Part 4:Test Planning

1. **Introduction**
    - **Describe the overall system and high-level goals**
      To standardize the security aspects of machine-readable travel documents, the International Civil Aviation Organization (ICAO) Document 9303, Part 3 sets forth an overarching framework (MRTDs). The technology aims to increase the precision of identification verification procedures, safeguard against counterfeiting and fraud, and make it easier for travelers to traverse international borders. The standard specifies the conditions that must be satisfied for a document to be regarded as secure and legitimate for usage globally.
    - **Testing strategy Executive Summary-a very high-level overview**
      The ICAO Passport Standard 9303 Part 3 (P3) testing technique will make sure that the software complies with the standards set out by the ICAO standard. The focus of the testing will be on confirming the functioning and security of the storage, processing, and transfer of passport data, and it will comprise both manual and automated testing of the software. Unit tests will be part of manual testing, however performance testing will be the main focus of automation testing. To make sure that everything is compatible and usable, testing will be done on all relevant systems. The protection of the passport data will also be ensured through security testing. To ensure traceability and repeatability, all testing will be carried out in compliance with ICAO requirements and will be documented. The testing strategy's overarching objective is to examine the software's performance in line with ICAO Passport Standard 9303 Part 3, as well as its quality and security.
    - **What development approach are you using? Waterfall ? Plan-driven ?Agile ?**
      We are using Agile development approach as it is an iterative approach to software development that emphasizes flexibility, collaboration, and continuous delivery

    - **How does the development approach impact testing?**
      A development team's choice of development methodology will directly affect the testing procedure. For instance, the testing process will probably be more iterative if an agile development style is used, with numerous testing cycles, briefer feedback loops, and more frequent releases. Conversely, if a waterfall development strategy is used, the testing procedure is likely to be more linear and call for fewer testing iterations, longer feedback loops, and fewer release cycles.

2. **Reference other relevant documents**
    - **Briefly describe the relevant information available in the provided document**

Information about the issuing and use of machine-readable travel documents is provided in full in International Civil Aviation Organization (ICAO) document 9303 Part 3. (MRTDs). It contains details on the requirements for MRTDs' physical, electronic, and aesthetic qualities as well as the data items that the document must contain. It also describes the security elements that MRTDs must have in order to be legitimate. The document also offers guidelines on how to utilize MRTDs when traveling internationally as well as standards for the issue of MRTDs.

3. **Testing scope**
    - **What are you testing?**
      1.Whether the system is getting information as two strings or not
      2.System is decoding the two strings or not
      3.Whether the system can encode the travel document
      4.Whether the is able to report a mismatch or not

    - **What are you not testing? Recall that strategy means making choices.**
      We are not testing the hardware part of the system as we don't have a physical system for that

    - **Describe the criteria you used for prioritizing tests**
      The criteria used for prioritizing tests was based on the impact and risk associated with each test. We evaluated the potential impact of a test failure on the product or system and weighed it against the potential risk of the test. We also considered the resources available to execute the tests, including the level of effort and time required, and the cost associated with each test. Finally, We looked at the criticality of the feature or functionality being tested, as well as the likelihood of a failure and its consequences in order for determine which tests should be given the highest priority.

4. **Testing approach**
    - **What are the key factors?**
      Key factors are the accuracy of the information in the document, the document's compliance with ICAO standards and requirements, the security features included in the document, and the user-friendliness of the document.

    - **What are the key risks?**
      1. Security Risks: The possibility of ICAO 9303 passports being faked or counterfeited poses the biggest concern. Criminals may obtain a copy of a person's passport and use it to enter forbidden regions or carry out other offenses.

      2. Data Protection Risks: Another danger is that unauthorized individuals or criminals could access and abuse the personal information contained in the passport.

      3. Identity Theft Risks: Additionally, the passport has biometric information that can be exploited to steal someone's identity.

4. Fraud Risks: A forged or fake passport can be used by fraudsters to enable financial operations like money laundering.

5. Vulnerability to Attacks: Additionally, passports are susceptible to assaults like skimming, which includes using specialized tools to read and duplicate the information kept in the passport.

- **What are the success criteria?**
  For the test to be successful, the system must adhere to all ICAO standards and specifications as well as all applicable laws and regulations. The passport standard's capacity to protect users' private information and to provide a reliable and secure method of identity verification would also be considered a success criterion. The success criteria would be completed by the passport standard's capacity to be successfully implemented by the relevant authorities and its application in a variety of different scenarios.

- **What are the contingency plans?**
  1. The owner of the passport should report the occurrence to the appropriate passport issuing authority and apply for a replacement passport if their passport is misplaced, stolen, or damaged.

  2. The passport bearer should get in touch with the relevant passport issuing authority for support if the passport is not received within the allotted term owing to a delay or for any other cause.

  3. The owner of the passport should get help from the appropriate passport issuing authorities if they are unable to travel because their passport has expired or for any other reason.

  4. The owner of the passport should seek assistance from the relevant passport issuing authority if the identity of the passport bearer has to be verified.

  5. The owner of a passport should seek assistance from the appropriate passport issuing authority if they have issues with border or immigration authorities.

  6. The owner of the passport should seek assistance from the appropriate passport issuing authorities if they have any additional questions or issues.

- **What are the item pass/fail criteria?**
  The document's specifications serve as the basis for determining whether an item meets the system's and the Consular standard's passing or failing requirements. These requirements include confirming the document's legitimacy, ensuring that all necessary areas are present and filled out, and ensuring the document is in good shape. The document must also adhere to

the technical requirements listed in the document and be issued by a competent authority as described in the document.

- **What are the entry/exit criteria?**

Entry criteria:

- Valid passport
- ICAO standard 9303 compliant
- Valid travel documents

Exit criteria:

- Confirmation of valid passport
- Confirmation of ICAO standard 9303 compliance
- Confirmation of valid travel documents

- **What are your testing criteria and checkpoints?**

1. **Verification of the document's content accuracy:** Making ensuring that all of the data and language in the document are correct and current should be one of the testing criteria for this.

2. **Verifying document format and layout:** Making sure that all of the content is properly formatted and organized in the document as well as that all of the photos and graphics are of high quality and are positioned appropriately should be part of the testing criteria for this.

3. **Verifying document functionality:** Verifying that all of the document's links function properly and that it can be read and printed accurately across a variety of browsers and devices should be among the testing criteria for this.

4. **Verifying document security:** Making sure the document is safely stored and shielded from unwanted access or manipulation should be part of the testing criteria for this.

5. **Verifying document accessibility:** The document's accessibility for all users, regardless of the platform or browser being used to view it, should be one of the testing criteria for this.

- **What are the test deliverables?**

Test deliverables will include a test plan and report outlining the results of the testing process, test documentation developed (e.g., test cases, scripts, or checklists)

- **What is the testing budget?**

The testing budget for this project will be estimated around 100,000$

- **What tools are you going to use?**
  There are few tools that we have used in this project that are:
  1.Unit testing
  2.Coverage
  3.Pylint
  4.Circle ci(Continuous Integration)

- **What is your automation strategy?**
  To ensure that every component of the product is adequately tested, my automation plan combines automated and manual testing techniques. While manual testing will be utilized to find any potential usability or compatibility concerns, automated testing will be used to test the operation of the product. Python will be used as part of a scripting language combination to create and run automated tests. Various scenarios that simulate how the program would be used in practice will be set up for manual tests, and the outcomes will be examined for any problems.

- **Which types of testing are you performing? What are the methodologies and techniques for each?**
  These are the following types of testing that we are performing
  1.Requirement Reviews: The main objective of requirement reviews is to make sure that a system's requirements are precise, thorough, and consistent. In order to verify that the requirements are testable, understandable, and valid for the functions of the system, many processes and techniques are used for requirement reviews.

  2.Unit Testing: Unit testing is a type of testing that focuses on individual units of source code. Unit testing strategies and techniques involve creating test cases, confirming that the code complies with requirements, and debugging.

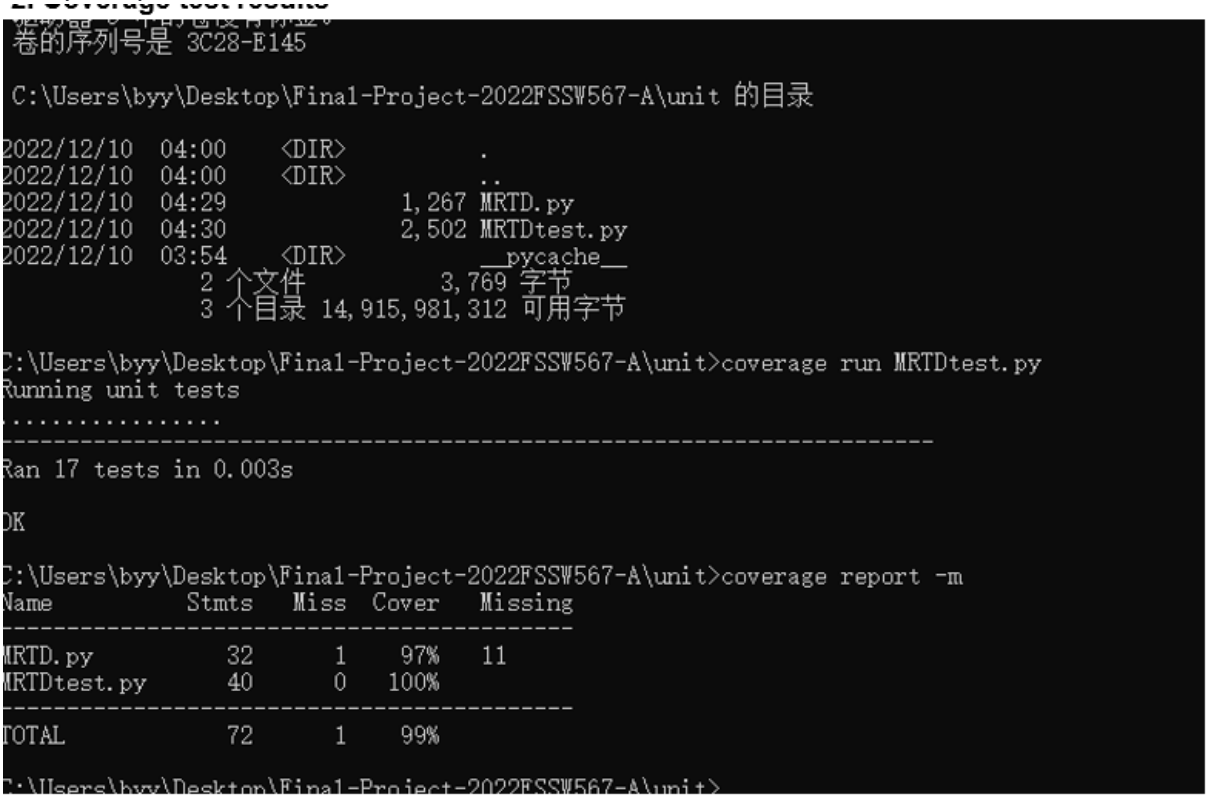
  3.Integration Testing: The goal of integration testing is to ensure that a system's components function as a whole. Writing test cases and confirming the system's functionality are a few of the strategies and techniques used for integration testing.

  4.Performance Testing: Performance testing is a sort of testing that gauges a software application's speed, scalability, and stability under a certain workload. It is employed to make sure an application satisfies performance objectives and can cope with a significant volume of users, transactions, and data. Benchmarking, load testing, stress testing, volume testing, and endurance testing are some of the methodologies and techniques used in performance testing.

- **Describe your test platform**
  Our test platform consists of a system running on Windows 11 with 16Gb or memory and it has storage type of SSD with that a GPU of 6GB GDDR6

- **Describe how you will measure the progress of testing. What reports and metrics will you use? Include sample reports in you document.**
  In order to measure the progress of testing, we will use a combination of reports and metrics. These will include:
  1. Test coverage reports: which will show the percentage of the application that has been tested, and where any remaining gaps are in coverage.
  2. Test result reports: which will provide an overview of the results of the tests that have been undertaken, including any failed tests and the reasons for their failure.
  3.Performance report: Which will provide an overview of the performance of the application

  Sample reports:



- **How will you determine when you’re ready to ship the system?**
  The readiness of a system for shipping can be determined in a number of ways. These strategies may include, but are not limited to: testing the system to ensure that it complies with the necessary specifications and requirements; verifying that it complies with the necessary safety and security standards; performing a final quality assurance check; and obtaining user feedback. Finding out if the system is affordable, user-friendly, and compatible with any existing systems are other factors to take into account.

5. **Schedule**

   Jan-1: Project starts.

   Jan-31: Requirements and design specifications finalized.

   Feb-15: Development begins.

   Mar-30: Development of core system completed.

   Apr-15: System integration and testing begins.

   May-30: System integration and testing completed.

   Jun-15: User acceptance testing begins.

   Jul-30: User acceptance testing completed.

   Aug-15: Final system testing and bug fixing begins.

   Sep-1: System delivered.

6. **Approvals**
   - **Identify the key roles of stakeholders who should approve your plan**
     1. Project Sponsor: This is the person responsible for providing the resources necessary for the project, approving the budget and ensuring that the project meets the organization's goals.

     2. Project Manager: This is the person responsible for the day-to-day management of the project and ensuring that it is completed on time and within budget.

     3. Business Analyst: This is the person responsible for understanding the requirements of the project, analysing the data and proposing solutions to problems.

     4. Technical Team: This is the team responsible for developing and testing the software.

     5. Quality Assurance Team: This is the team responsible for ensuring that the software meets the requirements of the project and that it is of a high quality.

6. Users: This is the group of people who will be using the software, and who will need to approve the end product.

7. Regulatory Bodies: This is the group of organizations that must approve the project before it can be released.