Software Requirements Specification

For

Internet Banking System

Version *1.2*

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Table of Contents

Revision History

Name	Date	Status	Approved by	Version
Mariam Abu El-Hamd , Sara Hussein	13-4-2022	Draft	NA	1.0
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1. Introduction

1.1 Purpose

The purpose of this document is to outline the requirements for *release 1* of *version 1.0* of the internet banking system to be developed. The internet banking system aims to provide banking services for its clients. This document includes all functional and nonfunctional features for the first release. It will describe the system's goal and features as well as the system's interfaces, what the system will do, and the constraints under which it operates.

1.2 Document Conventions

There are IDs used in this document for higher and lower level requirements. The ID for each of the higher level requirements elaborated in this document is in the format BS_REQ_Feature Abbreviation. However, the IDs for each of the lower level requirements are in the format BS_REQ_Feature Abbreviation-Requirement Number. Each Feature (higher level requirement) consists of one or more lower level requirements. Numbering starts from 1 for each feature. Moreover, assumptions also have IDs in the format BS_AS Assumption Number.

1.3 Intended Audience and Reading Suggestions

This document is intended for all the system's stakeholders such as developers, project manager, customer, testers, reviewers and quality auditors. The SRS contains an overview about the overall project scope, product perspective, assumptions and dependencies, a high level description of product features in section 2.2 and a more detailed description of lower level requirements in section 3. Moreover, it contains information about external interfaces requirements and non-functional requirements.

1.4 Project Scope

The internet banking system is relevant everywhere where banking exists. All banks will favor an online banking system over the traditional banking systems as it has more features and provides faster transaction methods. The scope of this project includes all development activities of the internet banking system. The internet banking system is a web-based system that offers clients access to multiple banking services through their banking accounts such as doing transactions, and viewing their previous transactions. The internet banking system allows clients to pay their bills online and transfer money in a secure and time saving manner.

1.5 References

No references for now.

2.   Overall Description

2.1   Product Perspective

The internet banking system developed is a standalone web application. It's a self-contained product that's not a part of a specific product family. Following is the context and origin of the banking system in addition to a comparison between the traditional system and the internet system.
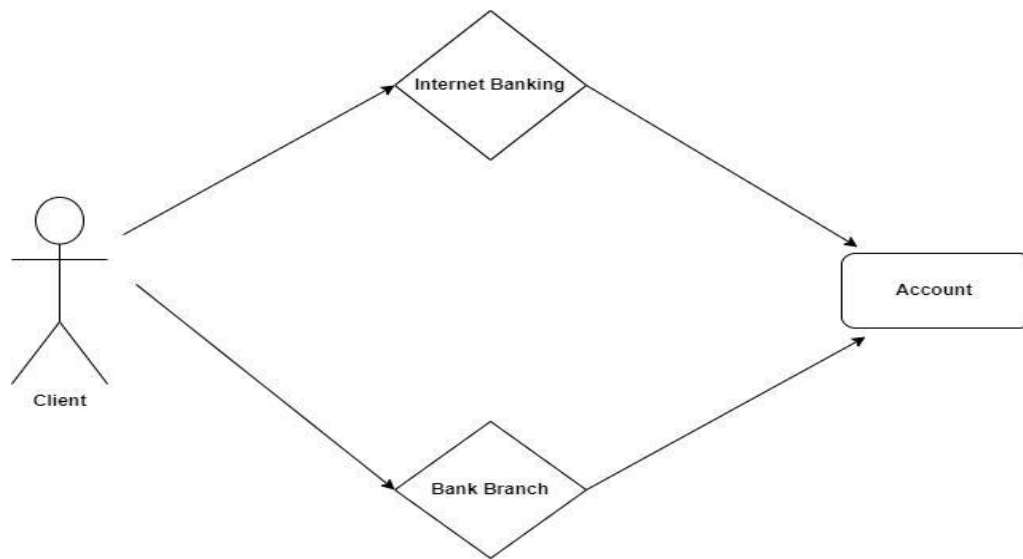
2.2   Product Features

The internet banking system will have two user roles with different product features. The user roles are:
1.   Client
2.   Admin

Client has a different GUI from admin due to the difference in features between each of them.

Following product features will be available to these two user roles:

Client	Admin
Client Register	Login & Logout

Login & Logout	Add Client
Transfer Money	Edit Client
View Transactions	Delete Client
	Add Account

Description of the product features:

Feature ID	Feature Name	Applicable User Role	Description
BS – REQ – R	Client Register	Client	A client can use their data to sign up to the internet banking system.
BS – REQ – L	Login & Logout	Client Admin	A user can use their credentials to login to the internet banking system. A user can also log out from the system.
BS – REQ – TM	Transfer Money	Client	A client can transfer money from any account they own to any destination account.
BS – REQ – VT	View Transactions	Client	A client can view all of their transactions history up to 10 transactions per page.
BS – REQ – AC	Add Client	Admin	An admin can add a new client.
BS – REQ – EC	Edit Client	Admin	An admin can edit all client data.
BS – REQ – DC	Delete Client	Admin	An admin can delete a client.
BS – REQ – AA	Add Account	Admin	An admin can add a saving or a current account for a client.

2.3   Operating Environment

The internet banking system being developed is a web application that's accessed through PCs. Accessing the banking system through the web using a mobile device is not required. The supported browsers for this app are all versions of Google Chrome. There are no hardware constraints.

2.4   Design and Implementation Constraints

As this system is an online web-based application so a PC with a good internet connection will be needed for this system. System should be user friendly and easy to understand. The time constraint for the internet banking system is four weeks. The security protocol is http. There are no constraints or language requirements for tools or databases to be used.

2.5   User Documentation

A user manual will be included in the future to help the user interact with the internet banking system.

2.6   Assumptions and Dependencies

The assumptions that could affect the requirements written in this SRS are:

Assumption No.	Assumption
BS-AS1	System development language is C#.
BS-AS2	Operating system needed is Windows 7, XP, Vis.
BS-AS3	Recommended configuration: 4Gb RAM or higher, 500mb Disk.

3.   System Features [Functional Requirements]

3.1   Client Register

3.1.1   Description

A client shall use their name, password, confirmed password, bank account number, email and phone number to sign up to the internet banking system.

3.1.2   Stimulus/Response Sequences

Stimulus: User requests to register to the internet banking system.

Response: System provides a registration form for the user to enter their data.

Stimulus: User enters their data.

Response: A client account is created for the user using their entered data.

3.1.3   Functional Requirements

Registration feature (BS – REQ – R) requirements:

3.1.3.1 Registration client name requirements:

[BS – REQ – R1]:

The client shall enter a unique client name to register. If not, the system should display an error message that this client name already exists.

[BS – REQ – R2]:

The client shall enter a client name with no special characters. If not, the system should display an error message that the client name can't include special characters.

[BS – REQ – R3]

Client name can't be blank. If it's blank, the system should display an error message that the name field can't be blank.

3.1.3.2 Registration client password requirements:

[BS – REQ – R4]

The client shall enter the same password twice to register. If a user enters a different second password, the system should display an error message that passwords don't match.

[BS – REQ – R5]

Passwords can't be blank. If it's blank, the system should display an error message that the password field can't be blank.

3.1.3.3 Registration account number requirements:

[BS – REQ – R6]

The client shall enter an account number that consists only of numbers to register. If a user enters characters or special characters, the system should display an error message that the account number can't include characters or special characters.

[BS – REQ – R7]

Account number can't be blank. If it's blank, the system should display an error message that the account number field can't be blank.

3.1.3.4 Registration email requirements:

[BS – REQ – R8]

The client shall enter a valid email to register. If not, the system should display an error message that the email format must be valid.

[BS – REQ – R9]

Email can't be blank. If it's blank, the system should display an error message that the email field can't be blank.

3.2 Login & Logout

3.2.1 Description

A user can use their name and password to login to the internet banking system. A user can also log out from the system. A User has only 3 trials to login with the right password before their account gets blocked.

3.2.2 Stimulus/Response Sequences

Stimulus: User requests to login to the internet banking system.

Response: System provides a login form for the user to enter their credentials.

Stimulus: User enters their credentials.

Response: System authenticates credentials and redirects user to their GUI where they can access their features.

Stimulus: User requests to log out from the internet banking system.

Response: System redirects user to the main home page.

3.2.3 Functional Requirements

Login & Logout feature (BS – REQ – L) requirements:

3.2.3.1 Login Client name requirements:

[BS – REQ – L1]:

The client should enter a valid name that registered before in the name field. If not, a system should display an error message that there is no account with the given name.

[BS – REQ – L2]:

The client can't login if he left the name field blank. If the name field is blank and the user clicks the login button, the system should display an error message that the name is blank.

3.2.3.2 Login Client password requirements:

[BS – REQ – L3]:

The client should enter a valid password related to the name in the password field. If the password is not correct, system should display an error message that the password is wrong.

[BS – REQ – L4]:

The client has three trials to login with a valid password. If he enters a wrong password for the fourth time, the system should display an error message that the user exceeded the allowed limit of login trials and the account must be blocked.

[BS – REQ – L5]:

The client can't login if he leaves the password field blank. If the password field is blank and the user clicks the login button, the system should display an error message that the password is blank.

3.2.3.3 Login Admin name requirements:

[BS – REQ – L6]:

The admin should enter a valid name that registered before in the database in the name field. If not, the system should display an error message that there is no account with the given name.

 [BS – REQ – L7]:

The admin can't login if he leaves the name field blank. If the username field is blank and the admin clicks the login button, the system should display an error message that the name is blank.

3.2.3.4 Login Admin password requirements:

[BS – REQ – L8]:

The admin should enter a valid password related to the name in the password field. If the password is not correct, system should display an error message that the password is wrong.

[BS – REQ – L9]:

The admin has three trials to login with a valid password. If he enters a wrong password for the fourth time, the system should display an error message that the user exceeded the allowed limit of login trials and the account must be blocked.

[BS – REQ – L10]:

The admin can't login if he left the password field blank. If the password field is blank and the admin clicked the login button, the system should display an error message that the password is blank.

3.3   Transfer Money

3.3.1   Description

A client can transfer a specific amount of money from any account they own to any destination account given that the max amount per transfer is 20000 pounds or what's equivalent in other currencies.

3.3.2   Stimulus/Response Sequences

Stimulus: Client requests to transfer money.

Response: System provides a form for the client to enter the source, destination account numbers, amount of transfer and currency.

Stimulus: Client enters the source, destination account numbers, amount of transfer and currency.

Response: System displays a message that money is successfully transferred.

3.3.3   Functional Requirements

Transfer Money feature (BS – REQ – TM) requirements:

3.3.3.1 Transfer money payer account number requirements:

[BS – REQ – TM1]:

The client shall enter a valid payer account number that they own. If not, the system should display an error message that payer account number is invalid.

[BS – REQ – TM2]:

The client shall enter a payer account number that has the necessary balance. If not, the system should display an error message that the payer account number doesn't have the necessary balance.

[BS – REQ – TM3]:

Payer account number can't be blank. If it's blank, the system should display an error message that the payer account number field can't be blank.

3.3.3.2 Transfer money payee account number requirements:

[BS – REQ – TM4]:

The client shall enter a valid payee account number that exists on the system. If not, the system should display an error message that payee account number is invalid.

[BS – REQ – TM5]:

The client shall enter a valid payee account number that's not the same as payer account number. If it is, the system shall display an error message that the payer account number and payee account number are the same.

[BS – REQ – TM6]:

Payer account number can't be blank. If it's blank, the system should display an error message that the payee account number field can't be blank.

3.3.3.3 Transfer money amount of transfer requirements:

[BS – REQ – TM7]:

Client shall enter an amount of transfer that doesn't exceed 20000 pounds or what's equivalent in other currencies. If it does, the system shall display an error message that amount of transfer exceeds the allowed limit.

[BS – REQ – TM8]:

Amount of transfer can't be blank. If it's blank, the system should display an error message that the amount of transfer field can't be blank.

3.4 View Transactions

3.4.1 Description

A client can view all of their transactions history up to 10 transactions per page. For each transaction, source account number, destination account number, amount, date, currency.

3.4.2 Stimulus/Response Sequences

Stimulus: Client requests to view their transactions.

Response: System provides clients with their history of transactions up to 10 per page.

3.4.3 Functional Requirements

View Transactions feature (BS – REQ – VT):

3.4.3.1 View Transactions requirements:

[BS – REQ – VT1]:
If the client clicks view transactions, the system shall allow the client to view their transaction history up to 10 transactions per page.

[BS – REQ – VT2]:
If the client attempts to view their transactions when they have made no previous transactions, the system should display an error that no previous transactions were made.

3.5 Add Client

3.5.1 Description

An admin can add a new client to the system by inserting client data like name, password, confirmed password, account number, email and phone number.

3.5.2 Stimulus/Response Sequences

Stimulus: Admin requests to add a client.

Response: System provides admin with a form where they can enter client data.

Stimulus: Admin enters client data.

Response: A client account is created using the entered data.

3.5.3 Functional Requirements

Add Client feature (BS – REQ – AC):

3.5.3.1 Client name field requirements:

[BS – REQ – AC1]:
The admin can't add a client name with special characters in the name field. If he did, the system should display an error message that the client name can't include special characters.

[BS – REQ – AC2]:

The admin can't add a client name that already exists in the database. If he did, the system should display an error message that the client name is already taken.

[BS – REQ – AC3]:

The admin can't add a client name with a blank value in the name field. If he did, the system should display an error message that the name field is blank.

3.5.3.2 Client password field requirements:

[BS – REQ – AC4]:

The admin shouldn't enter different passwords in the password and the confirm password fields if he enters a different passwords, system should display an error message that the entered passwords don't match.

[BS – REQ – AC5]:

The admin can't enter a client password or confirmation password with a blank value in the password or confirmation password fields. If he did, the system should display an error message that the password or confirmation password field is blank.

3.5.3.3 Client account number field requirements:

[BS – REQ – AC6]:

The admin can't add an account number with special characters in the account number field. If he did, the system should display an error message that the account number can't have characters or special characters.

[BS – REQ – AC7]:

The Admin shouldn't enter an invalid email format if he enters invalid email format system should display an error message that email is invalid.

[BS – REQ – AC8]:

The Admin can't enter a client email with a blank value in the email field. If he did, the system should display an error message that the email field is blank.

3.6 Edit Client

3.6.1 Description

An admin can edit all client data using the current client name including client name, password, confirmed password, account number, email and phone number.

3.6.2 Stimulus/Response Sequences

Stimulus: Admin requests to edit a client.

Response: System provides admin with a form where they can enter the name of the client they want to edit.

Stimulus: Admin enters client name.

Response: System provides admin with a form where they can edit any of the client data.

Stimulus: Admin edits the fields they want to edit.

Response: System updates the client data.

3.6.3 Functional Requirements

Edit Client feature (BS – REQ – EC) requirements:

3.6.3.1 Edit client's current client name requirements:

[BS – REQ – EC1]:

The admin shall enter a valid client name that exists on the system. If not, the system should display an error message that this client name doesn't exist on the system.

[BS – REQ – EC2]:

Current client name can't be blank. If it's blank, the system should display an error message that the current client name field can't be blank.

3.6.3.2 Edit client's new client name requirements:

[BS – REQ – EC3]:

The admin shall enter a unique new client name. If not, the system should display an error message that this client name already exists.

[BS – REQ – EC4]:

The admin shall enter a new client name with no special characters. If not, the system should display an error message that the client name can't include special characters.

[BS – REQ – EC5]:

New client name can't be blank. If it's blank, the system should display an error message that the new client name field can't be blank.

3.6.3.3 Edit client password requirements:

[BS – REQ – EC6]:

The admin shall enter the same password twice while editing a client's password. If an admin enters a different second password, the system should display an error message that passwords don't match.

[BS – REQ – EC7]:

Passwords can't be blank. If it's blank, the system should display an error message that the password field can't be blank.

3.6.3.4 Edit client account number requirements:

[BS – REQ – EC8]:

The admin shall enter an account number that consists only of numbers while editing a client's account number. If an admin enters characters or special characters, the system should display an error message that the account number can't include characters or special characters.

[BS – REQ – EC9]:

Account number can't be blank. If it's blank, the system should display an error message that the account number field can't be blank.

3.6.3.5 Edit client email requirements:

[BS – REQ – EC10]:

The admin shall enter a valid email while editing a client's email. If not, the system should display an error message that the email format must be valid.

[BS – REQ – EC11]:

Email can't be blank. If it's blank, the system should display an error message that the email field can't be blank.

3.7   Delete Client

3.7.1   Description

An admin can delete a client using the current client name.

3.7.2   Stimulus/Response Sequences

Stimulus: Admin requests to delete a client.

Response: System provides admin with a form where they can enter the name of the client they want to delete.

Stimulus: Admin enters client name.

Response: System removes the client removing all associated accounts.

3.7.3   Functional Requirements

Delete Client feature (BS – REQ – DC):

Delete client using name field requirements:

[BS – REQ – DC1]:

The admin should enter a client name that is stored already in the database. If he enters an existing name, the system should display an error message that the client name doesn't exist.

3.8   Add Account

3.8.1   Description

An admin can add a saving or a current account for a client. System provides two account types: saving and current. A client can have up to 2 different accounts.

3.8.2   Stimulus/Response Sequences

Stimulus: Admin requests to add a new account for a client.

Response: System provides a form for the admin to enter the name of the client they want to add an account for, the new account number and type.

Stimulus: Admin enters client name and new account data.

Response: System displays a message that the account is successfully created for the client.

3.8.3   Functional Requirements

Add Account feature (BS – REQ – AA):

3.8.3.1 Client name field requirements:

[BS – REQ – AA1]:

Admin can't add an account with an existing name in the database name. Names must be stored in the database. If the admin entered an existing name in the name field, system should display an error message that there is no client with this name.

[BS – REQ – AA2]:

 Admin can't leave the name field blank. If he did, the system should display an error message that the name field is blank.

3.8.3.2 Account number field requirements:

[BS – REQ – AA3]:

Admin can't enter characters or special characters in the account number field. If they did, the system should display an error message that the account number can't have characters or special characters.

[BS – REQ – AA4]:

 Admin can't enter an account number that was used by another user if they did display an error message that the account number was already taken.

[BS – REQ – AA5]:

Admin can't leave the account number field blank if they did. The system should display an error message that the account number is blank.

3.8.3.3 Account limitation requirements:

[BS – REQ – AA6]:

Admin tries to add an account and the user has already two different accounts the system should display an error message that you can't add more than two different accounts.

4.   External Interface Requirements

User Interface:
The client shall be able to communicate with the banking system through a client interface. It is a web-based interface that will be the web page of the banking application.

Starting a page is displayed information about the bank such as branches, contacts, and the latest news, the user can click on the login link. Then the page is redirected to the login page where the user can enter the login details. If the login credentials are valid, then the user is taken to a home page where he has the entire transaction list that he can perform with the bank.
All the above activities fall under the client interface.

The Admin will have an administrative   in- interface which is a GUI so that he can view the complete system. He'll also have a login page where he can input his login credentials and complete all of his tasks. This administrative interface provides a separate environment for him to maintain the database and make backups of the data in the database. He can create an account in the database for the users by supplying them with a username and password.

Software Interface:
The system is web-based application clients that require using a modern web browser such as Chrome. The tools and programming languages used are HTML, CSS, Java Script, and .Net.

Hardware Interface: User on the Internet, Web Browser, Operating System (any).

5.   Nonfunctional Requirements

1.1   Performance Requirements

The system should be able to handle a large amount of traffic. It should not hang or display any other issues as a result of a huge number of concurrent users. The system must be quick enough to suit the needs of the consumer. The device's performance should be unaffected by extreme temperatures. It is necessary to complete the transaction in a timely manner.

1.2   Safety Requirements

Requirements for safety, business continuity, backup, and recovery Banks should guarantee that they have appropriate data backup in case their operations require it. Banks should also have well-documented and thoroughly tested business continuity plans that include all parts of their operations.
Both data and software should be backed up on a regular basis. Recovery from catastrophic failures necessitates an off-site backup.

1.3   Security Requirements

Because our banking system places a premium on the safety and security of its clients' accounts and personal information, it must be completely accessible to only authentic users. It ought to be necessary. Your username and password are your unique identifier and one of the most critical security features for Online Banking. Make sure you don't share them with anyone.

1.4   Software Quality Attributes

A Software Quality Attribute is a nonfunctional feature of a component or system. There are multiple characteristics which are further classified into sub characteristics. Our system is effective. The technology makes it easier to connect with customers by providing information and providing high-quality service, as well as lowering barriers to entry into payment systems and retail banking. Clients can use internet banking to conduct informal transaction relationships that would otherwise require long-distance travel or the exchange of papers, both of which include the risk of loss. With online banking (internet), you can examine account balances and transactions at your leisure, from the comfort of your own home, at any time, transfer funds, receive and pay invoices, download transaction services, and contact customer support. Some characteristics such as:

Reliability
Determine whether the product is dependable enough to last in any situation. It should continuously produce accurate results. Product reliability is determined by how well the product performs in a variety of working contexts and conditions.

Maintainability
Different versions of the product should be simple to keep up with. It should be simple to add code to an existing system, as well as to upgrade for new features and technologies as they become available. Maintenance should be both inexpensive and simple. It's simple to maintain the system and fix bugs or make software changes.

Usability

Usability is a concept that refers to how easy something is to use. The application should be simple to use. It should be simple to grasp. The navigation should be straightforward.
d. Portability: This can be measured in terms of porting-related costing concerns, technical issues, and behavioral issues.

Accuracy
The programme should be accurate in terms of its functionality, internal calculations, and navigation. This means that the app must meet all of the functional requirements.

Efficiency
One of the most important aspects of a system is quality. Measured in terms of the time it takes for the system to execute any given task. For example, the system should make optimal use of CPU capability, disc space, and memory. If the system consumes all available resources, the user's performance will suffer, and the system would be deemed inefficient. It is impossible to employ a system in real-time applications if it is inefficient.

Flexibility
It should be possible to change it. It can be adapted to work with other goods with which it needs to interface. It should be simple to integrate with other common third-party components.

Appendix A: Glossary

Admin: He is the super Admin who can add new customers to the banking system, and assigns corresponding username, password, account type, and other details. When any customer withdraws his account from the bank, he can delete their account and stop the transactions immediately. He can generate different reports. He also takes the system backup.

Client: After logging in he can request for balance inquiry in his account, transfer money to another account in the same bank, request for checkbook/change of address/stop payments, and Mini statements (Viewing Monthly and annual statements).

Web browser: A web browser (also referred to as an Internet browser or simply a browser) is application software for accessing the World Wide Web or a local website.
HTML: Hyper Text Markup Language is a markup language used to design static web pages.

CSS: is the language we use to style an HTML document. CSS describes how HTML elements should be displayed.

JavaScript: is a high-level, often just-in-time compiled language that conforms to the ECMAScript standard. ... It has dynamic typing, prototype-based objects.

.NET: is a developer platform with tools and libraries for building any type of app, including web, mobile, desktop, games, IOT, cloud, and micro services.

HTTP: Hypertext Transfer Protocol is a transaction oriented client/server protocol between a web browser & a Web Server.

HTTPS: Secure Hypertext Transfer Protocol is an HTTP over SSL (secure socket layer)   TCP/IP: Transmission Control Protocol/Internet Protocol, the suite of communication protocols used to connect hosts on the Internet.

Appendix B: Analysis Models

No analysis models for now.