Software Project Management Plan

Commerce Bank Web Application

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Document Control

Change History

Revision	Change Date	Description of changes
V1.0	9/14/2021	Initial release

Version History Notes:
This is the initial release of the software project management plan for the Commerce Bank web application. Further edits will be added as we progress with the project.

Document Storage
This document is stored in the project's github repository at: https://github.com/UMKC-CS451R/cs415r_f21_groupproject-s1mple/tree/main/Documentation

Document Owner
Nehesia Edmond is responsible for developing and maintaining this document.

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1 Overview

1.1 Purpose and Scope

The purpose of this project is to provide a simple, visually appealing method for bank members to check the status of their bank accounts while receiving notifications for specified transactions. Providing a central hub for members in this way will help to save members and employees alike valuable time, resources, and money.

The Commerce Bank Web Application will provide many of the capabilities that come with being a member of Commerce Bank, including but not limited to: credit card information, loan payment information, information about Commerce Bank, and FAQs. The project's main purpose is located in the member dashboard. There, the member will be capable of adjusting their notification settings which will allow them to receive notifications as desired.

This project is not the creation of a fully complete and functional banking application. What this means is customer service support will be severely limited. There will be no method to connect directly with an employee of Commerce Bank via the web application beyond providing the customer service number. This project will not provide additional security to the user's account information beyond requiring a valid username and password. The user must take care to not provide any unauthorized individual with their login information.

This project is one that aims to be very user friendly with an appealing user interface and straightforward design. A user's guide and a system installation guide will be provided, however, one-on-one personalized training isn't required nor will it be a project deliverable.

1.2 Goals and Objectives

S1MPLE aims to provide the client with a product that is user friendly, useful, beneficial, and appealing. Providing our client with a useful product will help in reduction of future costs of their employees and clientele. Additionally, this product will serve to improve the quality of user experience with Commerce Bank. Our goals are as follows:

- Establish a software architecture that will monitor project design
- Create a graphical user interface (GUI), that will be appealing to the eye
- Ensure the application will be viewable on a mobile device in addition to the home devices.

Our objective at S1MPLE is to achieve a fully functional Commerce Bank web application that will meet the objectives (outlined below) before December 16th, 2021.

Project objectives:

1. Create a database to store Commerce Bank user's transaction history
2. Create capabilities that will allow Commerce Bank users to add or edit their transactions.
3. Create client software that allows access to the web application from mobile devices in addition to their laptop/desktop computers.
4. Create an interface that allows users to login to their account for added security.
5. Create an interface that will allow users to adjust their notification triggers to their desired specification.
6. Extend mobile access to data

1.3 Project Deliverables

The following items will be delivered to the customer on or before 12/16/2021:

1. Source code for both the client and sql portions of the system.
2. User's Guide
3. System Administrators Manual
4. Test Plan
5. Project Plan
6. System test Cases
7. Security Test
8. Data conversion program for migrating existing data to new database format.

1.4 Assumptions and Constraints

The project manager of S1MPLE has authorized the following assumptions as part of the risk management process. The signing of our Project Charter is an agreement to the provided assumptions.

Assumptions:

1. The web application is acceptable on a free online server or cloud service
2. The web application's main capabilities should be focused on the user notifications
3. Client agrees that a minimum of 2 stretch goals are required, however, more will be added if there is more time
4. Client will provide complete and full requirements documents for the project creation
5. Client will be unable to request further adjustments to the project once the requirement documentation has been accepted by our team without recommission

6. Due to the request that our team use .NET, Client will provide 3 separate developers who will be readily available for project requirement confirmations.

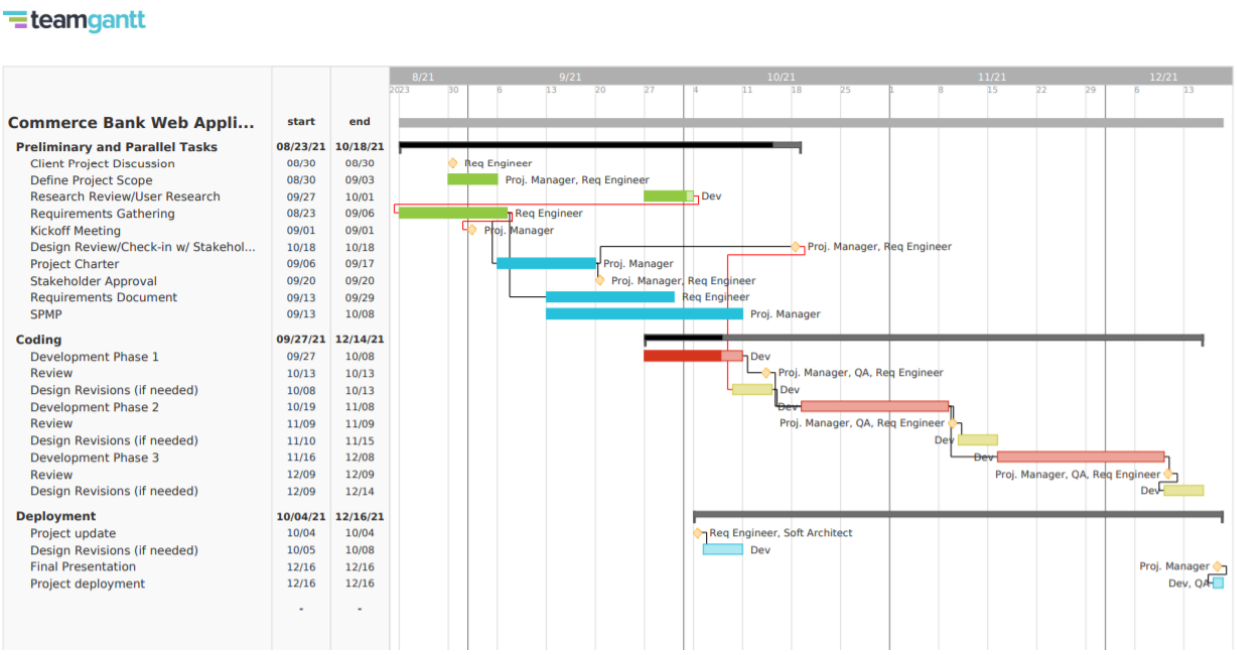
S1MPLE acknowledges that the desired project possess constraints imposed by the client. This project shall be limited as desired.

Constraints:

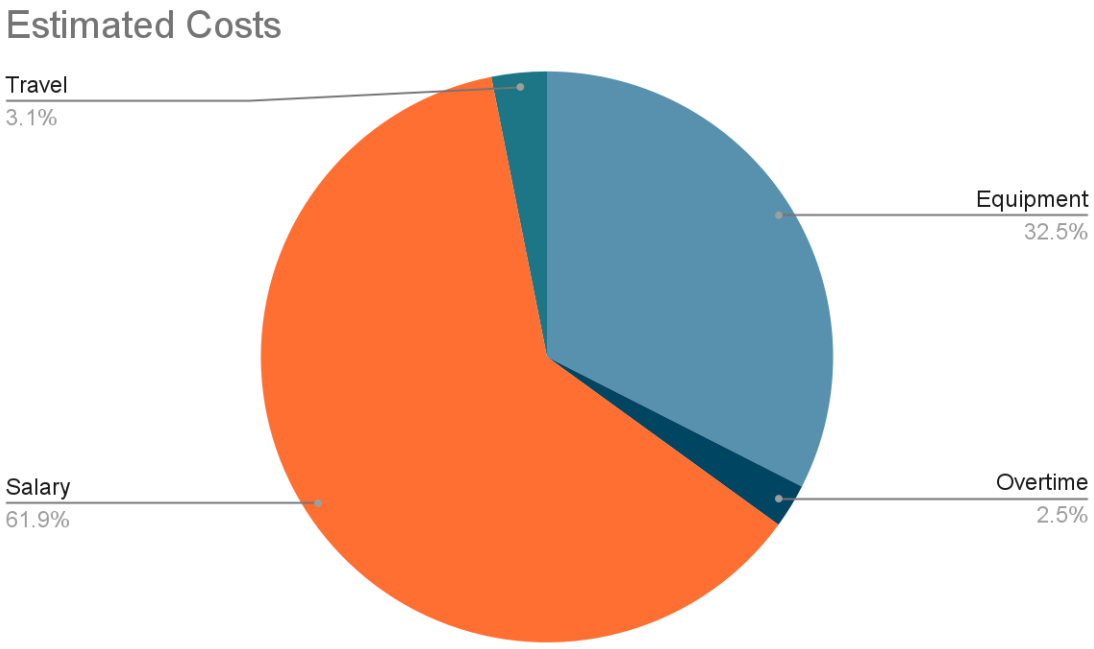
1. The software must run and be viewable on Windows and mobile devices
2. The software must use language that is easy to understand and time must be converted as such. No timestamps.
3. The project source code must have 10% of the coding being unittesting
4. The project source code must be a newer development framework, .NET being preferred
5. There must be a method of version control for the project
6. The database must be SQL Server 2012 or later
7. The software must be ready by 12/16/2021

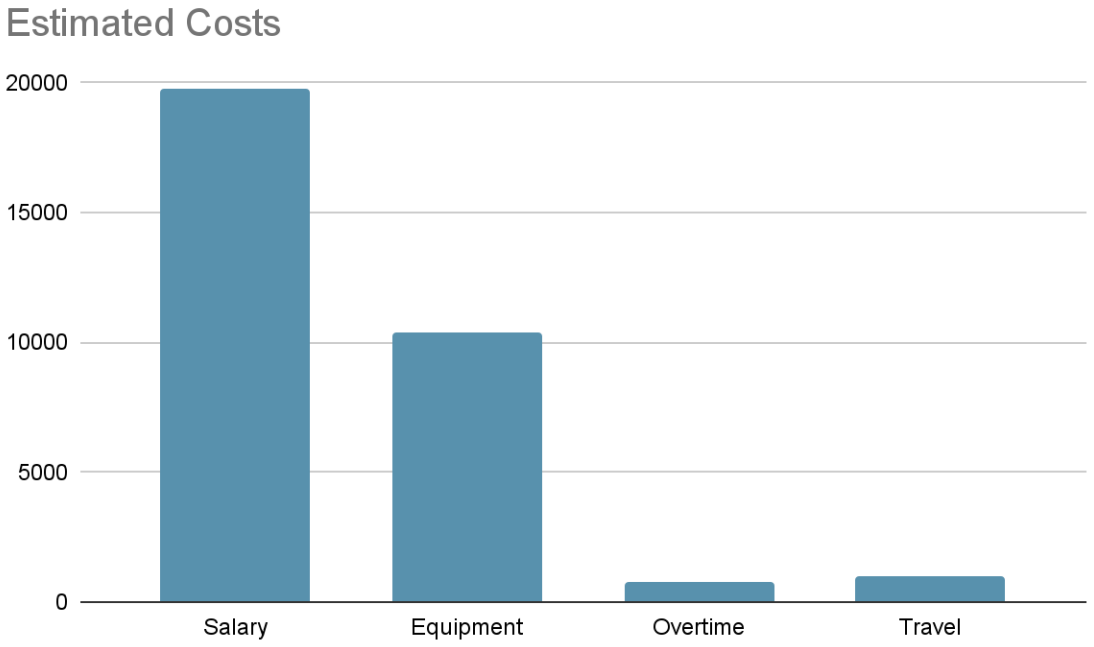
1.5 Schedule and Budget Summary

The schedule summary displaying start/end dates for high-level activities and major milestones is displayed below. Please review the document titled *Project Charter* for more information.



A complete budget breakdown is listed below. In short, the total expected cost of this project is $32,000.





1.6 Success Criteria

Here at S1MPLE, we aim to provide a completely functional and successful project for our client. For our project to be considered a success:

- Total project cost does not exceed the provided estimate without further recommissioning of our team.
- The web application will allow the user of said website to adjust their notification settings successfully. They will receive the notifications via email or text if the phone number has been provided.
- Web application has a functional user login screen that requires a password with a minimum of 8 characters (1 capital letter, 1 lowercase, 1 numeric, 1 special character) and has a unique username
- Web application has a visually appealing look that our client approves of before final submission
- All high-priority use cases in the requirements specification are delivered before October 30th, 2021
- Total test code is 10% of source code

1.7 Definitions

Acceptance Criteria - the conditions that a software product must meet to be accepted by a user, a customer, or other systems

Assumptions - conditions that are accepted as true.

Client – the person or organization for which this Commerce Bank web application is being built.

Commerce Bank Web Application – the product that is being described here; the software system specified in this document.

Constraints- limitation or restriction in regards to the client's product

Dev- developer

Development Framework - simple conceptual structure that will solve or address complex issues that may occur

Github- a distributed version-control platform where users can collaborate on or adopt open source code projects

Graphical User Interface (GUI)- visual way of interacting with the program. What the user will be seeing on the screen

PR- pull request. The act of pulling information from out github

Product - item that is offered for sale to the client. The software application.

Project – activities that will lead to the production of the Commerce Bank web application.

S1MPLE - the name of the organization of a commissioned group of developers.

Tech - shorthand for technical

User – the person or persons who will actually interact with the Commerce Bank web application.

User Interface(UI) - how a user will interact with a specific program. Includes buttons, music/sounds, etc.

1.8 Evolution of the Project Plan

Before the start of an iteration, the project plan will be updated to include a schedule of detailed tasks for the upcoming iteration. At the conclusion of an iteration, the project plan will be updated to include the actual effort for each completed task. The estimated and actual efforts will be located in a separate file titled *Team Estimated Efforts.*

Risk mitigation efforts will be evaluated at the start of each iteration. Severe risks will be analyzed and added to the project plan as soon as they materialize.

2 Startup Plan

2.1 Team Organization

Project Manager: Nehesia Edmond	The project manager is responsible for creating the project plan (with input from those doing the work), managing risks, running the weekly team meeting and providing monthly status reports to senior management
Lead Developer: Jash Singh	The lead developer is responsible for the mentoring, design, and conceptual stages of the product's development. They are able to explain technical requirements simply to their team.
Quality Assurance Officer: Emily Foley	The quality assurance officer focuses on the improvement and development of our production. They are able to prevent defects in production in addition to testing and ensuring the developers are accomplishing tasks correctly.
Software Architect: Geetika Padamati	The software architect is responsible for determining the processes and technologies the developers will be using. They are able to find structured software solutions that will help us reach our end goal.
Design Architect: Cheyenne Francois	The design architect will have many of the same job responsibilities as the software architect. They are responsible for the communication between our team and the client in regards to design and project execution.
Requirements Engineer: Komila Wiehe	The requirements engineer is responsible for analysis, coordination, and documentation of our projects. They are able to identify/understand the client's demands and document

	them in a binding way.
Programmers (6):	Programmers are primarily responsible for coding and unit testing modules. They are also expected to take part in architecture planning and review meetings.

2.2 Project Communications

Project requirements are often misconstrued at many tech organizations. To mitigate these issues and ensure we produce a product that meets/exceeds our client's expectations, we at S1MPLE like to remain in contact with our client periodically through the production process. We do so by maintaining contact with the developers at Commerce Bank, thereby guaranteeing that the project is what they are looking for. We also hold periodic meetings with our client to provide updates and status checks. At any point, the client is able to reach us via email if they have any additional questions or concerns.

2.3 Technical Process

S1MPLE uses a specific software development methodology or conventions by which the team considers standard processes. Our processes are as follows:

- Requirements Engineer reviews all listed requirements for our clients. They interact with the client to ensure that all requests are manageable in the requested time and are thoroughly understood
- Architects will document and outline possible formatting and software design
- Lead dev will direct and assign tasks to devs and act as liaison to project manager
- devs will create code based on iterations. They will submit all completed code for review and must receive approval to push new changes to our git
- Quality assurance officer will review code that is submitted for testing and to ensure naming conventions are uniform
- Project manager will further review completed code in addition to ensure that deadlines will be met and set up meetings with the client.

With the entry of each phase, a group meeting is required by the project manager to begin the delegation of tasks and products. The phase is completed once the final review for that phase has been completed and approved by the quality assurance officer, project manager, and requirements engineer. The dates of each phase can be found in section 1.5 and 4.1 of this document.

2.4 Tools

To create an end result that the client will enjoy, S1MPLE will employ the following tools and technologies:

- Programming Language – C#
- Version Control – source code and written artifacts will be stored in our github repository
  https://github.com/UMKC-CS451R/cs415r_f21_groupproject-s1mple

- Defect tracking – defects and issues will be tracked using our github listed above in addition to using the open source code BugTracker.NET
- Build tools – local and main builds will be done using Visual Studios
- Automated testing – unit tests will be implemented with the UnitX testing framework.

3 Work Plan

3.1 Activities and Tasks

S1MPLE maintains a work breakdown for easy organization for our developments while allowing our clients to have estimates for when a specific task will be completed. Please review our Gantt chart in section 1.5 of this document for a complete listing of our upcoming tasks. The estimated team efforts of this project can be found in the document titled *team_estimated_efforts*. Our upcoming work in the first iteration can be found via a separate document titled *iteration 1.*

Due to the nature of this project, our code is not heavily dependent on each other, and, as such, does not need for one developer to have completed their portion in order for the next developer to begin their tasks.

3.2 Release Plan

Day-to-day project management the release and iteration plans (described in the next section) are probably the two most important project management artifacts.

The expected completion dates for major milestones and delivery dates of key work products can be found in section 1.5 and 4.1 of this document.

The project's technical development process to a certain extent will dictate the choice and timing of milestones and deliverables.

3.3 Iteration Plans

For this project, we have 3 separate iterations as described below:

- iteration 1 will focus on setting up the initial framework of the project. We have the most contact with our clients at this point to ensure that we understand project requirements in addition to setting up future meetings. Documentation is the heaviest focus of this iteration.
- iteration 2,3&4 will be where the majority of the coding is completed. At this point we will have the most contact with the developers at Commerce Bank for updates and guidelines (if necessary). The product should be mostly completed by the end of this iteration.
- iteration 5 focuses heavily on testing and deploying the product for the client. This will be the final presentation of our prototype and will be displayed for the approval of our client. Once we've received that approval, we will begin the deployment process.

3.4 Budget

We estimate a cost of $32,000 for the project's completion. To review a complete cost breakdown, please check section 1.5 of this document. At the time of this

document's current release , we have spent $2,160. We are currently on track to meet the estimated budget by 12/16/2021.

4 Control Plan

4.1 Monitoring and Control

S1MPLE uses github and PR to help manage version control. Progress in the project is tracked during our weekly sprint updates. We have 3 iterations in which our project is expected to make a specific amount of progress. At the end of each iteration, we complete a large technical review and testing of the code to ensure that the code is meeting the standards of our client. Below are the major dates we have upcoming:

Weekly	– Sprint. Project participants report status, progress and potential problems.
10/6/2021	– Client meeting. Review of requirements and status updates
10/9/2021	– Critical Design Review. Formal inspection of product architecture.
11/9/2021	– Critical Design Review. Formal inspection of product architecture.
12/9/2021	– Critical Design Review. Formal inspection of product architecture.
12/16/2021	– Executive Review. The project manager presents current project status to project sponsor and senior executives.

4.2 Project Measurements

S1MPLE's product and process measures support project management and estimation by analogy. During this project, progress is tracked with measures of actual effort, integrated lines of code and actual expenditures. Keeping track of estimates and actuals during a project helps to calibrate our expected project completion date which helps keep our client in the know.

Phase	Measurement	Source
Release Planning	Record effort estimates for product features Communication with clients and document review conclude requirements are acceptable	Req. Engineer
Iteration Planning	Record effort estimates for scheduled tasks Update effort estimates for product features Update estimated dates in release plan	Proj. Manager
Iteration Closeout	Record actual effort for scheduled tasks Record actual effort for product features Record trends in actual effort vs. estimated effort to produce accurate estimates for future iterations	Req. Engineer Proj. Manager

System Test	Record the rate at which errors are found. Submit errors for review in addition to annotating said errors for dev correction	QA
Project Closeout	Archive project performance data in process database located on git	Proj. Manager
Ongoing	Record defects found from integration testing through the first year of release. Assign each defect to one of the following categories: blocker, critical, major, minor or trivial. Keep track of the state of each defect: open, assigned, fixed, closed.	Proj. Manager Req. Engineer QA

For further estimates please review the document titled *team_estimated_efforts.*

5 Supporting Process Plans

5.1 Risk Management Plan

S1MPLE takes great measures to identify technical and managerial risks that come with the creation of our client's products. Risks are prioritized based on the probability of a task becoming an issue and the consequences that may ensue if it were to occur. We monitor said risks by maintaining proper version control of our products as created. Any code that is completed must be reviewed by the project manager and fully tested by our quality assurance officer before being successfully pushed to our repositories. Any code deemed unacceptable is submitted back to our dev team with comments identifying any concerns we have encountered.

Possible Risks

Due to the nature of software development and the skillset of those involved with said development process, there are a few risks that are associated with this particular product. Specifically:

- The product is requested in a language that some of our developers are not familiar with
- The product will be using free cloud services for deployment as our client has opted not to cover costs of their own domains
- The clients will only be viewing the beta version of the website before pushing to production
- We have been given a relatively small data set by our client
- The time we have been commissioned is for a smaller period of time than is recommended

Contingency plans

Despite the listed risks, we do have contingency plans to prevent the issues stated above from becoming a problem that will prevent the product from becoming sufficient for our clients. Specifically:

- We have provided training to all developers who are not familiar with the requested programming language. This also included easy access to the dev team of our clients as necessary
- The free cloud service will be fully tested with dummy code before deploying the actual product. Furthermore, once we have deployed the actual product, we will have our quality assurance officer test to ensure the cloud service is sufficient for this product
- We will ensure our quality assurance officer will test as many possible aspects of the code as can be reasonably expected. The beta version displayed to the client will be sufficient enough that if approved it can easily be pushed to production
- We will add further data to use to ensure that we are providing a product that is capable of many possibilities that a user may experience

- We have ensured that all requirements set forth by our clients are outlined to a ‘no later than’ date. Our devs are not to exceed those dates.

5.2 Configuration Management Plan

The configuration management plans for this document and other baselined work products including review procedures are as follows:

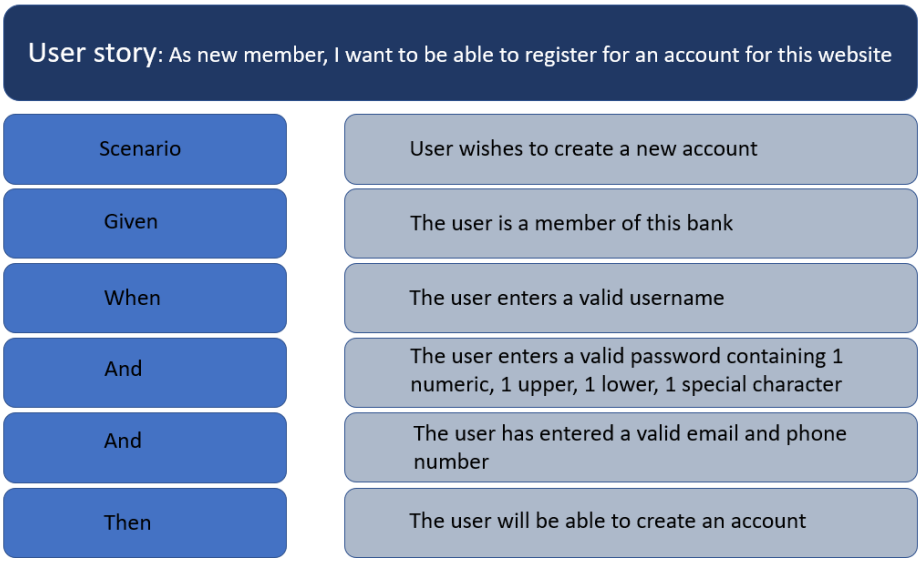
1. All work products will be stored in a centralized git repository running on a central server.
2. The naming convention for documents will be: NNN-VVV.suffix where NNN is a mnemonic that reflects the function of the document, VVV is a 3 digit version number, and 'suffix' is the standard/normal suffix for the document type. For example, the second version of the requirements document created as a Microsoft Word document might be labeled: REQ-002.doc.
3. All project (work products) items (documents, source code, test cases, program data, test data, etc) will be stored in the git repository but not all will be under change control (subject to formal change control procedures.) Only the system requirements, project plan and source code will be baselined and under configuration control.
4. Items that are subject to change control will be considered baselined after a group review at the end of the life cycle phase during which they are created. Baselined here means that the product has undergone a formal review and can only be changed through the prescribed change control procedures.
5. The change control procedure once a product is baselined is: (1) anyone wanting to make a change to a baselined item sends an email in addition to marking the specified change as in review to the rest of the group describing the change, reason for the change, expected impact, and timeline for integrating the change. (2) if no one responds to the group within 2 days with a reason for why the change request shouldn't be permitted, it will be considered accepted and the person proposing the change may proceed with the change. If anyone does object to the change, the reason for objecting will be discussed at a meeting where everyone is invited to attend and voice their opinion. At the end of the meeting a democratic vote will be held to decide whether or not the change should be allowed.
6. Including a change history with all documents is encouraged but only required for baselined documents. The change history should be at the front of the work item and include: (1) the name of the person making the change, (2) brief description of what has changed, (3) reason for the change, and (4) the date the change was integrated.

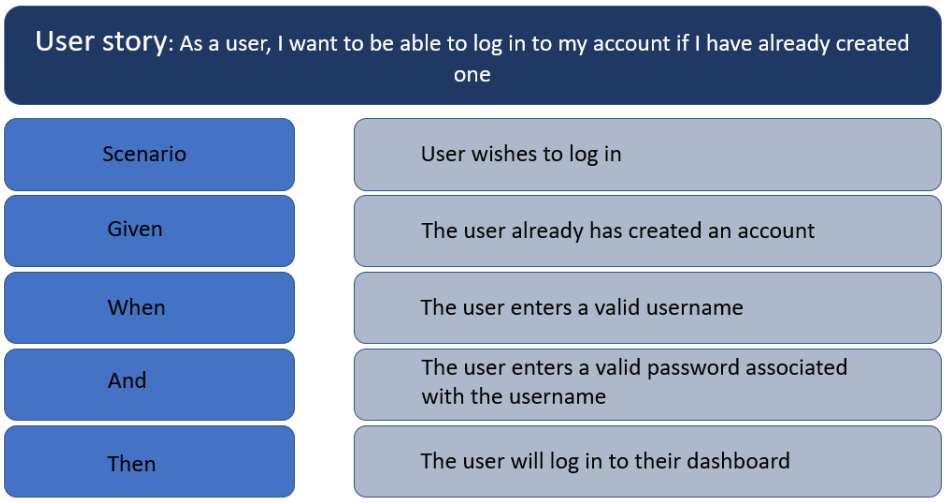
5.3 Verification and Validation Plan

The verification and validation plan defines what actions are being taken to assure the quality of the development process and resulting software products. This plan is located in a separate document titled *Verification and Validation Plan.*

5.4 Product Acceptance Plan

S1MPLE defines what is considered acceptable in terms of product quality and functionality by the approval of our client and how exact our work is to the client's requirements.





User story: As a user, I want to be able to recover the password to my account if a password is forgotten	
Scenario	User has forgotten password
Given	The user navigates to the login page
When	The user selects forgot password
And	The user has a valid email
Then	The system will send an email link to reset the password

User story: As a user, I want to be able to view my current transaction history	
Scenario	User wishes to view their transaction history
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
Then	The website will display their most recent transactions

User story: As a user, I want to be able to edit my transaction history	
Scenario	User wishes to edit a transaction
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the edit button
Then	The website will allow the user to adjust a transaction

User story: As a user, I want to be able to add to my transaction history	
Scenario	User wishes to add a new transaction
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the add button
Then	The website will allow the user to add a transaction

User story: As a user, I want to be able to view the notification settings for my transaction history	
Scenario	User wishes to view notifications
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the settings button
And	The user selects view notification settings
Then	The website will display all selected notification options

User story: As a user, I want to be able to change the notification settings for my transaction history	
Scenario	User wishes to change notifications to alert when transaction exceeds an amount
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the settings button and selects exceeds amount
And	The user inputs a desired amount
Then	They will receive a text when a purchase has exceeded the inputted amount

User story: As a user, I want to be able to change the notification settings for my transaction history	
Scenario	User wishes to change notifications to alert when transaction is from a certain merchant
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the settings button and selects notify by merchant
And	The user inputs merchant name
Then	They will receive a text when a purchase has been from the specified merchant

User story: As a user, I want to be able to change the notification settings for my transaction history	
Scenario	User wishes to change notifications to alert when transaction is from a certain location
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the settings button and selects notify by location
And	The user inputs a desired radius
Then	They will receive a text when a purchase is outside of the radius

User story: As a user, I want to be able to change the notification settings for my transaction history	
Scenario	User wishes to change notifications to alert when account balance is low
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the settings button and selects notify by balance
Then	They will receive a text when the account balance is low

User story: As a user, I want to be able to change the notification settings for my transaction history	
Scenario	User wishes to change notifications to alert when deposit is made
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the settings button and selects notify by deposit
Then	They will receive a text when a deposit is made

User story: As a user, I want to be able to change the notification settings for my transaction history	
Scenario	User wishes to change notifications to alert when a purchase exceeds available funds
Given	The user is a member of this bank
When	The user has logged in
And	The user is viewing their dashboard
When	The user clicks the settings button and selects exceeds available funds
And	The user inputs makes a purchase exceeding their current balance
Then	They will receive a text when a purchase has exceeded that balance