. (2018, October 2). When Do Personality Traits Predict Behavior? Psychology Today. Retrieved from <https://www.psychologytoday.com/us/blog/out-the-ooze/201810/when-do-personality-traits-predict-behavior>
- [5] Hetler, A. (2023, September 21). Palm Scanning Tech explained: Everything you need to know. WhatIs.com. Retrieved from <https://www.techtarget.com/whatis/feature/Palm-scanning-tech-explained-Everything-you-need-to-know>
- [6] Discprofile.com. (n.d.). What is the disc assessment? Retrieved from <https://www.discprofile.com/what-is-disc>
- [7] Cliniko. (n.d.). Allied Health Practice Management Software. Retrieved from <https://www.cliniko.com/>
- [8] Salesforce. (n.d.). Salesforce: the customer company. Retrieved from <https://www.salesforce.com/ap/?ir=1>
- [9] MindPrint Learning. (n.d.). Retrieved from <https://www.mindprintlearning.com/>

APPENDIX A SOFTWARE REQUIREMENT SPECIFICATION (SRS)

2024

SOFTWARE REQUIREMENT SPECIFICATION (SRS)

PERSONALITY PREDICTION SYSTEM BASED
ON FINGERPRINT DETECTION (PPFD)

IT

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To be submitted for the requirement of Final Year Project 1 course
Bachelor of IT Hons. (Software Engineering)



DOCUMENT APPROVAL

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Software : PERSONALITY PREDICTION SYSTEM BASED ON
FINGERPRINT DETECTION

Archiving Place :

1. INTRODUCTION

1.1 PURPOSE

The purpose of this document is to articulate the requirements and specifications for the development of the Personality Prediction System based on Fingerprint Detection. It serves as a guide for stakeholders involved in the project, including developers, testers, project managers, and other contributors..

1.2 PROBLEM STATEMENT

i. Lack of Personalized Analysis

- Traditional personality assessment tools often lack personalization, relying on generic surveys and questionnaires. This results in a one-size-fits-all approach that fails to capture the intricacies of an individual's personality. The project addresses this gap by introducing a Personality Prediction System that utilizes fingerprint patterns, providing a more nuanced and personalized analysis..

ii. Inefficiency in Conventional Assessment

- Conventional methods of personality assessment are time-consuming, requiring extensive surveys and subjective interpretation. This inefficiency poses challenges in timely decision-making and hinders practitioners from providing quick and accurate insights. The proposed system streamlines the assessment process by leveraging advanced fingerprint detection technology, enabling faster and more efficient personality predictions.

iii. Security and Authentication Concerns

- Existing personality prediction systems often overlook the importance of secure user authentication. Inaccurate predictions may arise if the system cannot reliably associate captured data with the correct individual. By integrating fingerprint detection, a highly secure and unique biometric identifier, the project enhances the authentication process, mitigating concerns related to identity verification and ensuring the system's reliability in producing accurate personality insights.

1.3 REFERENCES

This document is being produced in reference to the following document:

- i. IEEE Std. 830-1998, Recommended Practice for Software Requirements Specifications.

1.4 DOCUMENT OVERVIEW

This document is divided into four sections:

- I. Section 1 contains the introduction for this document.
- II. Section 2 contains an overall description of the application.
- III. Section 3 contains the specific requirements for the application.
- IV. Section 4 contains definitions, acronyms, and abbreviations used in this document.

2. OVERALL DESCRIPTION

2.1 Overall Description

The Personality Prediction System based on Fingerprint Detection is an innovative application designed to revolutionize personality assessment through biometric data. This section provides an overview of the product's perspective, system interfaces, user interfaces, and software interfaces.

2.1.1 Product Perspective

The Personality Prediction System is designed as an independent application, capable of delivering accurate personality predictions solely based on captured fingerprint data. While it operates autonomously, there is potential for integration with existing user databases or systems, enriching the personality assessment with additional contextual information. The system's unique selling point lies in its ability to derive insights solely from fingerprint patterns, making it an innovative and standalone solution for personality prediction.

2.1.2 System Interfaces

The system interfaces seamlessly with fingerprint scanning devices, establishing a direct connection to capture and process biometric data. This ensures a reliable and efficient means of collecting unique identifiers for personality assessment.

Additionally, there is potential for integration with external databases to enhance user authentication and provide a more comprehensive profile of individuals. The robust system interfaces contribute to the overall efficiency and accuracy of the personality prediction process.

2.1.3 User Interfaces

The user interfaces are tailored to the distinct needs of practitioners and administrators. Practitioners access a dedicated portal where they can manage client information, input data, and capture fingerprints. The interface prioritizes simplicity and intuitiveness, facilitating easy data entry and efficient client management.

Admins, on the other hand, use a specialized interface for reviewing fingerprint data, generating comprehensive reports, and conducting consultations. Both interfaces are designed with a user-centric approach, ensuring a smooth and user-friendly experience.

2.1.4 Software Interfaces

Table 1 displays a list of software interfaces that will be utilized in the development of PPFd for web applications. Tables 2 to 4 present the names and descriptions of these software interfaces.

Software Requirements	
Programming Language	<ul style="list-style-type: none">• Python
Development Tools	<ul style="list-style-type: none">• Visual Studio Code
Data Storage	<ul style="list-style-type: none">• SQLite

Table 1: software interfaces for mobile and web application development

Name	Description
Python	Python has a large standard library that includes modules and packages for a wide range of tasks, making it versatile and suitable for various applications, including web development, data science, artificial intelligence, and more
PIP	Pip is the package installer for Python. It is a tool that simplifies the process of installing and managing Python libraries and packages.
Streamlit	Streamlit is an open-source Python library that simplifies the process of creating web applications for data science and machine learning projects.

Table 2: Programming Language

Name	Description
Visual Studio Code	Lightweight source code editor with support for various programming languages.
Microsoft 365	Suite of productivity applications and cloud- based services by Microsoft.
Internet Browser	Web browser used for accessing and interacting with websites and web applications.

Table 3: *Development Tools*

Name	Description
SQLite	SQLite is designed as an embedded database, which means it is incorporated directly into the applications that use it.

Table 4: *Database*

2.2 Product Functions

PPFD products provides 2 different users which is Admin and Practitioner. Admin will have the features that allow them to manage all the data from database and make registration for practitioner. They can add, edit and delete details for all the data.

Admin also can review the fingerprint data and submitted the review result and finally generate the report from client data.

For practitioner, they can make the registration for client. From here practitioner is responsible on taking the data which includes client fingerprints correctly according to the format given by the admin. The system allows practitioners to capture fingerprint images from clients, focusing on specific fingers such as the left thumb, right thumb, and others. These images are securely stored within the system, forming the basis for subsequent personality assessments.

Feature ID	List of Features	Description	Accessible Role
F01	Login	To allow users to login to the system with their given credentials.	Admin, Practitioner
F02	Data Management	To configure database	Admin
F03	Client Registration	To allow Admin or Practitioner to Key In client details and information	Admin, Practitioner
F04	Search Information	To search client information and fingerprints	Admin, Practitioner
F05	About us	To be able to link the button to About us page	Admin, Practitioner
F06	Contact Support	To be able to email the admin for support	Practitioner

2.3 User Characteristics

PPFD involves two main user groups: Admin and Practitioner. Here are the user characteristics for each group:

User	Description	Required Knowledge
Admin	Admin able to login, manage database, manage user, print DISC report, consult client	Proficiency in operating desktop applications and managing data. They should have a good understanding of data management principles.
Practitioner	Gather client data	Have a good communication skills.

2.4 Constraints

The development and implementation of Timing System are subject to certain constraints, which are outlined below:

- i. **Platform Compatibility:** The system is compatible with Windows platform only, which means users of other operating systems may not be able to use it. This limitation could exclude a portion of potential users.
- ii. **Windows Compatibility:** While the system is designed for Windows, it may not work with all versions of Windows, and updates or changes to the Windows platform could affect its performance.
- iii. **Cost:** The cost of implementing and maintaining fingerprint scanner technology can be significant. The system's cost could be a constraint for smaller organizations or events with limited budgets.
- iv. **Training and Adoption:** Admin and Practitioner will need training to use the system effectively. Adoption may take time, and some users may resist the transition from manual processes to a digital system.
- v. **Data Privacy and Security:** The system will collect sensitive data, such as fingerprint data. Ensuring the security and privacy of this data is crucial and may impose constraints related to compliance with data protection regulations.

2.5 Assumptions and Dependencies

Here are some assumptions and dependencies that may affect the requirements for the RFID Timing System for Endurance:

2.5.1 Assumptions

1. **Fingerprint Quality:** The accuracy of personality predictions assumes that captured fingerprint images are of sufficient quality and clarity. Factors such as smudging or poor image resolution may impact the reliability of predictions.
2. **User Cooperation:** The system assumes the cooperation of practitioners and clients during the fingerprint capture process. Users are expected to follow guidelines for optimal image acquisition.
3. **Secure Environment:** It is assumed that the system operates in a secure computing environment, free from potential cybersecurity threats. Adequate measures are in place to protect against unauthorized access.
4. **System Compatibility:** The system assumes compatibility with standard hardware and software configurations commonly used in a typical computing environment.

2.5.2 Dependencies

1. **Biometric Hardware:** The system is dependent on the availability and proper functioning of fingerprint scanning hardware, such as the UareU 4500 fingerprint reader, for accurate image capture.
2. **Database Management System:** The system relies on a stable and functional database management system (DBMS) to store and retrieve user information, fingerprint data, and generated reports.
3. **Internet Connectivity:** While not mandatory, internet connectivity enhances system functionality by enabling updates, additional features, and remote access. However, the system is designed to operate in offline mode when necessary.
4. **Regulatory Compliance:** Dependencies on compliance with relevant data protection and privacy regulations are crucial to ensure ethical and legal use of biometric data.

3. SPECIFIC REQUIREMENTS

3.1 External Interface Requirements

For this section shall plan the details of the external interfaces requirements which enfold a group of user interface, hardware interface, and software interface requirements of PPFd. The interfaces will be classified and grouped based on their features:

3.1.1 User Interfaces

Requirement ID	REQ_001	Version	1.0
Item	Login		
Description	Users shall provide their login credentials that has been given to access in the PPFd.		
Purpose	Registered users can securely log in to the PPFd and access their personalized features and settings.		
Format	Username - Text Password - Masked text field	Valid Range	Not applicable
Related I/O	None		
Author	Muhamad Akram Buqhari Bin Mohd Adli		

Table 3.1: Login Interface

Requirement ID	REQ_002	Version	1.0
Item	PERSONALITY PREDICTION SYSTEM BASED ON FINGERPRINT DETECTION(PPFD)		
Description	Practitioner able to register client information.		
Purpose	Client Information gathered during the process.		
Format	Id - TEXT Name - TEXT Address - EXT Email - TEXT Phone - TEXT picture_data - TEXT picture_names - TEXT	Valid Range	Not applicable
Related I/O	None		
Author	Muhamad Akram Buqhari Bin Mohd Adli		

Table 3.2: Login Interface

Requirement ID	REQ_003	Version	1.0
Item	Search Client Information Based on ID as Primary Key		
Description	Admin and Practitioner able to search client information		
Purpose	To view the client data		
Format	ID – TEXT NAME - TEXT	Valid Range	Not applicable
Related I/O	None		
Author	Muhamad Akram Buqhari Bin Mohd Adli		

Table 3.3: Search Client Information

Requirement ID	REQ_004	Version	1.0
Item	Contact Support by email		
Description	Practitioner able to contact admin through email using the PPFD website		
Purpose	Get support from Admin		
Format	Name – TEXT Email – TEXT Message - TEXT	Valid Range	Not applicable
Related I/O	None		
Author	Muhamad Akram Buqhari Bin Mohd Adli		

Table 3.3: Contact Support

3.1.2 Hardware Interface

Not Applicable.

3.1.3 Software Interface

CariSpot has specific requirements and constraints related to its software interface. These are as follows:

- i. Desktop Application:
 - PPFDD will be developed as a desktop application for Windows platforms only.
 - The app's user interface should be designed to provide a seamless and intuitive experience for users accessing it on their desktop.
- ii. Desktop Application for Admin:
 - PPFDD will have a desktop application interface specifically for the administrators to manage data of the users which include Practitioner and Client.
 - The desktop application should have a user-friendly interface that allows administrators to generate report easily.
- iii. Desktop Application for Practitioner:
 - PPFDD will have a desktop application interface specifically for the Practitioner to gather client information.
 - The desktop application should have a user-friendly interface that allows Practitioner to submit client information which also include fingerprints to the website to be reviewed by Admin.

3.2 Software Product Features

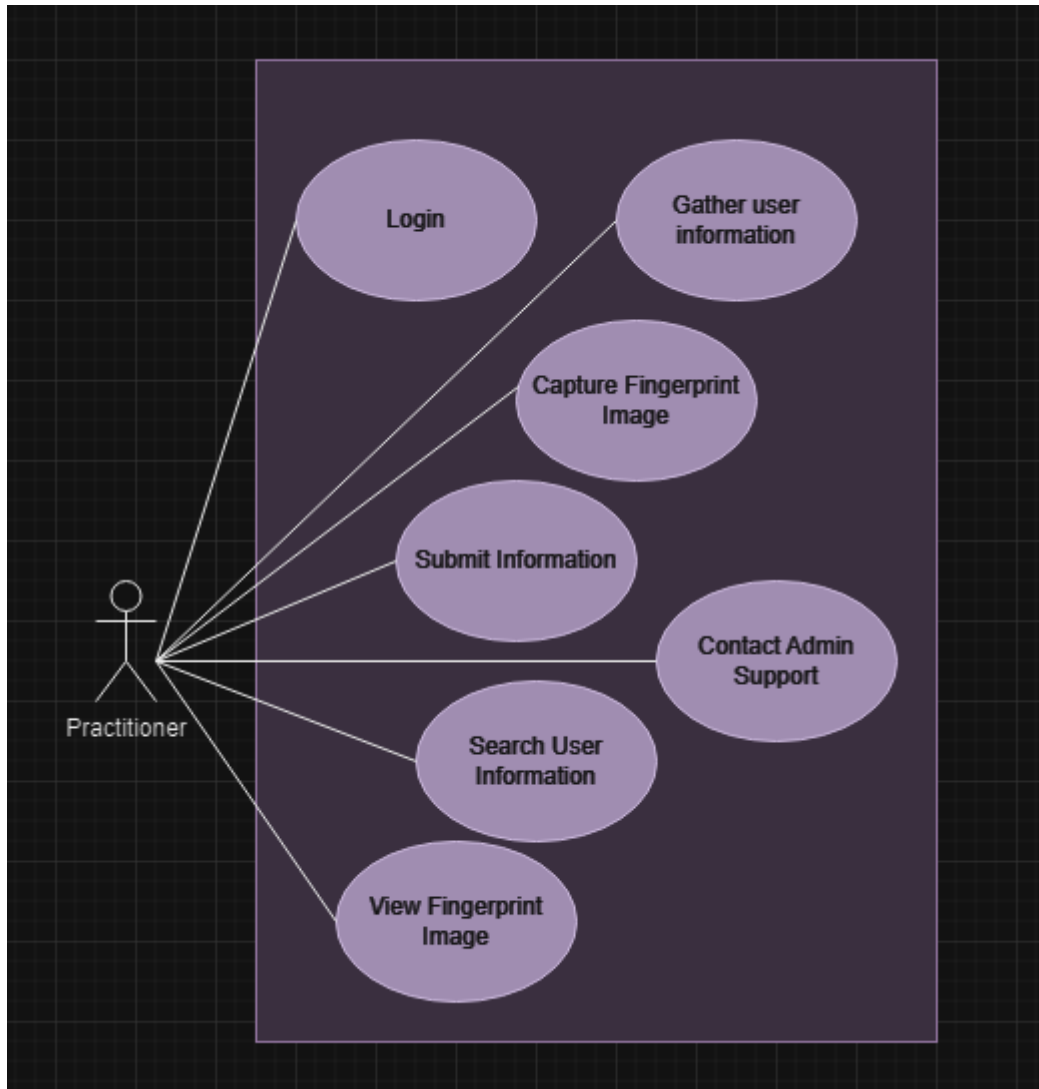


Figure 3.1: Use Case of PPFD: Personality Prediction system based on Fingerprint Detection

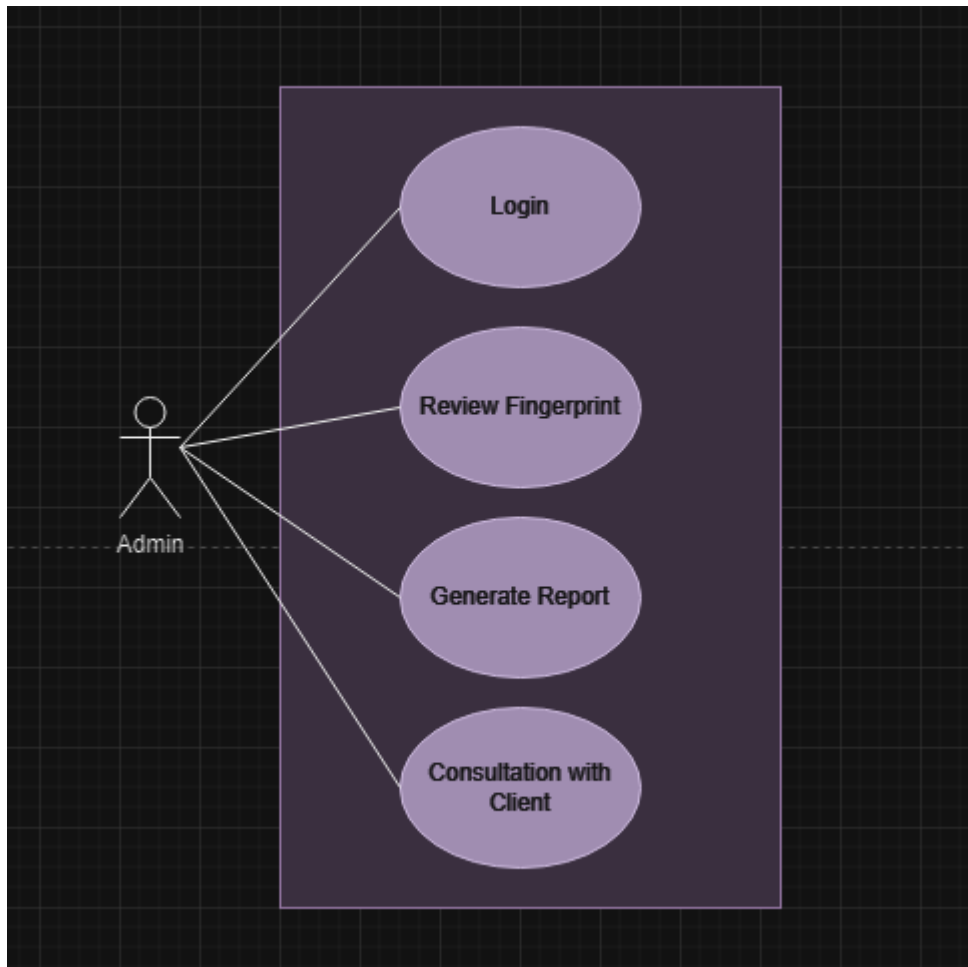


Figure 3.2: Use Case of PPFD: Personality Prediction system based on Fingerprint Detection (Admin)

3.2.1 Functional Requirements for Drivers

3.2.1.1 Login

Functional Requirement ID	Description	Priority	Author
FR_U001	Users shall be able to enter their username and password to access their PPFd account.	High	Akram Buqhari
FR_U002	System shall be able to validate the correctness of their login credentials during the login process.	High	Akram Buqhari

Table 3.2.1: Login Functional Requirements

Use Case ID	UC_U001	Version	1.0
Use Case Name	User Login		
Requirement ID	REQ_001		
Purpose	To allow users to login to their existing PPFD account.		
Actor	User (Admins)		
Trigger	The user initiates the login process.		
Precondition	UC_U001		
Flow of events			
Scenario			
Main Flow	Step	Action	
User Login	1	The user opens the PPFD application.	
	2	The system displays the login screen.	
	3	The user enters their username and password.	
	4	The user clicks on the "Login" button.	
	5	The system validates the login	

		Credentials.
	6	If the credentials are valid, the user is granted access to their PPFD account.
	7	The use case ends.
Alternate Flow		
Title	Description	
Invalid Credentials	If the user enters incorrect login credentials: <ul style="list-style-type: none">The system displays an error sign indicating the invalid credentials.	
Post-condition		
Title	Description	
Success	The user is successfully logged in to their PPFD account.	
Extension points	Not applicable	

Table 3.2.2: Use Case of Login

3.2.1.3 Client Registration

Functional Requirement ID	Description	Priority	Author
FR_U003	Practitioner shall be able to register the client into the system	High	Akram Buqhar i

Table 3.2.5: Registration Functional Requirements

Use Case ID	UC_U002	Version	1.0
Use Case Name	Client Registration		
Requirement ID	REQ_002		
Purpose	To allow Practitioner to register the client.		

Actor	User (Admins)	
Trigger	The user initiates the process of registration.	
Precondition	UC_U002	
Flow of events		
Scenario		
Main Flow	Step	Action
Generating Results	1	The user opens the PPFID application.
	2	The system displays the main screen based on the user’s account.
	3	The practitioner will register the client.
	4	The system will store the data of the client.
Alternate Flow		
Title	Description	
Invalid Credentials	If the user enters invalid image: <ul style="list-style-type: none">The system displays an error within warning message image error.	
Post-condition		
Title	Description	
Success	The Practitioner is successfully registering the client in the system.	
Extension points	Not applicable	

Table 3.2.6: Use Case of Registration

3.2.1.3 Search Client Information

Functional Requirement ID	Description	Priority	Author
FR_U004	Admin and Practitioner shall be able to search the client into the system	High	Akram Buqhari

Table 3.2.5: Search Functional Requirements

Use Case ID	UC_U003	Version	1.0
Use Case Name	Search Client Information		
Requirement ID	REQ_003		
Purpose	To allow Admin and Practitioner to search the client.		
Actor	User (Admins)		
Trigger	The user initiates the process of registration.		
Precondition	UC_U003		
Flow of events			
Scenario			
Main Flow	Step	Action	
Generating Results	1	The user opens the PPFD application.	
	2	The system displays the main screen based on the user’s account.	
	3	The admin and practitioner will search the client.	
	4	The system will get the data from database	
Alternate Flow			
Title	Description		

Invalid Credentials	If the user enters incorrect ID credentials: <ul style="list-style-type: none"> The system displays an error sign indicating the invalid credentials.
Post-condition	
Title	Description
Success	The Admin and Practitioner is successfully search the client in the system.
Extension points	Not applicable

Table 3.2.6: Use Case of Search Client Information

3.2.1.3 Contact Support

Functional Requirement ID	Description	Priority	Author
FR_U005	Practitioner shall be able to contact support from Admin by Email	High	Akram Buqhari

Table 3.2.5: Search Functional Requirements

Use Case ID	UC_U004	Version	1.0
Use Case Name	Contact Support		
Requirement ID	REQ_004		
Purpose	To allow Practitioner to Contact Support from Admin.		
Actor	User (Admins)		
Trigger	The user initiates the process of registration.		
Precondition	UC_U004		
Flow of events			
Scenario			
Main Flow	Step	Action	

Generating Results	1	The user opens the PPFD application.
	2	The system displays the main screen based on the user’s account.
	3	The practitioner will contact support by fill in the blank contact support box in system.
	4	The system will get send the message to Admin email.
Alternate Flow		
Title	Description	
Invalid Credentials	If the user enters incorrect credentials: <ul style="list-style-type: none">The system displays an error sign indicating the invalid credentials.	
Post-condition		
Title	Description	
Success	The Admin and Practitioner is successfully search the client in the system.	
Extension points	Not applicable	

Table 3.2.6: Use Case of Contact Support

3.3 Performance Requirements

The following table displays the list of performance requirements that are defined for Timing System.

Performance Requirement ID	Description	Priority	Author
PR001	The average response time of System when retrieving data information shall be less than 2 seconds.	High	Akram Buqhari
PR002	The average response time of the login to the system shall be less than 3 seconds	Moderate	Akram Buqhari
PR003	The average response time of the printing REPORT shall be less than 3 seconds	High	Akram Buqhari
PR004	The average response time of the launching the system shall be less than 5 seconds	Moderate	Akram Buqhari
PR005	The average response time of the update the CLIENT INFORMATION in the system shall be less than 3 seconds	High	Akram Buqhari
PR006	The average response time of the CONTACT SUPPORT to send the email to the Admin shall be less than 3 seconds	High	Akram Buqhari

3.4 Requirements Traceability

The table below summarizes the relationship between user interface, functional requirements, and use cases are shown in the table below:

User Requirement ID	Functional Requirement ID	Use Case ID	Functionality	Role
REQ_002	FR_U003	UC_U002	Client Registration	Admin Practitioner
REQ_001	FR_U001 FR_U002	UC_U001	Login	Admin Practitioner
REQ_003	FR_U004	UC_U003	Search Client Information	Admin Practitioner
REQ_004	FR_U005	UC_U004	Contact Support	Admin Practitioner

4. DEFINITIONS, ACRONYMS AND ABBREVIATION

Definitions

Admin	A use who is responsible to analyst the data, generate result, do the consultation
Practitioner	A user who is responsible to manage the registration.

Acronyms

FREQ	Functional Requirement
IEEE	Institute of Electrical and Electronics Engineers
MIIT	Malaysian Institute of Information Technology
QREQ	Quality Requirement
REQ	Requirement
SRS	Software Requirement Specification
UC	Use Case
UniKL	Universiti Kuala Lumpur

APPENDIX B: SOFTWARE TEST PLAN (STP)

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UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

Test Plan

PERSONALITY PREDICTION SYSTEM BASED ON FINGERPRINT DETECTION

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1.0 Introduction

1.1 Purpose

This test plan support the following objectives:

- i. To detail the activities required to prepare for and conduct the system test.
- ii. To communicate to all responsible parties the tasks that they are to perform and the schedule to be followed in performing the tasks.
- iii. To define the sources of the information used to prepare the plan.
- iv. To define the test tools and environment needed to conduct the system test.

1.2 Scope

The scope of the Software Test Plan for Personality Prediction System Based on Fingerprint Detection is to focus on testing and ensure the functionality of the system. The testing will be conducted using Black Box Testing, which allows for an evaluation of the overall effectiveness of the system's features without considering its internal structure. The Software Test Plan will specifically cover the functional requirements of PPF, with the primary objective of achieving the necessary functionality to successfully develop the system.

1.3 References

The following IEEE standards have been referenced in preparation of this document:

- i. IEEE 829-1998 Standard for Software and System Test Documentation
- ii. IEEE 829-2008 Standard for Software and System Test Documentation

The following documents provide the test basis for this test design:

- i. Personality Prediction System Based on Fingerprint Detection Software Requirements Specifications (Personality Prediction System Based on Fingerprint Detection and Guidance_SRS_1.0)

2.0 Test Plans

2.1 Test Items

The following documents will provide the basis for defining correct operation:

- i. Personality Prediction System Based on Fingerprint Detection System Requirement Specifications 1.0 (SRS)

The test items include all system features in PPFD, as described in Section 2.2 below.

2.2 Test Traceability Matrix

The following table contains the functions in PPFD and its traceability:

Function ID.	Risk Level	Function Description	Source of Function
FR1	MEDIUM	Login	SRS
FR2	MEDIUM	Client Registration	SRS
FR3	HIGH	Search Client Information	SRS
FR4	LOW	Contact Support	SRS

Table 2.2 Test Traceability Matrix

2.3 Features to be tested

Function ID.	Function Description	Risk Level
FR1	Login	MEDIUM
FR2	Registration	MEDIUM
FR3	Search Client Information	HIGH
FR4	Contact Support	LOW

Table 2.2 Features to Be Tested

2.4 Features not to be tested

Aside from the features listed in Section 2.2, other aspects of the system are not covered in this test plan. This includes:

- i. Operation procedure
This test plan is for system level test, operation procedure is not covered here.
- ii. Network security
This test plan is designed for functional test, security is not covered here.

2.5 Test Approach or Test Strategy

The test on PPFD is a system level functional test that focuses only on the functional part of the system. Testing will be using risk-based strategy.

This test will also be a black-box test where test cases are derived using black box testing techniques such as:

- i. Equivalence partitioning
- ii. Boundary value analysis
- iii. Decision table testing
- iv. State transition testing
- v. Use case testing

During the testing process, inputs will be provided to the PPFD application, and the expected outputs will be compared against the specified requirements. This approach allows us to identify any deviations or defects in the software's behavior and functionality. All identified issues will be thoroughly documented, and will be fixed in next release version.

2.6 Item Pass/Fail Criteria

The system must satisfy the following criteria in order to pass:

- i. The application should not crash or freeze during normal operation.
- ii. PPFD should display the expected behavior without any unexpected errors.
- iii. All user inputs and actions should be validated and processed correctly.
- iv. PPFD should operate correctly on all supported devices, including mobile devices and web browsers.

Other than that, all test items must fulfil its requirement as stated in SRS.

2.7 Suspension Criteria and Resumption Requirements

Suspension Criteria:

- Testing resources are unavailable or insufficient to continue testing.
- The testing environment is not stable or available for use.
- The testing objectives have been met.

Resumption Requirements:

- Critical defects have been fixed and the application is stable enough to continue testing.
- Testing resources are available and sufficient to continue testing.

- The testing environment is stable and available for use.
- Any necessary fixes or updates have been made to the application

2.8 Test Deliverables

The following documents will be generated by the system test group and will be delivered during the system testing.

Test documentation:

- Test Plan
- Test Transmittal Report
- Test Design Specifications
- Test Case Specifications
- Test Procedure Specifications
- Test Logs
- Test Incident Reports
- Test Summary Report
- Test Completion Report

2.9 Entry Criteria

The following items are needed before the testing can begin:

- Requirements documents for PPFD 1.1
- Software Under Test: PPFD 1.1

2.10 Exit Criteria

The following items are needed before the testing can end:

- All required test deliverables, as outlined in Section 2.8 Test Deliverables, have been successfully provided.
- Test execution has been completed.
- Open defect at the end of final iteration shall be:
 - Zero fatal defect,
 - Zero major defect
 - <= three minor defects.

3.0 Test Management

This section describes the test activities and tasks for each specified level and the progression of test of Personality Prediction System Based on Fingerprint Detection. It

is here to identify the infrastructure, responsibilities and authority, organization interfaces, resources, training, schedules, and risk(s) of this test.

3.1 Planned Tasked and Activities

The flowing table shows the set of tasks necessary to prepare for and perform testing for PPFD. It was identify dependencies of other tasks and significant constraint such as test item availability, testing resources availability and deadlines.

No.	Task	Activities
1	Test Planning and control	<ul style="list-style-type: none"> i. Define test project scope and objectives ii. Requirement view iii. Identified risks, staffing and scheduling iv. Documenting test plan v. Technical review vi. Submission and approval of test plan
2	Test Analysis and Design	<ul style="list-style-type: none"> i. Analyze product ii. Develop test design specification iii. Prepare test case specification
3	Test Environment	<ul style="list-style-type: none"> i. Setup CariSpot ii. Identify and acquired test data
4	Test Implementation and Execution	<ul style="list-style-type: none"> i. Prepare test procedure specification ii. Perform functional test iii. Record test result iv. Analyze test result
5	Documenting Test Summary Report	<ul style="list-style-type: none"> i. Summarize test result
6	Documenting Test Closure	<ul style="list-style-type: none"> i. Collecting test process data from completed activities to consolidate experience, testware, facts and numbers.
7	Test Complete	<ul style="list-style-type: none"> i. Deliver the finalized PPFD application

3.2 Environment & Infrastructure

This section describes the hardware, software and operating system that require for this system testing.

3.2.1 Hardware

The following table shows the hardware requirements that will be used to install PPFD.

Hardware Name	Laptops or Desktop / Fingerprint Scanner Readers that support USB to HID Mode
Manufacturer	Any Windows Supported Devices except mobile.
Card Processor	Any Intel or AMD Processors

3.2.2 Software

The following table shows the software requirements of Find My Device that will be used to install CariSpot.

Application Name	PPFD
Version	1.0
Type of file	.EXE
Size of Application	10MB
Operating System	Windows 7 and above

3.3 Responsibility and Authority

This section will identify the individuals or groups responsible for managing, designing, preparing, executing, witnessing, and checking results of this testing. In addition, it will identify the persons responsible for providing the test items in Section 2.0 and environmental needs identified in Section 3.2.

Underline Specific roles and responsibility of project testing team member.

Roles	Responsibilities
Test Manager	<ul style="list-style-type: none"> - Defining the overall purpose and objectives of the testing effort for PPFD. - Ensuring effective planning and management of test resources. - Assessing the progress and effectiveness of the testing effort. - Advocating for the resolution of critical defects to maintain the desired level of quality. - Promoting testability focus in the software development process.
Test Lead	<ul style="list-style-type: none"> - Deploying and managing the appropriate testing framework for PPFD. - Implementing and evolving relevant measurements and metrics to evaluate the product under test and the testing team. - Planning, coordinating, and managing the testing effort for each release or engagement of PPFD. - Managing and developing the necessary testing assets, including team members, testing tools, and testing processes. - Ensuring the retention and growth of skilled testing personnel.

Test Analyst	<ul style="list-style-type: none"> - Identifying the target test items to be evaluated during the testing of PPFD. - Defining the appropriate tests and associated test data required for effective testing. - Gathering and managing the test data needed for the testing activities. - Evaluating the outcome of each test cycle and providing insightful analysis.
Tester	<ul style="list-style-type: none"> - Performing test requirements analysis to understand the testing objectives for PPFD. - Developing and updating test cases based on the defined requirements. - Preparing test data required for executing the test cases. - Executing the test cases and logging the results accurately. - Analysing and reporting any identified defects. - Conducting re-tests for fixed defects to verify their resolution.

3.4 Resources and Allocation

This section will describe any additional required resources that are not already documented by other parts of the plan. This is including internal or external resources.

External Resources

There are no external resources required in system testing.

Internal Resources

The internal Quality Assurance Team of University Kuala Lumpur shall be responsible for reviewing the test deliverables for adherence to compliance.

3.5 Training

All personnel that involve in this testing are require training on PPFD according to their responsibility.

- i. Training on the operation flow of PPFD
- ii. Training on the roles related to driver and parking lot operator.

3.6 Schedules, Estimates and Costs

This section will describe the project schedule and task milestones. The schedule will include estimated time that required for each testing task. Cost is not included for this testing.

Task	Milestone	Days
Test Planning and control	Submission of Test Plan for sign-off.	7
Test Analysis and Design	Submission of Test Design Specification, Test Case Specification, and Test Procedure Specification.	8
Test Environment	Setup of test Environment	4
Test Implementation and Execution	Execution of system test of PPFD	17
Documenting Test Summary Report	Submission of Test Summary Report	1
Documenting Test Closure	Submission of Test Closure	1
Test Complete	Delivery of product	1

3.7 Risk and Contingency

This section identifies the risk issues that may impact successful completion of the system testing activities of CariSpot. The potential likelihood, impact and mitigation plan was described in the following tables.

Rating for Likelihood for Each Risk	
1	Rated as Low
2	Rated as Medium
3	Rated as High
4	Rated as Extreme

Rating for Impact for Each Risk	
1	Rated as Low
2	Rated as Medium
3	Rated as High
4	Rated as Extreme

Function ID	Risk Description	Likelihood	Impact	Risk Exposure	Risk Treatment Plan	People Responsible	Cost
F1	Slow app performance	3	2	6	Perform performance testing and optimization	Test Team	-
F2	User interface inconsistency across devices	3	4	12	Conduct UI testing on different device models	Test Team	-
F3	Network connectivity issues	2	4	8	Perform network testing and handle connection errors	Test Team	-
F4	Compatibility issues with different devices	3	3	9	Perform compatibility testing on different device models	Test Team	-
F5	Data synchronization errors	2	3	6	Perform data validation and synchronization testing	Test Team	-

4.0 General

4.1 Metrics

The following metrics will be collected and used to monitor the progress.

Metric List	Metric Description	Goals
Actual duration vs. plan (variance)	Metric to monitor the project progress compared to the plan	Allow 10% delay
Percentage of test cases run during test execution	Metric to monitor total number of test cases executed	100%
Percentage of test cases passed against total of test cases executed	Metric to monitor total number of test cases executed with Passed criteria	All high-risk test cases passed
Percentage of baseline requirement covered against total test cases	Metric to monitor total number of baseline requirement coverage	100%

4.2 Glossary

Term	Definition
SDS	Software Design Specification
SRS	Software Requirement Specification
TP	Test Plan

4.3 Incident Classification

Impact
Mission Critical : Application will not function or system fails Major : Severe problems but possible to work around Minor : Does not impact the functionality or usability of the process is not according to requirements/design specifications
Priority
Immediate : Must be fixed as soon as possible Delayed : System is unstable but incident must be fixed prior to next level of test or shipment Deferred : Defect can be left in if necessary due to time or costs

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