TAYLOR'S UNIVERSITY
Wisdom Integrity Excellence

Bachelor of Computer Science (Hons)

Module Code : ITS66704 (July/Aug 2023)

Module Name : Advanced Programming

Assignment No./Title	Assignment Task 2 & Task 3 (Group Project) 20% (PART A - ANALYSIS AND DESIGN) 30% (PART B - DEVELOPMENT) 10% (PRESENTATION)
Course Tutor/Lecturer	Mr. Biju Maharjan/ Mr.Subit Timalsina
Submission Date	09/11/2023 (PART A - ANALYSIS AND DESIGN) 23/11/2023 (PART B - DEVELOPMENT) 23/11/2023 (PRESENTATION)

Student Name, ID and Signature

1.Shreya Chipalu- 0355446

2. Anupa Gurung- 0355943

3. Astha Joshi- 0355813

4. Shabnam Rai- 0355550

5. Rojina Tamang- 0355466

Declaration (need to be signed by students. Otherwise, the assessment will not be evaluated)

Certify that this assignment is entirely my own work, except where I have given fully documented references to the work of others, and that the material contained in this assignment has not previously been submitted for assessment in any other formal course of study.

Marks/Grade:	Evaluated by:

Evaluator's Comments:

Table of Contents

1. INTRODUCTION

The Automated Citizenship Assessment System for Masathai is an innovative initiative that aims to provide an automated approach for evaluating citizenship aspirants. At its foundation, this project emphasizes the critical need for a uniform and efficient procedure to assess the eligibility of those seeking citizenship in Masathai, the newly constituted nation. Malaysia, Singapore, and Thailand are working together to form the nation of Masathai and impose a standardized Citizenship Test for all people. The project's technology has the potential to revolutionize the total efficiency of the citizenship assessment process, including candidate registration, authentication, and examination, while also providing a smooth and transparent result presentation.

1.2 Project Management Plan Objective

• Develop a comprehensive roadmap for the successful completion of the Automated Citizenship Assessment System for Masathai project.

• Describe the project's objectives, scope, timetables, resource requirements, and deliverables.

• Define the roles and responsibilities of team members and stakeholders.

• Establish communication and risk management procedures to guarantee project execution runs smoothly.

· Ensure that the project contributes to the integrity and fairness of the Masathai citizenship application process.

• Create an easy-to-use and secure system for citizenship candidates to improve their overall experience.

• Provide comprehensive result analysis and feedback to candidates in order to help them understand their strengths and areas for improvement.

These goals work together to guide the project to completion and the creation of an efficient and user-friendly Automated Citizenship Assessment System for Masathai.

1.2 Mission:

Our ambition for the Automated Citizenship Assessment System is to create a streamlined and user-friendly platform that streamlines the citizenship assessment procedure. We intend to make this technology available to all candidates, providing them with a simple and dependable way to complete the exam. By doing so, we hope to contribute to the integrity and fairness of the Masathai citizenship application process.

1.3 Vision:

Our purpose is to create a system that meets the unique demands of citizenship applicants by providing an easy-to-use and secure registration and authentication process. We aim to provide candidates with an entertaining examination experience as well as detailed result analysis and feedback, allowing them to identify their strengths and areas for progress.

2. Countries selected:

Countries selected and the related 20 questions for the Citizenship Assessment System

This content is mainly focused on the development and execution of Masathai's Automated Citizenship Assessment System. Malaysia, Singapore, and Thailand have been chosen for this plan, and they are collaborating to form a new nation called Masathai and adopt a standardized Citizenship Test for all inhabitants.

20 Questions for Discussion with Option:

● **In which year did Malaysia gain independence?**

A) 1957

B) 1963

C) 1957

D) 1980

Answer: B) 1963

● **What is the capital city of Malaysia?**

A) Kuala Lumpur

B) Jakarta

C) Bangkok

D) Manila

Answer: A) Kuala Lumpur

● **Which ethnic group forms the largest population in Malaysia?**

A) Malay

B) Chinese

C) Indian

D) Dayak

Answer: A) Malay

- **What is the national language of Singapore?**

  A) English

  B) Mandarin

  C) Malay

  D) Tamil

  Answer: A) English

- **Singapore gained independence from Malaysia in which year?**

  A) 1959

  B) 1965

  C) 1971

  D) 1982

  Answer: B) 1965

- **The symbol of Singapore, Merlion, represents a mythical creature with the head of a lion and the body of a fish. What does it symbolize?**

  A) Prosperity

  B) Unity

  C) Courage

  D) Maritime heritage

  Answer: D) Maritime heritage

- **What is the capital city of Thailand?**

  A) Phnom Penh

  B) Hanoi

  C) Bangkok

  D) Vientiane

  Answer: C) Bangkok

- **. Which Thai festival is known for the water fights that take place throughout the country?**

  A) Songkran

B) Loy Krathong

C) Yi Peng

D) Thai New Year

Answer: A) Songkran

- **. What is the traditional Thai dance-drama often performed at cultural events and festivals?**

    A) Khon

    B) Ram Wong

    C) Likay

    D) Mor Lam

    Answer: A) Khon

- **What is the name of the new country formed by the unification of Malaysia, Singapore, and Thailand?**

    A) Thaipore

    B) Malaythai

    C) Singathai

    D) Masathai

    Answer: D) Masathai

- **The official currency of Masathai is called:**

    A) Ringgit

    B) Baht

    C) Dollar

    D) Masathai Coin

    Answer: C) Dollar

- **Masathai's flag consists of how many horizontal stripes representing each founding country?**

    A) 2

    B) 3

    C) 4

D) 5

Answer: B) 3

- **Which river is the longest in Masathai, flowing through multiple regions?**

   A) Chao Phraya

   B) Mekong

   C) Kinabatangan

   D) Singapore River

   Answer: B) Mekong

- **Masathai is known for its diverse cuisine. What is the famous spicy noodle dish often associated with Thailand?**

   A) Laksa

   B) Pho

   C) Pad Thai

   D) Hainanese Chicken Rice

   Answer: C) Pad Thai

- **. The traditional dance of the Malay community in Masathai is called:**

   A) Kecak

   B) Joget

   C) Tinikling

   D) Ram Wong

   Answer: B) Joget

- **Masathai is strategically located in Southeast Asia, connecting which major bodies of water?**

   A) Pacific Ocean and Indian Ocean

   B) South China Sea and Andaman Sea

   C) Arabian Sea and Bay of Bengal

   D) Gulf of Thailand and Timor Sea

   Answer: B) South China Sea and Andaman Sea

- **Masathai is known for its vibrant festivals. Which festival involves the release of lanterns into the sky?**

  A) Loy Krathong

  B) Yi Peng

  C) Songkran

  D) Diwali

  Answer: B) Yi Peng

- **The iconic Petronas Towers, once the tallest twin towers in the world, are located in which city of Masathai?**

  A) Bangkok

  B) Kuala Lumpur

  C) Singapore

  D) Penang

  Answer: B) Kuala Lumpur

- **Masathai has a rich history of traditional martial arts. What is the national martial** art of Thailand?

  A) Silat

  B) Muay Thai

  C) Kali

  D) Krabi-Krabong

  Answer: B) Muay Thai

- **The official language(s) of Masathai include(s):**

  A) Malay, Thai, and English

  B) Mandarin, Malay, and Tamil

  C) Thai and English

  D) Malay and Mandarin

  Answer: A) Malay, Thai, and English

3. Limitations:

• **The possibility of technical issues or system downtimes:** The Automated Citizenship Assessment System, like any technological system, may face technical faults or issues that could disrupt the assessment process. These difficulties could range from server failures to software defects, all of which have an influence on the user experience.

• **Reliance on assessment question quality:** The accuracy of the assessment is strongly reliant on the quality of the questions contained in the examination module. Poorly written or confusing questions can result in erroneous assessments, thereby putting candidates at a disadvantage.

• **The effectiveness of the analysis module as it relates to assessment accuracy:** The analysis module is critical for evaluating and presenting the results of the assessment. If the analysis module is not well-designed, it may produce inaccurate or misleading results, reducing the fairness and reliability of the evaluation.

4. Solutions:

In order to resolve potential technical issues and system downtimes, a dedicated technical support team should be in place to monitor system performance and respond quickly to any problems. Regular maintenance and updates should also be arranged to prevent problems from occurring.

• **Continuous quality assurance of assessment questions:** A rigorous quality assurance approach for assessment questions is required to verify the accuracy of the assessment. Expert assessment, pilot testing, and continuing evaluation of question effectiveness should all be part of this process. Regular changes and revisions to questions are also required based on candidate performance and feedback.

• **Continuous enhancement of the system's analytical capabilities**: Continuous improvement efforts can improve the effectiveness of the analysis module. This could include improving algorithms, statistical approaches, and data interpretation methods. The analysis module should be reviewed and updated on a regular basis as part of the system's maintenance strategy.

• **Invaluable candidate feedback for system improvement:** Candidate feedback is invaluable for system improvement. It can aid in the identification of problems with the assessment process, question quality, and user experience. Mechanisms for collecting and acting on candidate recommendations and concerns should be in place to ensure that the system evolves to meet the demands of its users.

By addressing these restrictions and implementing these solutions, the Automated Citizenship Assessment System will be able to run more efficiently, delivering a dependable and fair assessment experience for all candidates.

5. SCOPE MANAGEMENT

5.1 Scope definition process

The scope of the project involves the development of an automated Citizenship Assessment System with specific features and functionality.

5.2 WORK BREAKDOWN STRUCTURE

5.2.1 Candidate Registration and Authentication

This critical module is in charge of coordinating the registration and authentication processes for applicants taking the Citizenship Assessment. Individuals may register using a secure and user-friendly interface by inputting personal information such as their name, birth year, gender, and nationality. Each applicant establishes a unique password upon registration, assuring their identity and data protection. The module then saves these candidate details in a serialised data file, which will be used for authentication, data integrity, and privacy protection.

5.2.2 Examination Module

The Examination Module is the system's core, providing a thorough assessment experience. It has an eye-catching interface that shows the candidate's name, gender, and the national flag of their country of origin. Throughout the evaluation, a conspicuous 5-minute countdown counter keeps applicants informed, delivering auditory cautions to help them manage their time properly. The module also displays the current question number out of a total of 20, allowing applicants to easily switch between questions using user-friendly controls. The system offers a wide variety of question kinds, including text-based, image-based, and multiple-choice questions. These questions are retrieved from an external data file ("question_list.txt"), assuring test diversity and quality. The module records and analyses applicants' responses once they submit them.

5.2.3 Analysis and Result Presentation

This module is dedicated to clearly and informatively analysing and presenting the findings of the citizenship evaluation. It computes and shows essential statistical measures such the maximum, minimum, mean, mode, median, and standard deviation. These data provide a comprehensive overview of applicants' performance. The results are organised by score, making it simple to discern between pass and fail outcomes. This module guarantees that applicants receive insightful feedback on their performance, assisting them in understanding their strengths and areas for growth.

5.2.4 Result Display

The Result Display module gives a full overview of all candidates' evaluation outcomes. It has an easy-to-use interface with a drop-down list that allows users to choose individual candidates. The module displays the proportion of accurate responses for each selected candidate. Candidates can also check their replies to each question, along with the proper answers. This tool supports self-evaluation and learning by allowing applicants to understand which questions they answered properly and which need more attention.

5.2.5 Object-Oriented Concepts

The Object-Oriented Concepts module is critical to the architecture and code structure of the system. It makes the best use of fundamental object-oriented principles such as instantiation, encapsulation, inheritance, and polymorphism. These features improve the codebase's modularity, flexibility, and maintainability, guaranteeing that the system is durable and adaptable to future upgrades.

5.2.6 User Interface

The User Interface module focuses on providing applicants with a visually appealing and intuitive interface. Design aesthetics, user-friendly navigation, and accessibility are all prioritised. This module requires proper code style, naming standards, indentation, and extensive comments. It guarantees that the system not only performs properly, but also delivers a pleasant and engaging user experience, which contributes to overall user satisfaction and the assessment system's success.

These modules together comprise the Automated Citizenship Assessment System's backbone, assuring its functioning, usefulness, and efficacy in testing applicants' understanding of Masathai's history and culture.
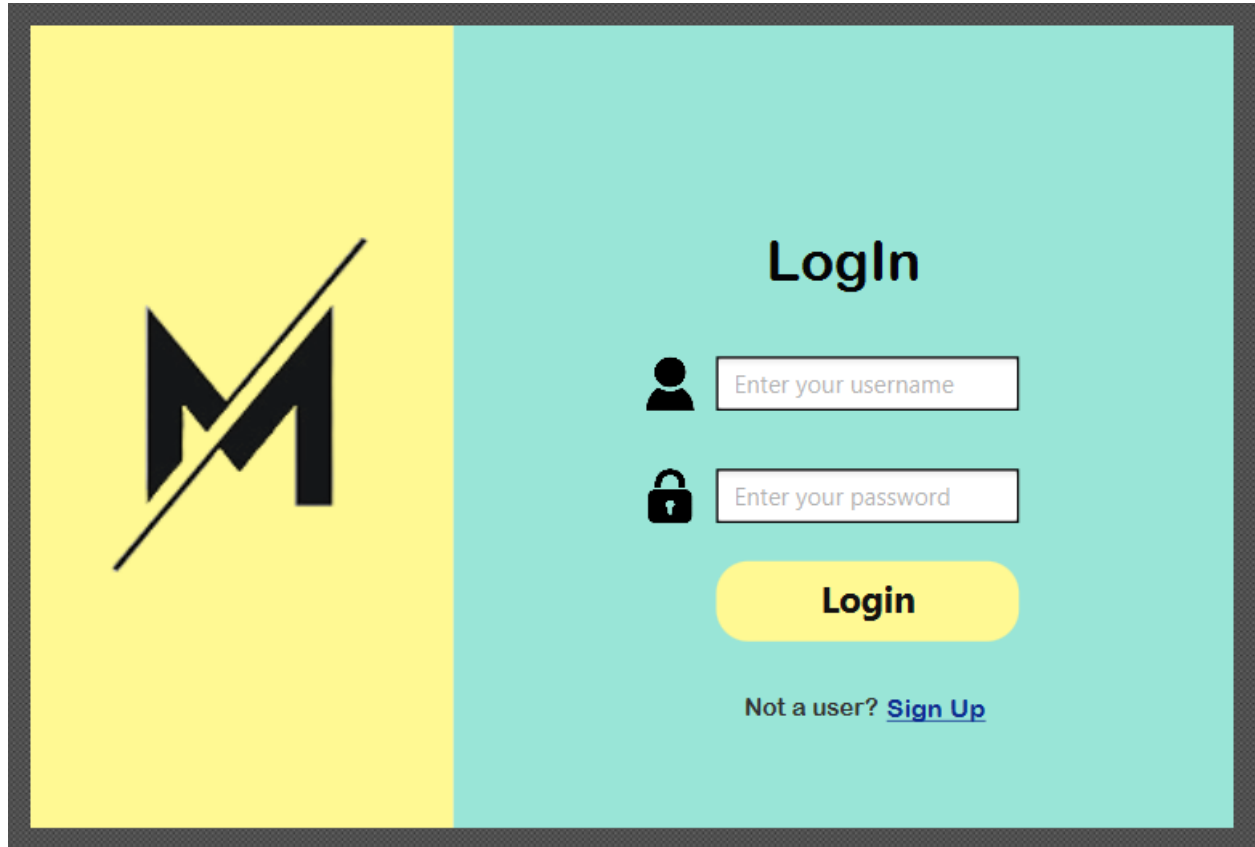
5.2.7 Unique Implementation

This module emphasizes the unique features that differentiate the system from other similar applications.

6. System Architecture Overview:
6.1 UI/UX:

Login Page

Registration page:

Examination Module:

Citizenship Pre-requisites

START

Question

◯ Option 1
◯ Option 2
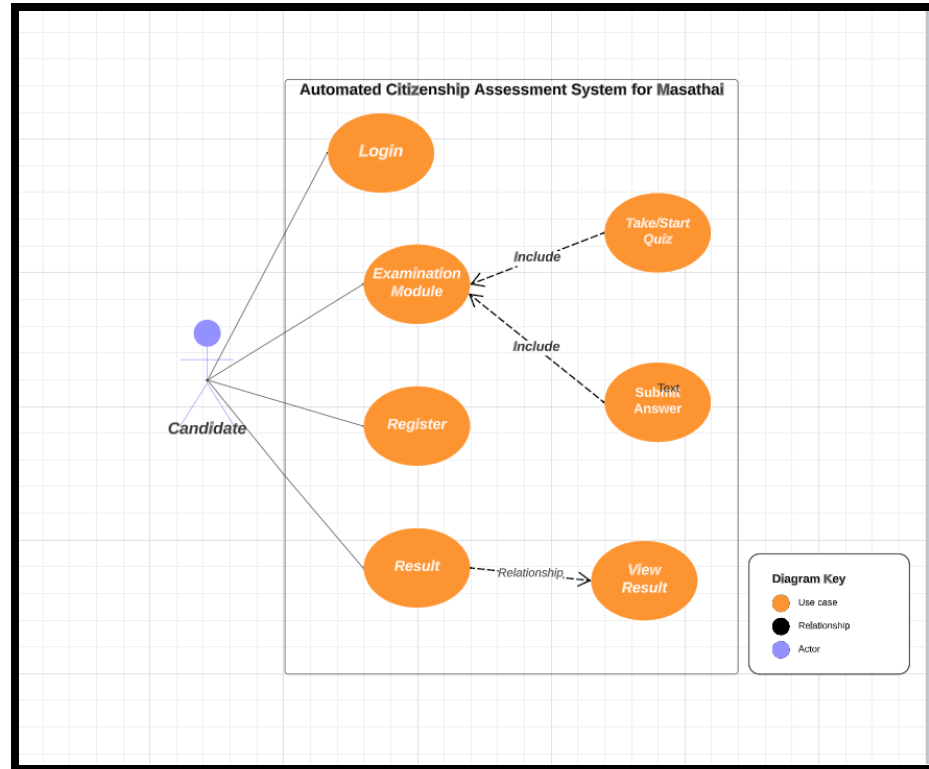◯ Option 3
◯ Option 4

Back   Next

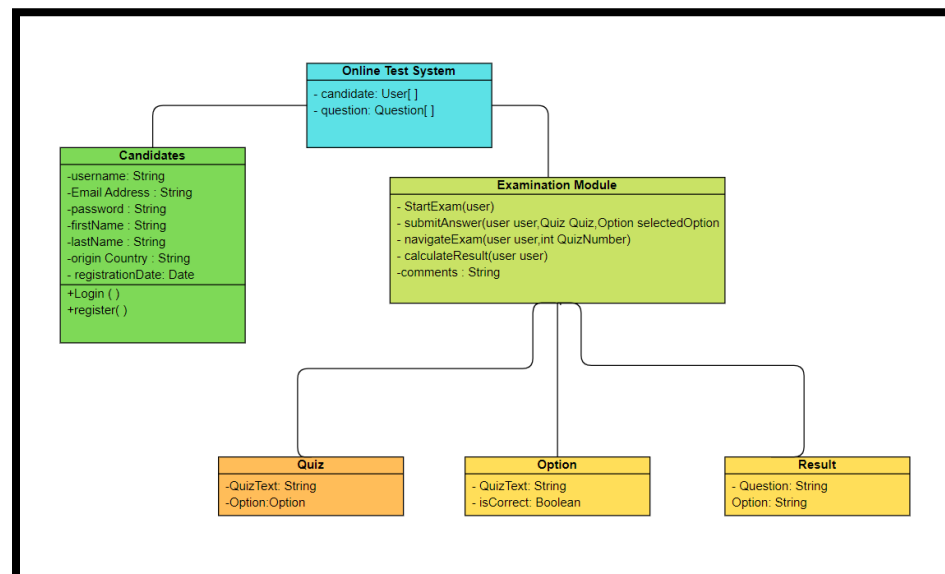**Result Page:**

6.2 UML:
Use case diagram:

Class diagram:

7. System Requirements:

- **Secure and Reliable Hosting Environment:** The system requires a hosting environment that is both secure and reliable in order to protect sensitive candidate information. To protect data, security measures such as encryption, firewalls, and frequent security audits should be in place. To reduce downtime, redundancy and backup solutions should be built.

- **Candidate Information Database**: A solid database system is required for securely storing and managing candidate information. The database should be designed to manage enormous amounts of data while maintaining data integrity and facilitating efficient data retrieval. To preserve applicant privacy, access to the database should be restricted to authorized staff.

- **Fast and reliable Internet Connectivity:** To offer a seamless user experience, the system relies on a fast and reliable internet connection. Applicants should be able to access and engage with the system without interruptions or delays. This is especially important for real-time interactions during the assessment process.

- **User-Friendly Interface That Adheres to Design and Usability Standards:** The system's user interface should be created with a focus on usability and adherence to design and usability standards. This means that the interface should be simple and straightforward to use, allowing candidates to complete the evaluation without difficulty or irritation. It should also adhere to design best practices in terms of aesthetics and accessibility.

- **Device and Browser Compatibility**: To ensure accessibility for all candidates, the system should be compatible with a variety of devices (e.g., desktops, laptops, tablets, smartphones) and web browsers (e.g., Chrome, Firefox, Safari, Edge). This flexibility means that applicants can use their chosen devices and browsers to access the system, making it inclusive and accessible to a diverse user population.

  By achieving these system requirements, the Automated Citizenship Assessment System may provide candidates with a safe, dependable, and user-friendly environment in which to conduct their examinations. It also ensures that the system is available to a wide range of people, encouraging justice and inclusivity in the citizenship assessment process.

8. MILESTONES:

A. Module: Candidate Registration and Authentication

Milestone: Milestone 1 - User Registration and Authentication Module Completion

Dependency: None

Depended with: Examination Module

B. Module: Examination Module

Milestone: Milestone 2 - Completion of the Citizenship Assessment Examination Module

Dependency: Milestone 1 (Candidate Registration and Authentication)

Depended with: Analysis and Result Presentation

C. Module: Analysis and Result Presentation

Milestone: Milestone 3 - Successful Implementation of Analysis and Result Presentation Module

Dependency: Milestone 2 (Examination Module)

Depended with: Result Display

D.Module: Result Display

Milestone: Milestone 4 - Completion of the Result Display Module

Dependency: Milestone 3 (Analysis and Result Presentation)

Depended with: Object-Oriented Concepts

E.Module: Object-Oriented Concepts

Milestone: Milestone 5 - Integration of Object-Oriented Concepts into the System

Dependency: Milestone 4 (Result Display)

Depended with: User Interface

F.Module: User Interface

Milestone: Milestone 6 - User Interface Enhancement and Completion

Dependency: Milestone 5 (Object-Oriented Concepts)

Depended with: Unique Implementation

G. Module: Unique Implementation

Milestone: Milestone 7 - Implementation of Unique Features to Differentiate the System

Dependency: Milestone 6 (User Interface)

Depended with: Project Completion

These milestones represent significant checkpoints in the project's development, ensuring that each module is completed and integrated into the system in a logical and systematic manner. Milestones also help in tracking progress and managing dependencies effectively.

9. Conclusion:

Masathai's Automated Citizenship Assessment System intends to simplify the citizenship application procedure. It aims to improve efficiency and justice by simplifying candidate registration, verification, examination, and result presentation.

Defining the scope of the project, creating schedules, allocating resources, establishing team and stakeholder responsibilities, increasing communication, and managing risks are all important project objectives. The primary goal is to develop a user-friendly and secure system that provides informative feedback to candidates.

Technical difficulties, question quality, and analysis performance are all potential challenges. Technical support, continuing quality assurance, and system updates are among the solutions, with candidate input playing an important part in improvement.

Candidate Registration, Examination, Analysis, Result Presentation, User Interface, and Implementation are the modules that make up the project. Each module is critical to the system's performance and ensures complete coverage.

The success of the project is dependent on particular needs such as secure hosting, a powerful database, dependable internet, user-friendly design, and compatibility with various devices and browsers. These requirements will make the system usable by a diverse set of users.

In conclusion, the Masathai Automated Citizenship Assessment System is a well-planned project with clear goals, solutions to probable obstacles, and a disciplined development approach. It intends to make the citizenship assessment process efficient, dependable, and user-friendly for all applicants, in line with the idea of a unified platform.

10. Appendix: Project Management Plan Approval

The undersigned acknowledge we have reviewed the Automated Citizenship Assessment System for Masathai Project Management Plan and agree with the approach it presents. Changes to this project will be coordinated with and approved by the undersigned or their designated representatives

Name: Astha Joshi

Title: Team Member

Role: Co-Ordinator

Name: Anupa Gurung

Title: Team member

Role: Supervisor

Name: Shabnam Rai

Title: Team Member

Role: Developer

Name: Sherya Chipalu

Title: Team Member

Role: Developer

Name: Rojina Tamang

Title: Team Member

Role: Co-Ordinator