# American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science &Technology (FST)

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Section: B

Software Quality Assurance and Testing

## Dhaka Metro Rail App

A Report submitted

By,


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# Software Test Plan
for
# <Dhaka Metro Rail App>

Version 1.0 approved

Prepared by <author>

<organization>

<date created>

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# Revision History

| Revision | Date | Updated by | Update Comments |
|---|---|---|---|
| 0.1 | | | |
| 0.2 | | | |
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# 1. TEST PLAN IDENTIFIER: DhakaMetroRailApp_TP_v1.0

# 2. REFERENCES

- Valuable sources for Dhaka Metro Rail App insights.
- Official information on Dhaka Metro Rail development.
- Access the Dhaka Metro Rail App on Google Play Store.

1. Dhaka Tribune website: [https://www.dhakatribune.com/](https://www.dhakatribune.com/)
2. Dhaka Mass Transit Company Limited (DMTCL) official website: [https://dmtcl.gov.bd/](https://dmtcl.gov.bd/)
3. Dhaka Metro Rail App on Google Play Store: [https://play.google.com/store/apps/details?id=com.metrorailbd&pcampaignid=web_share](https://play.google.com/store/apps/details?id=com.metrorailbd&pcampaignid=web_share).

# 3. INTRODUCTION

## Background to the Problem:

The city of Dhaka, Bangladesh, faces significant transportation challenges due to its rapid population growth, particularly in the demand for efficient and convenient transportation services. The existing metro rail services, while essential, lack real-time information and efficient ticket purchasing options. Commuters often experience difficulties obtaining timely information, leading to missed trains and inconvenient ticket procurement. These challenges are more pronounced during peak hours and for tourists unfamiliar with the metro rail system.

The root cause of this problem lies in the inadequacies of the current metro rail services. The absence of real-time information and inefficient ticketing processes hampers the overall commuting experience for residents and visitors alike.

## Solution to the Problem:

To address these challenges, a comprehensive solution is proposed: the development of the Dhaka Metro Rail App. This mobile application aims to provide real-time information, streamline ticket purchasing, and enhance the overall user experience. The choice of a mobile app aligns with the growing demand for convenient transportation services in Dhaka.

The solution is feasible, leveraging the .NET framework for compatibility across various devices and platforms. The app will integrate seamlessly with existing metro rail services and complemented by agile methodologies, user-centered design, and collaboration with metro rail authorities.

The Dhaka Metro Rail App serves as a user-friendly platform, offering real-time train schedules, efficient ticket booking, and an enhanced overall commuting experience for metro rail users in Dhaka. Existing studies highlight the challenges faced by commuters in obtaining real-time information and the inconvenience of ticket purchasing in metro rail systems worldwide. The Dhaka Metro Rail App seeks to draw on best practices from similar applications in other cities.

Objective/goals:

- System Login and Sign-up functionality.
- To provide a user-friendly platform for passengers of the Dhaka Metro Rail.
- To offer real-time information about train schedules and disruptions.
- To simplify the ticket booking process.
- To enhance the overall experience of using the metro rail for commuters.
- To make their journeys more efficient and convenient.

# 4. REQUEIREMNT SPECIFICATION

## 4.1 System Features

1. USER AUTHENTICATION

• Functional Requirements:
1.1 The system shall allow users to log in using a valid username and password.
1.2 In case of three consecutive incorrect login attempts, the system shall generate a random verification code for reattempting login.
1.3 Optionally, if login attempts exceed five, the system shall block the user account login for one hour.
Priority Level: High
Precondition: User has a valid user ID and password or completes the sign-up process.

2. USER INTERFACE AND CUSTOMIZATION

• Functional Requirements:
2.1 Users shall have the option to customize settings, including preferred themes and display options.
2.2 Users shall have the ability to personalize their dashboard, arranging information and features according to their preferences.
Priority Level: High
Precondition: User successfully logs in to the Dhaka Metro Rail App.

3. REAL-TIME INFORMATION DISPLAY

•Functional Requirements:
3.1 The app shall display real-time information on metro rail schedules, including arrival and departure times.
3.2 The system shall integrate with metro rail authorities to fetch and display accurate and up-to-date information.
Priority Level: High
Precondition: User accesses the app and is connected to the internet.

4. TICKET BOOKING AND MANAGEMENT

• Functional Requirements:
4.1 The software shall offer a streamlined and secure platform for purchasing metro rail tickets.
4.2 The system shall provide a digital ticket wallet where users can store and manage their electronic tickets.
Priority Level: High
Precondition: User successfully logs in and selects the desired route.

## 4.2 System Quality Attributes

Usability:

- *Functional Requirement:* The software shall provide a user-friendly interface for metro rail passengers, ensuring ease of navigation and a seamless user experience.
- *Measurable Attribute:* The average time for a user to complete a ticket booking or obtain real-time information should be within three minutes, with a maximum limit of five minutes.

Reliability:

- *Functional Requirement:* The system shall ensure accurate and up-to-date information about metro rail schedules and disruptions.
- *Measurable Attribute:* The app should have an uptime of 99.9%, minimizing service disruptions and ensuring reliable access to information.

Performance:

- *Functional Requirement:* The app shall display real-time information on metro rail schedules with minimal latency.
- *Measurable Attribute:* The system response time for retrieving and displaying information should be within two seconds under normal operating conditions.

Security:

- *Functional Requirement:* The system shall implement robust user authentication mechanisms to protect user accounts.
- *Measurable Attribute:* The app should comply with industry security standards, ensuring the confidentiality and integrity of user data.

Scalability:

- *Functional Requirement:* The system architecture shall support an increasing number of users without compromising performance.
- *Measurable Attribute:* The app should handle a 20% growth in user base within the next year without a significant decrease in response time.

Maintainability:

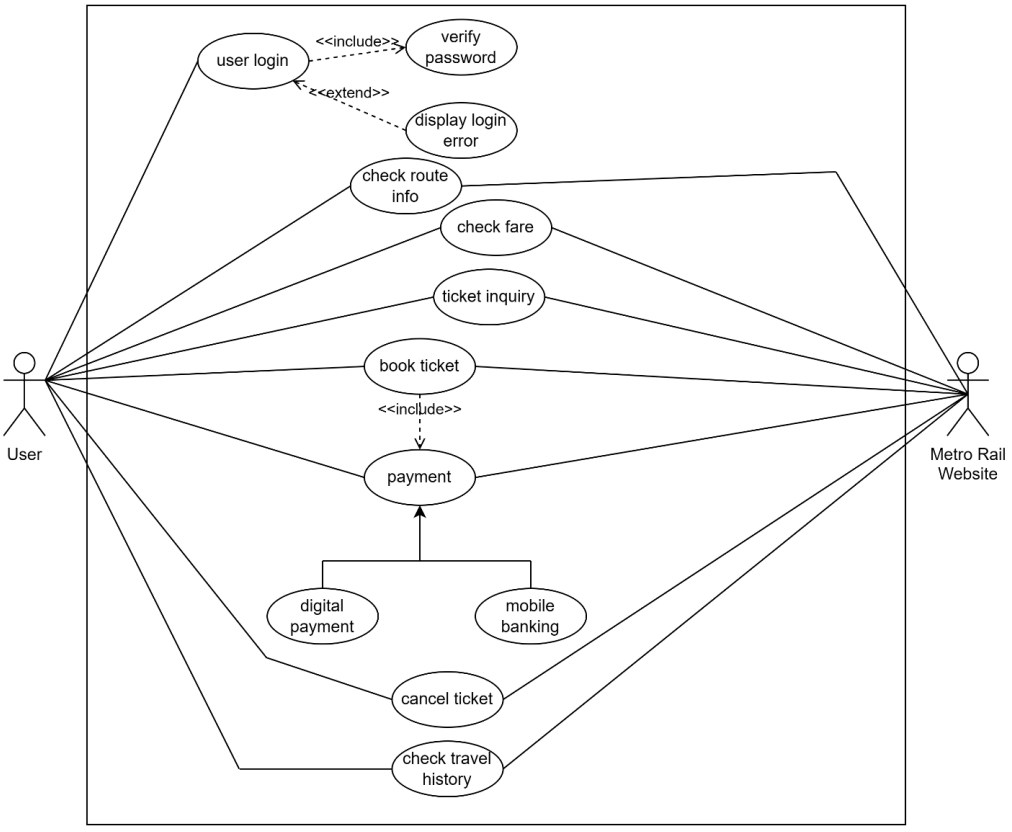
- *Functional Requirement:* The codebase shall follow best practices for maintainability, with well-documented code and modular design.
- *Measurable Attribute:* The time required for a developer to implement a minor feature or fix a bug should not exceed four hours.

Availability:

- *Functional Requirement:* The system shall be available to users 24/7, with scheduled maintenance communicated in advance.
- *Measurable Attribute:* The scheduled maintenance downtime should not exceed 1% of the total operational time in a month.

## 4.3 System Interface

Use case diagram of Dhaka Metro Rail App:



## 4.4 Project Requirements

This table illustrates a few key constraints of the Dhaka Metro Rail App project, such as budget (or financial resources), time (or deadline), availability and quality of resources, environmental effects, requirements of regulation, expectations of stakeholders, quality of product and service, as well as risk management (or risk minimization).

| Constraint | Description | Example |
|---|---|---|
| Budget | Total budget allocation for the project. | 3,60,000 BDT |
| Time | Total development duration. | 1 year 3 months |
| Resources | Availability of skilled human resources and tools. | Testers: HASIB, MD MOSTOFA, ALIF HOSSAIN TALHA, RIYAD, REDOANUL HOUQUE, SAIFA, BINTAY SHAHJAHAN |
| Environment | Suitable development and testing environment. | Test environment mirroring real-world usage. |
| Regulatory | Compliance with local regulations and standards. | Adhering to data privacy regulations. |
| Stakeholder Expectations | Meeting stakeholder needs and expectations. | Functional requirements outlined in the test plan. |
| Quality | Delivering a high-quality, reliable application. | All test cases passing. |
| Scope | Defining the project's boundaries and features. | Focusing on essential features like login, ticketing, real-time info. |
| Risk Management | Identifying and mitigating potential risks. | Testing API integration thoroughly. |

# 5. FEATURES NOT TO BE TESTED

- Third-Party Applications:
  Testing of third-party applications integrated with the Dhaka Metro Rail App, whether PC-based or mobile, falls outside the defined testing scope. The responsibility for testing and maintaining the compatibility of these applications rests with their respective developers or maintainers.

- External Hardware Devices:
  Testing of external hardware devices, such as ticket vending machines or mobile payment terminals, is not within the purview of this testing effort. Compatibility and functionality testing for these devices are considered external to the Dhaka Metro Rail App project.

- Legacy Systems:
  Legacy systems that are not directly interfacing with the Dhaka Metro Rail App, and for which testing efforts would be indirect or secondary, are excluded. Any necessary data extraction for these systems is the responsibility of the system maintainer or developer.

- Manual Processes:
  Manual processes or workflows existing outside the automated scope of the Dhaka Metro Rail App, such as manual ticket verification procedures, are excluded from direct testing efforts. Testing of these processes will be considered indirect and conducted because of other testing activities.

# 6. TESTING APPROACH

### 6.1 Testing Levels:

The testing for the Dhaka Metro Rail App project will consist of Unit, System/Integration (combined), and Acceptance test levels. While it is hoped to have at least one full-time independent test person for system/integration testing, due to budget constraints and timelines, most testing will be done by the test manager with the participation of the development teams.

- UNIT Testing:
  Unit testing will be performed by the developer and approved by the development team leader. Proof of unit testing, including a test case list, sample output, data printouts, and defect information, must be provided by the programmer to the team leader before unit testing will be accepted and passed on to the test person.

- SYSTEM/INTEGRATION Testing:
  System/Integration testing will be conducted by the test manager and development team leader with assistance from individual developers as required. No specific test tools are available for this project. Programs will enter into System/Integration test after all critical defects have been corrected. A program may have up to two major defects as long as they do not impede testing of the program (i.e., there is a workaround for the error).

- ACCEPTANCE Testing:
  Acceptance testing will be performed by the actual end users with assistance from the test manager and development team leader. The acceptance test will be conducted in parallel with the existing manual ZIP/FAX process for a period of one month after completion of the System/Integration test process.

### 6.2 Test Tools:

Appium: Appium is an open-source automation tool for mobile applications. It supports both Android and iOS platforms, making it suitable for testing the Dhaka Metro Rail App across different devices.

### 6.3 Meetings:

The test crew will meet every week repeatedly to take stock of the progress, analyze error trends, and solve issues before they get bigger in the testing process. The team leader, accordingly, will also meet with the development department and the project manager every fortnight on the same frequency. Other meetings should be planned for other side events or emergency cases if needed.

## 7. TEST CASES/TEST ITEMS

| | | | | |
|---|---|---|---|---|
| Project Name: Dhaka Metro Rail App | | | Test Designed by: HASIB, MD MOSTOFA | |
| Test Case ID: FR_1 | | | Test Designed date: 26/4/2024 | |
| Test Priority (Low, Medium, High): High | | | Test Executed by: HASIB, MD MOSTOFA | |
| Module Name: Login Session | | | Test Execution date: 26/4/2024 | |
| Test Title: Verify Login information | | | | |
| Description: Test User Authentication | | | | |
| Precondition (If any): User must have valid username and password | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Go to the website<br>2. Enter username<br>3. Enter password<br>4. Click submit | Username: [valid username]<br>Password: [valid password] | The user should successfully log in and be redirected to the application's main page. | The user successfully logged in as expected. | Pass |
| Post Condition: User is validated with database and successfully login to account. The account session details are logged into the database. | | | | |

| | | | | |
|---|---|---|---|---|
| Project Name: Dhaka Metro Rail App | | | Test Designed by: HASIB, MD MOSTOFA | |
| Test Case ID: FR_2 | | | Test Designed date: 26/4/2024 | |
| Test Priority (Low, Medium, High): High | | | Test Executed by: HASIB, MD MOSTOFA | |
| Module Name: Login Session | | | Test Execution date: 26/4/2024 | |
| Test Title: verify login with invalid username and password | | | | |
| Description: Test User Authentication | | | | |
| Precondition (If any): User must have valid username and password | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Go to the website.<br>2. Enter an incorrect username.<br>3. Enter an incorrect password.<br>4. Repeat steps 2-3 two more times. | Username: [incorrect username]<br>Password: [incorrect password] | After the third consecutive incorrect attempt, the system should generate a random verification code for reattempting login. | A random verification code was generated after the third consecutive incorrect attempt. | Pass |
| Post Condition: The system correctly generated the verification code as expected. | | | | |

| | | | | |
|---|---|---|---|---|
| Project Name: Dhaka Metro Rail App | | | Test Designed by: HASIB, MD MOSTOFA | |
| Test Case ID: FR_3 | | | Test Designed date: 26/4/2024 | |
| Test Priority (Low, Medium, High): High | | | Test Executed by: HASIB, MD MOSTOFA | |
| Module Name: Login Session | | | Test Execution date: 26/4/2024 | |
| Test Title: Verify Account Blocking for Exceeding Login Attempts | | | | |
| Description: Test User Authentication | | | | |
| Precondition (If any): User must have valid username and password | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Go to the website.<br>2. Enter an incorrect username.<br>3. Enter an incorrect password.<br>4. Repeat steps 2-3 two more times. | Username: [incorrect username]<br>Password: [incorrect password] | After five consecutive incorrect attempts, the system should block the user account login for one hour. | The user account login was blocked, and a message indicated a one-hour lockout. | Pass |
| Post Condition: The account blocking functionality worked as expected, displaying the appropriate message to the user. | | | | |

| | |
|---|---|
| Project Name: Dhaka Metro Rail App | Test Designed by: ALIF HOSSAIN TALHA |
| Test Case ID: FR_4 | Test Designed date: 28/4/2024 |
| Test Priority (Low, Medium, High): High | Test Executed by: ALIF HOSSAIN TALHA |
| Module Name: User Interface and Customization | Test Execution date: 28/4/2024 |
| Test Title: Verify User Customization Options | |
| Description: Test the customization feature allowing users to customize settings, including preferred themes and display options. | |

Precondition (If any): 1. Users are logged into the Dhaka Metro Rail App.
2. The user is on the main application dashboard.

| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
|---|---|---|---|---|
| Navigate to the settings or customization section of the application.<br><br>Look for the options related to theme customization and display preferences.<br><br>Choose a preferred theme (e.g., light, dark, or a custom color).<br><br>Adjust display options such as font size, language, or any other relevant customization feature.<br><br>Save the selected customization options. | 1. Theme: [Select from available themes or specify custom color]<br><br>2. Display Options: [Specify chosen display preferences] | 1. The user should be able to access the settings or customization section easily.<br><br>2. Options for theme customization and display preferences should be visible and accessible.<br><br>3. After selecting a theme, the app's appearance should change accordingly.<br><br>Display options should be applied, and the changes should be reflected on the user interface.<br><br>The selected customization options should be saved successfully. | 1. Record any discrepancies or issues observed during the test. | Pass |

Post Condition: The selected customization options persist when the user logs out and logs back in.

| | |
|---|---|
| Project Name: Dhaka Metro Rail App | Test Designed by: ALIF HOSSAIN TALHA |
| Test Case ID: FR_5 | Test Designed date: 28/4/2024 |
| Test Priority (Low, Medium, High): High | Test Executed by: ALIF HOSSAIN TALHA |
| Module Name: User Interface and Customization | Test Execution date: 28/4/2024 |
| Test Title: Verify Personalization of Dashboard. | |
| Description: Test the ability of users to personalize their dashboard by arranging information and features according to their preferences. | |

Precondition (If any): 1. Users are logged into the Dhaka Metro Rail App.

2. The user is on the main application dashboard.

| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
|---|---|---|---|---|
| Navigate to the dashboard personalization or customization section.<br><br>Look for options to rearrange information or features on the dashboard.<br><br>Drag and drop or use the provided controls to rearrange at least two features or information sections on the dashboard.<br><br>Save the personalized dashboard. | Features to rearrange: [Specify the features or information sections] | The user should be able to access the dashboard personalization section easily.<br><br>Options to rearrange features or information sections should be visible and intuitive.<br><br>The user should be able to rearrange features using drag and drop or other provided controls.<br><br>The changes made to the dashboard should be reflected in real-time.<br><br>The personalized dashboard should be saved successfully. | Record any discrepancies or issues observed during the test. | Pass |

Post Condition: The rearranged dashboard persists when the user logs out and logs back in.

| | |
|---|---|
| Project Name: Dhaka Metro Rail App | Test Designed by: RIYAD, REDOANUL HOUQUE |
| Test Case ID: FR_6 | Test Designed date: 1/5/2024 |
| Test Priority (Low, Medium, High): High | Test Executed by: RIYAD, REDOANUL HOUQUE |
| Module Name: Ticket Booking and Management | Test Execution date: 1/5/2024 |
| Test Title: verify the user authentication and route section in Dhaka Metro Rail App | |
| Description: The functional requirements outlined in the test case focus on the streamlined and secure ticket purchasing process for the Dhaka Metro Rail App. Once the user successfully logs in and selects their desired route, the system should present a user- friendly interface for purchasing metro rail tickets. This includes ensuring a seamless and secure transaction process, with options for different payment methods. | |
| Precondition ): 1. Users must have app | |

| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
|---|---|---|---|---|
| Verify that the software allows users to log in successfully and select the desired route within the Dhaka Metro Rail App<br><br>Open the Dhaka Metro Rail App.<br><br>Enter valid login credentials.<br><br>Navigate to the ticket booking section. | 1. Ensure that the system accurately processes payments, generates tickets, and handles errors appropriately<br><br>2.Add, view, and delete digital tickets from the wallet. Test scenarios where tickets expire or encounter issues | The login process should succeed without errors.<br><br>The user should be able to easily navigate to the ticket booking section.<br><br>The selected route should be visually confirmed and accurately displayed | 1.Executing the steps outlined in the test case and observing the behavior of the Dhaka Metro Rail App during the process of logging in and selecting the desired route | Pass |
| Post Condition: The system correctly input | | | | |

| | |
|---|---|
| Project Name: Dhaka Metro Rail App | Test Designed by: RIYAD, REDOANUL HOUQUE |
| Test Case ID: FR_7 | Test Designed date: 1/5/2024 |
| Test Priority (Low, Medium, High): High | Test Executed by: RIYAD, REDOANUL HOUQUE |
| Module Name: Ticket Booking and Management | Test Execution date: 1/5/2024 |
| Test Title: Verify ticket booking | |
| Description: the system should incorporate a digital ticket wallet feature, allowing users to store and manage their electronic tickets. The digital ticket wallet enhances user convenience by providing a centralized location for accessing and organizing purchased tickets. This feature contributes to the overall goal of simplifying the ticket booking process and making it more efficient for commuters | |
| Precondition (If any): 1. Users log in app by using password . | |

| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
|---|---|---|---|---|
| Log in to the Dhaka Metro Rail App with valid credentials.<br><br>Navigate to the ticket purchasing section after successfully logging in.<br><br>Select the desired metro rail route for ticket purchase.<br><br>Verify that the ticket purchasing process is streamlined, following the functional requirement 4.1 for a streamlined and secure platform.<br><br>Complete the ticket purchase transaction and ensure it is secure. | Input: User selects the desired route and specifies the number of tickets.<br><br>Output: Successful completion of the ticket purchase with a confirmation message | The user should be able to access the dashboard personalization section easily.<br><br>Options to rearrange features or information sections should be visible and intuitive.<br><br>The user should be able to rearrange features using drag and drop or other provided controls.<br><br>The changes made to the dashboard should be reflected in real-time.<br><br>The personalized dashboard should be saved successfully. | Successful login and route selection, the user experiences a seamless and secure platform for purchasing metro rail tickets. The digital ticket wallet functionality is accessible, allowing users to conveniently store and manage their electronic tickets. The system effectively meets the high-priority functional requirements, enhancing the overall user experience for metro rail commuters in Dhaka. | Pass |

| Post Condition: The system output correctly. |
|---|

| Project Name: Dhaka Metro Rail App | Test Designed by: SAIFA, BINTAY SHAHJAHAN |
|---|---|
| Test Case ID: FR_8 | Test Designed date: 3/5/2024 |
| Test Priority (Low, Medium, High): High | Test Executed by: SAIFA, BINTAY SHAHJAHAN |
| Module Name: REAL-TIME INFORMATION DISPLAY | Test Execution date: 3/5/2024 |
| Test Title: Verify Real Time Information | |
| Description: Test the Rial-Time information feature allowing users to mandates the immediate and accurate presentation of live data, such as schedules, arrival, and departure times, ensuring users have access to up-to-the-minute information without manual intervention. | |

Precondition (If any): 1. Users are logged into the Dhaka Metro Rail App.
2. The user is on the main application dashboard.

| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
|---|---|---|---|---|
| Verify that the displayed schedule aligns with the expected format (time, stations, line numbers)<br><br>Confirm that the displayed information updates automatically without requiring manual refresh, reflecting accurate and current data.<br><br>Measure the time taken for the application to retrieve and display real-time information. Ensure it meets defined performance benchmarks (e.g., less than 5 seconds).<br><br>Simulate heavy user traffic to evaluate how the feature handles simultaneous requests for real-time data without compromising performance or functionality.<br><br>Evaluate how users interact with the real-time schedule | 1. **Arrival and Departure Times:**<br>• Arrival:<br>• 09:15 AM<br>• Departure: 09:30 AM<br><br>2. **Real-Time Update Check:**<br>• Initial displayed time: 10:00 AM<br>• Trigger a real-time update event<br>• Expected updated time after refresh: 10:05 AM | 1. Displayed schedule matches format (time, stations, line numbers).<br><br>2. Information updates automatically, accurately reflecting real-time data.<br><br>3. Retrieval and display within 5 seconds consistently.<br><br>4. Handles heavy traffic without performance compromise<br><br>5. Intuitive, seamless access to relevant information. | 1. Record any discrepancies or issues observed during the test. | Pass |

| | | | | |
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| feature and provides relevant information seamlessly. | | | | |
| Post Condition: The app should established a stable and functional connection to access and retrieve data from the metro rail authorities' API. | | | | |

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|---|---|---|---|---|
| Project Name: Dhaka Metro Rail App | | | Test Designed by: SAIFA, BINTAY SHAHJAHAN | |
| Test Case ID: FR_9 | | | Test Designed date: 3/5/2024 | |
| Test Priority (Low, Medium, High): High | | | Test Executed by: SAIFA, BINTAY SHAHJAHAN | |
| Module Name: REAL-TIME INFORMATION DISPLAY | | | Test Execution date: 3/5/2024 | |
| Test Title: Verify integration of the system with metro rail authorities: | | | | |
| Description: Test to ensure seamless integration between the system and metro rail authorities' data, enabling accurate and real-time information retrieval and display within the application. | | | | |
| Precondition (If any): 1. Users are logged into the Dhaka Metro Rail App.<br>2. The user is on the main application dashboard. | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| Verify successful connection to metro rail authorities' API. Ensure accurate data retrieval.<br><br>Cross-check displayed info with official metro data. Confirm real-time updates reflect authorities' changes.<br><br>Test system response to unavailable data or errors. Ensure graceful handling without compromising function.<br><br>Evaluate user experience with displayed metro info. | **Real-Time Update:**<br>Current Displayed Time: 10:00 AM<br>Simulate Metro Rail Authority Update<br>Expected Updated Time After Refresh: 10:05 AM | The Successful connection without errors, Accurate data retrieval and display.<br>Alignment with official metro data, Real-time updates reflect authorities' changes.<br>Graceful response to unavailable data.Robust handling of disruptions without impact.<br>Positive user experience with | Record any discrepancies or issues observed during the test. | Pass |

| | | | | |
|---|---|---|---|---|
| Gather feedback on accuracy and reliability. | | accurate information. Feedback confirms reliability and satisfaction. | | |
| Post Condition: The app successfully displays accurate and up-to-date metro rail information fetched from the authorities' API, ensuring real-time updates without manual intervention | | | | |

## 8. ITEM PASS/FAIL CRITERIA

The criteria for each of the scenarios considered in Dhaka Metro Rail App range from agility, precision, user interface and experience. Unit Testing case is marked successful if the proper flow of data retrieval as per given feature, creation of error messages for program deficiency found, and user-friendly experience is what verifies the feature. For example, a test would be considered failed if the system was missing functionality, some of the data was incorrect, or the users would not be able to interact in the system as they should. Moreover, the possibility to maintain permanent communication with metro rail authority API, collect live data and make necessary modifications of the application before test occur are significant features for successful integration. Basically, passenger's app needed to be popular, and the performances resulted in positive critiques by the people that used it.

## 9. TEST DELIVERABLES

- Acceptance test plan
- System/Integration test plan
- Unit test plans/turnover documentation
- Screen prototypes
- Report mock-ups
- Defect/Incident reports and summaries
- Test logs and turnover reports

## 10. STAFFING AND TRAINING NEEDS

10.1 Staffing Requirements

It is preferable to assign at least one (1) full-time tester dedicated to the project for the system/integration and acceptance testing phases. Initially, a person will be assigned part-time for project initiation and reviews. Approximately four months into the project, they will transition to full-time. If a dedicated tester is unavailable, the project manager/test manager will assume this role.

10.2 Training Needs

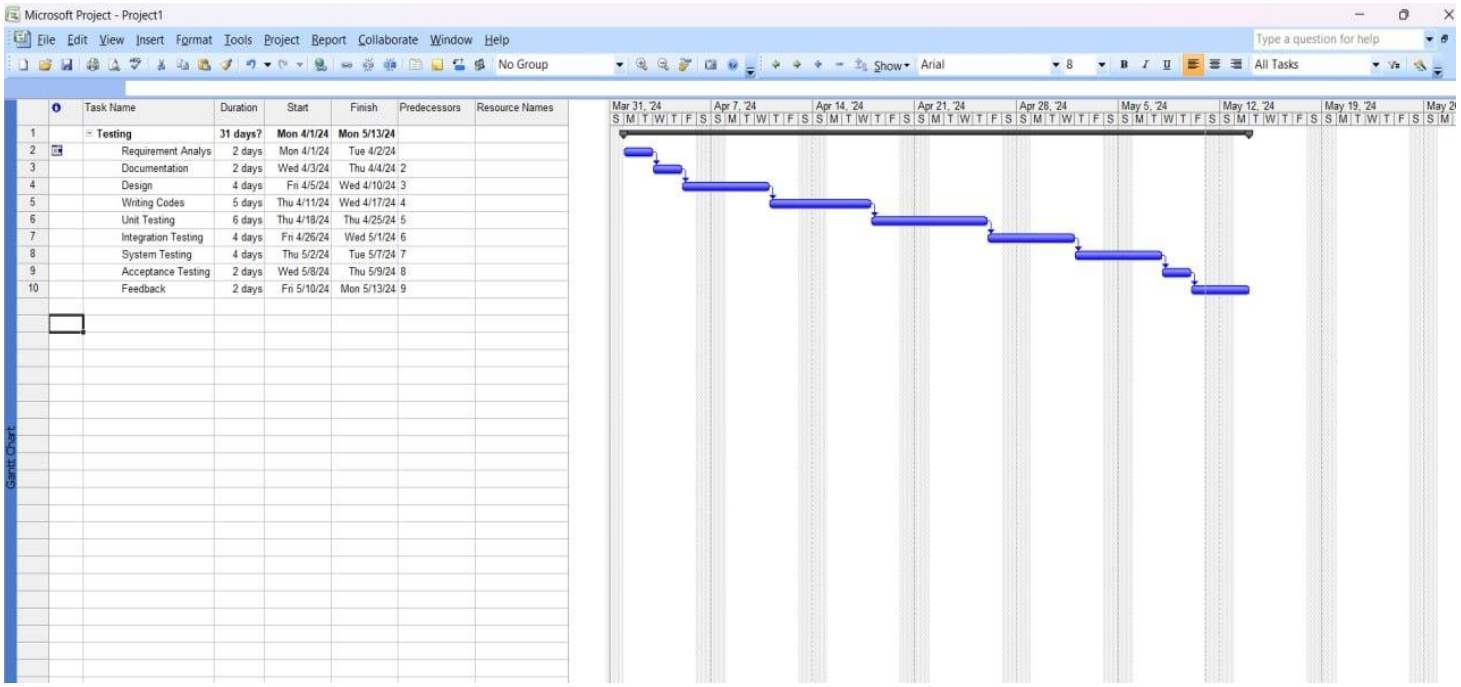
- EDI Interface Training:
  Developers and tester(s) will undergo training on the basic operations of the EDI interface to ensure a comprehensive understanding of the communication processes.
- Operations Staff Training:
  Operations staff will receive complete training on the EDI communications process before the final acceptance of the project.
- Sales Administration Staff Training:
  Sales administration staff will be trained on the new screens and reports to ensure proficiency in utilizing the features introduced by the Dhaka Metro Rail App.

## 11. RESPONSIBILITIES

| | TM | PM | Dev Team | Test Team | Client |
|---|---|---|---|---|---|
| Acceptance test Documentation & Execution | X | X | | X | X |
| System/Integration test Documentation & Exec. | X | | X | X | |
| Unit test documentation & execution | X | | X | X | |
| System Design Reviews | X | X | X | X | X |
| Detail Design Reviews | X | X | X | X | |
| Test procedures and rules | X | X | X | X | |
| Screen & Report prototype reviews | | | X | X | X |
| Change Control and regression testing | X | X | X | X | X |
| | | | | | |

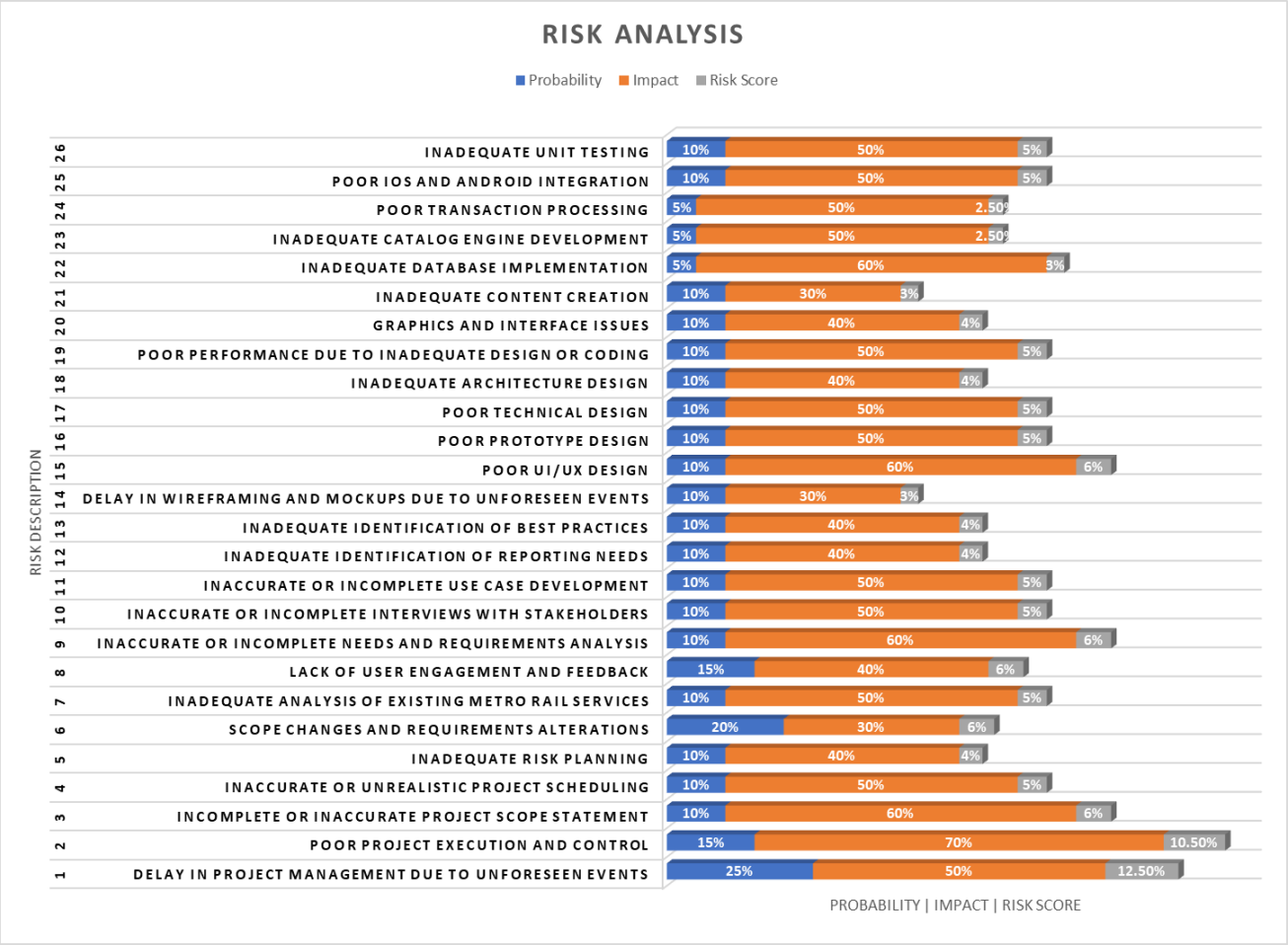
## 12.TESTING SCHEDULE

Time has been allocated within the project plan for the following testing activities. The specific dates and times for each activity are defined in the project plan timeline.



# 13. PLANNING RISKS AND CONTINGENCIES

| ID | Risk Description | Probability | Impact | Risk Score |
|---|---|---|---|---|
| 1 | Delay in project management due to unforeseen events | 25% | 50% | 12.50% |
| 2 | Poor project execution and control | 15% | 70% | 10.50% |
| 3 | Incomplete or inaccurate project scope statement | 10% | 60% | 6% |
| 4 | Inaccurate or unrealistic project scheduling | 10% | 50% | 5% |
| 5 | Inadequate risk planning | 10% | 40% | 4% |
| 6 | Scope changes and requirements alterations | 20% | 30% | 6% |
| 7 | Inadequate analysis of existing metro rail services | 10% | 50% | 5% |
| 8 | Lack of user engagement and feedback | 15% | 40% | 6% |
| 9 | Inaccurate or incomplete needs and requirements analysis | 10% | 60% | 6% |
| 10 | Inaccurate or incomplete interviews with stakeholders | 10% | 50% | 5% |
| 11 | Inaccurate or incomplete use case development | 10% | 50% | 5% |
| 12 | Inadequate identification of reporting needs | 10% | 40% | 4% |
| 13 | Inadequate identification of best practices | 10% | 40% | 4% |
| 14 | Delay in wireframing and mockups due to unforeseen events | 10% | 30% | 3% |
| 15 | Poor UI/UX design | 10% | 60% | 6% |
| 16 | Poor prototype design | 10% | 50% | 5% |
| 17 | Poor technical design | 10% | 50% | 5% |
| 18 | Inadequate architecture design | 10% | 40% | 4% |
| 19 | Poor performance due to inadequate design or coding | 10% | 50% | 5% |
| 20 | Graphics and interface issues | 10% | 40% | 4% |
| 21 | Inadequate content creation | 10% | 30% | 3% |
| 22 | Inadequate database implementation | 5% | 60% | 3% |
| 23 | Inadequate catalog engine development | 5% | 50% | 2.50% |
| 24 | Poor transaction processing | 5% | 50% | 2.50% |
| 25 | Poor iOS and Android integration | 10% | 50% | 5% |
| 26 | Inadequate unit testing | 10% | 50% | 5% |




# 14. APROVALS

| | |
|---|---|
| Project Sponsor - Steve Sponsor | |
| Development Management - Ron Manager | |
| EDI Project Manager - Peggy Project | |
| RS Test Manager - Dale Tester | |
| RS Development Team Manager - Dale Tester | |
| Reassigned Sales - Cathy Sales | |
| Order Entry EDI Team Manager - Julie Order | |