

**Software Requirements Specification (SRS) Document.**

**(INVOICE PAYMENT AUTOMATION SYSTEM)**



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**Table of Contents**

[1. Introduction 2](#_Toc193104559)

[1.1 Purpose 2](#_Toc193104560)

[1.2 Scope 2](#_Toc193104561)

[1.3 Definitions, Acronyms, and Abbreviations 2](#_Toc193104562)

[1.4 References 3](#_Toc193104563)

[1.5 Overview 3](#_Toc193104564)

[2. Overall Description 4](#_Toc193104565)

[2.1 Product Perspective 4](#_Toc193104566)

[2.2 Product Functions 4](#_Toc193104567)

[2.3 User Characteristics 4](#_Toc193104568)

[2.4 Constraints 4](#_Toc193104569)

[3. Specific Requirements 5](#_Toc193104570)

[3.1 Functional Requirements 5](#_Toc193104571)

[3.2 Non-Functional Requirements 5](#_Toc193104572)

[4. Appendices 6](#_Toc193104573)

# **1. Introduction**

## 1.1 Purpose

The Payment Automation System aims to automate the process of fetching payments from Safaricom M-Pesa, recording them against existing invoices , updating invoice balances, generating new invoices, and providing users with options to download or view invoices on a GUI.

## 1.2 Scope

The system shall:

* Retrieve payment records from Safaricom M-Pesa.
* Record received payments in the database.
* Deduct payment amounts from corresponding invoices.
* Generate a new invoice reflecting the updated balance.
* Allow users to download the updated invoice as a PDF.
* Display invoices on a graphical user interface (GUI).
* Ensure security, accuracy, and reliability in all transactions.

## 1.3 Definitions, Acronyms, and Abbreviations

* **API** - Application Programming Interface
* **GUI** - Graphical User Interface
* **SRS** - Software Requirements Specification
* **M-Pesa** - Mobile money service provided by Safaricom
* **PDF** - Portable Document Format

## 1.4 References

* Safaricom M-Pesa API documentation
* Django/Flask/Laravel(php)/Ajax/node.js documentation for backend development
* PostgreSQL/MySQL/MongoDB/Firebase documentation for database management
* Report Lab/WeasyPrint for PDF generation

## 1.5 Overview

This document details the functional and non-functional requirements of the Payment Automation System, its architecture, and constraints.

# **2. Overall Description**

## 2.1 Product Perspective

The system will function as an independent software solution integrated with Safaricom M-Pesa API. It will include a backend for processing payments and invoices, a database for storing records, and a frontend for user interaction.

## 2.2 Product Functions

* **Payment Retrieval**: Fetch payments from M-Pesa API.
* **Invoice Processing**: Match payments to existing invoices and update balances.
* **New Invoice Generation**: Create a new invoice reflecting the updated balance.
* **PDF Generation**: Convert invoices into downloadable PDFs.
* **GUI Display**: Show invoices to users interactively.

## 2.3 User Characteristics

* **System Administrator**: Manages system configurations and user accounts.
* **Finance Department Users**: Monitors payments, updates invoices, and downloads reports.

## 2.4 Constraints

* The system must comply with Safaricom M-Pesa API limitations.
* The database should handle a large number of transactions efficiently.
* The PDF generator should maintain high accuracy and formatting consistency.
* The GUI must be user-friendly and responsive.

# **3. Specific Requirements**

## **3.1 Functional Requirements**

1. **Payment Retrieval**
   * The system shall fetch payment details from the M-Pesa API.
   * Payment records shall include transaction ID, amount, and timestamp.
2. **Invoice Matching and Deduction**
   * The system shall match payments to the correct invoices using invoice IDs.
   * The system shall deduct the payment amount from the total due on the invoice.
   * If payment exceeds the invoice amount, the system shall handle overpayments accordingly.
3. **Invoice Generation**
   * A new invoice shall be generated with the updated balance.
   * The system shall store the invoice in the database.
4. **PDF Generation and Display**
   * The system shall allow users to download invoices as PDFs.
   * The system shall provide an interactive GUI to display invoices.

## **3.2 Non-Functional Requirements**

* **Security**: API authentication and encrypted database storage.
* **Performance**: API calls should process within 3 seconds.
* **Scalability**: The system should support a growing number of transactions.
* **Usability**: The GUI should be intuitive and accessible.

# **4. Appendices**

* Safaricom M-Pesa API endpoints
* Database schema overview
* Wireframe designs for GUI

**UML DIAGRAM**  
