Software Project Management Plan

Commerce Bank Group 6

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Version 1

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**GENERAL DOCUMENT INFORMATION**

**Project Name:** Online Transactional Ledger Web Application

**Date of Last Change:** 03/06/2021

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**Document Storage**

This document is stored in the project’s GitHub repository at: <https://github.com/UMKC-CS451R-Spring-2021/semester-project-group-6-commerce/tree/main/Project_Documentation>

**Document Owner**

Lauren Magee is responsible for developing and maintaining this document.

**CHANGE HISTORY**

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|  |  |  |  |

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**1** **OVERVIEW**

* 1. **Purpose and Scope**

The purpose of this project is to provide Commerce Bank consumers with user-friendly, seamless access to view and edit transactional history, through a cross-platform web/mobile application, with the sole intent to provide them with an enjoyable, efficient, online banking experience. We envision our customers, Commerce Bank, enjoying these user focused components so much that they decide to incorporate parts or the entire application in an enterprise development.

The application will have three different windows to guide the user through their Commerce online banking experience, these will include a login, dashboard, and transactional pages. On the login page, the user will be allowed to access their account only if correct, known credentials are provided. This page will not provide registration for new users, allow users to change a password, or give the option to recover an account if their password has been forgotten. The dashboard page will spawn when users have successfully logged into their accounts. On this page a user-friendly, snapshot of data will be visualized to show the user their history of triggered notifications for a time interval of a year or a month. The user will also be able to hide notification rules and pull notification rules from different timeframes for comparisons. Lastly, this page gives the user an option to download an Excel version of their transactional notifications. The dashboard page’s purpose is for viewing history only, no manipulations to data, transactions, or notification rules can be made on this page by the user. The transactional page will be the designated window where users can make edits to their data. Upon the initial loading of the page, all user information will be sorted in a list by date. They will then have the options to add new entries to their online ledger. This page will not allow users to search for specific data or provide any advanced filter features beyond the original date sorting.

In general, the application will abide by the following mentioned design considerations. Design for all pages will embody simplicity both in graphics and wording. None of the windows will feature any overbearing visuals or use statements/ instructions the user isn’t expected to already be familiar with. Users of the app will easily be able to recognize the brand of their web application. Each page will feature Commerce bank stylings, logos, and other trademark designs. None of the pages will branch from Commerce’s proprietary theme. Finally, the app will be a wrapped project that will fully render for any user wanting to access it without needing special software or additional downloads. This means there will not be any external resources or libraries and all developmental tools utilized will be available cross platform.

**1.2 Goals and Objectives**

Our greatest goal is to deliver a tested and finished product to Commerce Bank, utilizing their recommended development platforms, and that they decide to distribute it to their customers in the future. At the lowest level, we will consider this goal met if our project has completed the required 10% code testing and we receive unanimous, positive feedback for our final presentation from the review panel. At the highest level, we will consider this goal met if the testing is completed, at the same level, and we receive verbal confirmation that parts or the whole application will be integrated into future enterprise use.

Our smaller goals focus on usability and the overall user experience, as we recognize the intention of this project is to satisfy and enhance the banking routines of our intended users. The first secondary goal is to create a login window that provides valid accessibility and reliability. We will consider this goal met if registered users can access their accounts with proper login credentials and if those same users can effortlessly recognize their trusted Commerce brand on that page. Another secondary goal we have is to develop a dashboard that highlights important user data and gives the user power to select which data should be of importance. We will consider this goal met if the user can view previously triggered notification rules, edit/ turn off specific notification rules, and also has the option to export their app activity to an Excel spreadsheet. Our last big secondary goal is to allow the user to view their account transaction history and make additions if necessary. We will consider this goal met if the user can view the transaction list sorted by date, the user can add additional transactions to the mobile ledger, and when new transactions are added the notification rules set should be triggered if applicable.

**1.3 Project Deliverables**

The team’s major deliverables follow closely to what is provided by the Project Sponsor in Canvas. In addition to those, at every team meeting we establish additional weekly goals and smaller deliverables. The timetable below displays the merging of the two already created to this present point (3/6/2021), however, these are subject to grow as the project progresses throughout the semester. The following table lists the date the deliverable was completed along with the what the customer deliverable is or contains. A more detailed version of the project’s deliverables can be found in the *Activities and Tasks* section.

|  |  |
| --- | --- |
| **Date** | **Deliverable** |
| 2-14-2021 | Individual Contracts for Project Participation |
| 3-2-2021 | Project Charter  Requirements Document Baseline |
| 3-8-2021 | Project Plan |
| 3-14-2021 | Risk Management Report |
| 3-22-2021 (Commerce Bank Presentation #1) | All the above-mentioned deliverables **plus**  Login Page Design Prototype  Dashboard Page Design Prototype  Transactional Ledger Design Prototype |
| 4-4-2021 | Architecture Document |
| 4-30-2021 | Test Plan |
| 5-7-2021 | Project Results |
| TBD (Final Commerce Bank Presentation) | All the above-mentioned deliverables **plus**  Web Application Prototype with Full Requirement Functionality |

**1.4 Assumptions and Constraints**

**Assumptions:**

1. Commerce Bank customers will not attempt to filter, organize, or change the layout of their online transactional data.
2. All users of the application will have access to a reliable internet connection.
3. Users will already have login credentials that are logged as entries in the designated SQL backend.
4. The users of this software will know they are using a Commerce Bank product and will understand the services being provided and offered.
5. Commerce Bank will have to fund hosting methods if interested in launching this web application to several users.
6. Developers and UI designers assume they have access and the privileges to use any/ all Commerce Bank branding while creating this application.
7. The design prototypes will be delivered at the first Commerce Bank presentation for panel and Project Sponsor review.
8. The final web application prototype with functionality will be presented to Commerce Bank and Project Sponsor at the last presentation.

**Constraints:**

1. Development of the web application will be done using .NET platform.
2. The database backend of the application will be SQL.
3. Graphics and other design features will be created by incorporating Commerce Bank’s colors, logos, and themes.
4. Testing of the code will be completed using the xUnit library.
5. The only users able to access the application’s features will be preregistered Commerce Bank customers.
6. Web application design prototype will be done by 3-22-2021.
7. Web application prototype with full functionality will be done by project end in May, exact date TBD.

**1.5 Schedule and Budget Summary**

**Chart, waterfall chart

Description automatically generated**

In regard to budget estimates, this is a pro bono, university project. This means our group will be utilizing the recommended free and open-source development platforms and libraries. We do not foresee any part of our project requiring monetary assistance because every requirement should be able to be fulfilled using a free alternate solution. If this web application becomes a part of Commerce Bank’s enterprise solutions, they will be responsible for any financial instances incurred.

**1.6 Success Criteria**

The Commerce Bank project will be considered a success if, at the end of the project, all of the following conditions hold:

1. Our team presents a finished prototype that hits 75% of our top project prioritizations, referenced in our *Project Charter* document.
2. We had deliverables completed by the deadline for all our Project Sponsor’s assignments (on Canvas)
3. Our users can effortlessly distinguish our web application’s brand upon initial usage.
4. Everyone on our team’s individual efforts and contributions are mostly proportional on our GitHub repository’s activity visualization.
5. We receive a greater amount of positive feedback than criticism from our final presentation to our customers.

**1.7 Definitions**

**Commerce Bank** – the intended recipient of the finished Commerce Bank application

**Commerce Bank Application** – the project deliverable being presented as the finished product, all features and requirements discussed are wrapped into this software application

**Customer** – a consumer of Commerce Bank, individual(s) who spend money to utilize their provided services

**Dashboard** – the designated home page of the Commerce Bank Application, displays most recent customer transactional history using visual analytics

**Notification Rules** – a set of conditionals that inspect incoming transaction history for specific indicators, for example, if a customer has spent over $1000 in one day

**Requirements** – vocalized needs and wants for the software from Commerce Bank

**Transaction History** – data collected from consumers when they make monetary purchases

**Web Application** – software that is accessed from a web server rather than an operating system

**1.8 Evolution of the Project Plan**

At the beginning of each iteration, the associated tasks will be thoroughly discussed by the development team. Any new additions or adjustments will be reflected in the Project Plan. The following sections are subject to change for the duration of the project: *Project Deliverables, Schedule and Budget Summary, Definitions, Team Organization, Technical Process, Activities and Tasks, Iteration Plans, Risk Management Plan, Configuration Management Plan, and Verification and Validation Plan*. Additional sections outside of the above listed may also change but are far more less likely because they are more foundational to the project and its requirements.

At the end of each iteration, an inventory of tasks completed will be taken. Again, anything not already featured in the Project Plan will be added. In addition to added tasks, the group will have retrospectives to deliberate how the previous iteration went and if any collaborative processes need to be reviewed. If edits are made to any variation of the processes deployed by the team, they will also be updated in the appropriate section of the Project Plan.

1. **STARTUP PLAN**
   1. **Team Organization**

**Project Manager:** The project manager is responsible for drafting all required documentation, sharing, reviewing with the group, and then turning in the paperwork once officially completed. In addition to documentation, this individual is declared head of communication for the group. Part of their duties is to schedule Zoom meetings, send out updates to group members, and record minutes of group meetings for team members who were unable to attend. This member also creates the agenda for meetings with the assistance of developers beforehand. The project manager is then responsible for uploading all relevant group information to GitHub or Canvas and ensuring all team tasks are getting completed on schedule. The project manager of our group is Lauren Magee.

**Developers (3):** The first priority of our developers is to create a design prototype for the clients. Once these prototypes are approved, their primary responsibility is to implement the design and associated functionality utilizing the project’s designated development platform. The developers of our group are Txomin Chivite Amigo, Cory Free, and Saurav Pawar.

**Tester:** The tester is responsible for creating different tests, through the xUnit framework, to verify the work completed by the Developers is usable and reliable. Another of their duties is to communicate with the group the type of acceptance criteria they have chosen and ask for additional features that should be looked into from the rest of the team. The tester of our group is Mohamud Abdi.

* 1. **Project Communications**

The head of communications for our group is Lauren Magee, she is responsible for retrieving outside updates about the project from the Project Sponsor and Clients. Team members needing any additional information or have questions for those three stakeholders is completed by her through method of email.

Inside the group, we have established three different methods of communication. For random, non-important, casual messages we use our group’s dedicated Discord server. If addressed through this channel, individuals have 24 hours to respond to the message. Our second method of communication is for more formal announcements and Zoom meeting links. All announcements related to these criteria are posted on the Canvas Group created by the Project Sponsor. Our last method of communication, Zoom, is used primarily for project planning and updates. All deliverables from iterations are upload to the group’s shared GitHub repository when completed.

* 1. **Technical Process**

Our development group is following the iteration sequence plan provided by the Project Sponsor, mostly similar to the waterfall methodology. At the beginning of each iteration, the team has a meeting to designate tasks to individuals. Occasionally, if a task is larger and if there are two or more people who possess the skills needed to complete it, then one task will be assigned to those individuals. It is then up to them to communicate with one another how they would like to collaborate during the iteration. Throughout iterations, the group repeatedly holds weekly meetings over Zoom to discuss task developments, updates, and can interact with the rest of the team members for any other need. Any other questions, comments, or updates about the progress of the project can be made utilizing our communication channels. At the end of each iteration the tasks should be completed, uploaded to the GitHub repository and, we have decided to integrate an Agile feature to our SDLC, we hold a retrospective to determine what went well and what we would like to improve upon for the next iteration. Refer to the *Iteration Plans* section to view our iterations and their deliverables.

* 1. **Tools**

The tools used to complete this project are listed below to the right of their purpose.

**Programming Language** – SQL and C#

**Development Platform** - .NET Framework and mySQL

**Version Control** – source code and project documentation will be stored on shared group GitHub repository, see *Document Storage* for exact hyperlink

**Prototype Design** - Graphium

**Defect Tracking** – provided Visual Studio debugging software

**Communication Channels** – Canvas, Discord Server, GitHub

**Automated Testing** – xUnit library

**Documentation Creation/ Editing** – Microsoft Word

1. **WORK PLAN**
   1. **Activities and Tasks**

The table below lists out several tasks that need to be completed within this project, specifically for the actual software development. Any documentation for the Project Sponsor throughout the duration can be found listed in the *Technical Process* section. Each task listed has an expansion of attributes to detail the efforts, iteration timeline, and project dependency of the duty. The literal planned dates of these tasks can be found in the next section, *Release Plan*.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Task** | **Description** | **Owner** | **Effort Estimate** | **Actual Estimate** | **Planned Dates** | **Actual Dates** | **Other Task Dependencies** |
| Login Page Prototype | Intended Design of Window | Saurav | 5 | 5 | Iteration 1 Closeout | Iteration 1 Closeout | None |
| Dashboard Page Prototype | Intended Design of Window | Cory | 5 | 5 | Iteration 1 Closeout | Iteration 1 Closeout | None |
| Online Ledger Page Prototype | Intended Design of Window | Mohamud | 5 | TBD | Iteration 2 Closeout | TBD | None |
| SQL Backend Setup | Create tables with Commerce Mock Info | Txomin | 3 | TBD | Iteration 2 Closeout | TBD | None |
| Functional Login Rough Draft Prototype | Start coding design prototype with actual login functionality and connect to SQL backend | TBD | 18 | TBD | Iteration 3 Closeout | TBD | Need finished Login Page Prototype |
| Functional Dashboard Rough Draft Prototype | Start coding design prototype with actual dashboard functionality | TBD | 18 | TBD | Iteration 3 Closeout | TBD | Need finished Dashboard Page Prototype |
| Functional Online Ledger Rough Draft Prototype | Start coding design prototype with actual functionality and access to SQL Backend | TBD | 20 | TBD | Iteration 3 Closeout | TBD | Need finished Online Ledger Page Prototype |
| Identify 2 Stretch Goals | Pick out stretch goals to integrate into the design prototypes and add them to this table | All Group Members | 2 | TBD | Iteration 3 Closeout | TBD | Finished base requirements of web application |
| Integrate all 3 Rough Draft Pages | Hyperlink the login, dashboard, and online ledger to be connected bidirectionally | TBD | 3 | TBD | Iteration 4 Closeout | TBD | All 3 Functional Rough Draft Prototype need to be completed |
| Notification Rule Setup | Find and integrate method to notify user when transaction triggers a rule (via email) | Lauren | 5 | TBD | Iteration 4 Closeout | TBD | Need source code for web application pages |
| Define 3 Notification Rules | Pick different transaction instances to notify user when they occur | TBD | 8 | TBD | Iteration 4 Closeout | TBD | Need source code for web application pages and access to SQL database |
| Make appropriate Code Adjustments to prototype | Developer find bugs/ edits themselves before sending off for automated testing | Saurav, Cory,  Txomin | 15 | TBD | Iteration 5 Closeout | TBD | Need completed initial rough draft of web application |
| Automated Testing | Testing to at least the 10% standard of web application prototype | Mohamud | 15 | TBD | Iteration 5 Closeout | TBD | Need completed prototype of web application |

* 1. **Release Plan**

The following table lists the project’s planned major milestones and key work products along with the predetermined date of its completion. Additional deliverables may be added at a later time.

|  |  |
| --- | --- |
| **Date** | **Major Milestones/ Key Work Products** |
| 2-26-2021 | Project Charter  Login Page Design Prototype  Dashboard Page Design Prototype  User Notification Research |
| 2-28-2021 | Requirements Document |
| 3-1-2021 | Iteration 1 Closeout |
| 3-8-2021 | Project Plan |
| 3-14-2021 | Risk Management Report |
| 3-15-2021 | Online Ledger Page Prototype  SQL Backend Setup  Iteration 2 Closeout  Commerce Bank Presentation #1 |
| 3-19-2021 | Mid Semester Presentation |
| 4-4-2021 | Architecture Document |
| 4-5-2021 | Functional Login Page Rough Draft  Functional Dashboard Page Rough Draft  Functional Online Ledger Page Rough Draft  2 Stretch Goals Identified  Iteration 3 Closeout |
| 4-19-2021 | Integration of all 3 Page Prototypes  Defined 3 Notification Rules  Setup 3 Notification Rules  Iteration 4 Closeout |
| 4-30-2021 | Test Plan |
| 5-3-2021 | Automated Testing Completed  Final Prototype  Iteration 5 Closeout |
| 5-7-2021 | Project Results Document |
| TBD | Commerce Bank Final Project Presentation |

* 1. **Iteration Plans**

This project has a total of five iterations. Expected deliverables for each iteration can be found in the table below.

|  |  |
| --- | --- |
| **Iteration** | **Deliverables** |
| 1 | Individual Contracts  Project Charter  Login Page Design Prototype  Dashboard Page Design Prototype  User Notification Research  Requirements Document  Iteration 1 Closeout w/ Reflection |
| 2 | Project Plan  Risk Management Report  Online Ledger Page Prototype  SQL Backend Setup  Commerce Bank Presentation #1  Iteration 2 Closeout w/ Reflection |
| 3 | Mid Semester Presentation  Architecture Document  Functional Login Page Rough Draft  Functional Dashboard Page Rough Draft  Functional Online Ledger Page Rough Draft  2 Stretch Goals Identified  Iteration 3 Closeout w/ Reflection |
| 4 | Integration of all 3 Page Prototypes  Defined 3 Notification Rules  Setup 3 Notification Rules  Iteration 4 Closeout w/ Reflection |
| 5 | Final Commerce Bank Presentation  Test Plan  Automated Testing Completed  Final Web Application Prototype  Project Results  Iteration 5 Closeout w/ Reflection |

* 1. **Budget**

The following statement was already mentioned in the *Schedule and Budget Summary* section but applies equally for this segment within this documentation. In regard to budget estimates, this is a university sponsored capstone project. This means our group will be utilizing the recommended free and open-source development platforms and libraries. We do not foresee any part of our project requiring monetary assistance because every requirement should be able to be fulfilled using a free alternate solution. If this web application becomes a part of Commerce Bank’s enterprise solutions, they will be responsible for any financial instances incurred.

1. **CONTROL PLAN**
   1. **Monitoring and Control**

The plan for tracking progress of this project is detailed in the table below. In this table, dates for specific technical and managerial tasks are listed to the left and the activity of the task is featured to the right. The activity of the review also mentions its status as (Begin) or (Completed).

|  |  |
| --- | --- |
| **Date** | **Technical/ Managerial Reviews** |
| 2-26-2021 | Project Charter (Begin)  Login Page Design Prototype (Begin)  Dashboard Page Design Prototype (Begin)  User Notification Research (Begin)  SQL Backend Integration to Web Application Practice (Begin)  Team Meeting - discuss progress on Iteration 1 tasks (listed right above) |
| 2-28-2021 | Requirements Document (Begin) |
| 3-1-2021 | Iteration 1 Closeout w/ Reflection |
| 3-2-2021 | Project Charter (Completed)  Requirements Document (Completed)  Login Page Design Prototype (Completed)  Dashboard Page Design Prototype (Completed)  User Notification Research (Completed)  SQL Backend Integration to Web Application Practice (Completed) |
| 3-5-2021 | Retrospective for Iteration 1 - discuss which processes went well and what needs to be improved  Team Meeting – plan and assign tasks for Iteration 2  Project Plan (Begin)  SQL Database Creation w/ Commerce Mock Data (Begin)  Online Ledger Page Design Prototype (Begin) |
| 3-8-2021 | Project Plan (Completed)  Team Meeting – share updates about progress on design prototypes and review Project Plan for turn in  Risk Management Report (Begin)  Fine tune Design Prototypes, All 3 Pages (Begin) |
| 3-14-2021 | Risk Management Report (Completed) |
| 3-15-2021 | Iteration 2 Closeout w/ Reflection  Retrospective for Iteration 2 - discuss which processes went well and what needs to be improved  Team Meeting – assign Iteration 3 tasks to team members |
| 3-22-2021 | Fine tune Design Prototypes, All 3 Pages (Completed)  Commerce Bank Presentation – present design prototypes to stakeholders to get approval for implementation |
| 3-26-2021 | Mid Semester Presentation with Project Sponsor |
| 3-29-2021 | Team Meeting – discuss process of dividing implementation work and start producing functional prototype pages  Architecture Document (Begin) |
| 4-4-2021 | Architecture Document (Completed) |
| 4-5-2021 | Iteration 3 Closeout w/ Reflection  Retrospective for Iteration 3 - discuss which processes went well and what needs to be improved  Team Meeting – share progress updates for prototype page implementation and start discussion of merging all three pages |
| 4-12-2021 | Team Meeting – review the transitioning of overall web application, start implementing stretch goals and notification rules |
| 4-19-2021 | Iteration 4 Closeout w/ Reflection  Retrospective for Iteration 4 - discuss which processes went well and what needs to be improved  Team Meeting – developers and tester have discussion of what to test and general automated testing approach  Test Plan (Begin) |
| 4-26-2021 | Team Meeting – Tester shares discoveries from testing process, developers make necessary updates |
| 4-30-2021 | Test Plan (Completed) |
| 5-3-2021 | Iteration 5 Closeout w/ Reflection  Retrospective for Iteration 5 - discuss which processes went well and what needs to be improved  Team Meeting – practice for final presentation to stakeholders and discuss any last-minute changes  Project Results Document (Begin) |
| 5-7-2021 | Project Results Document (Completed) |
| TBD | Commerce Bank Final Project Presentation – present final prototype to project stakeholders |

* 1. **Project Measurements**

The table below lists different phases of the project management life cycle along with their task work analogical measurement. This information is intended to be an aid for estimations of future project effort expenditures.

|  |  |  |
| --- | --- | --- |
| **Phase** | **Measurement** | **Source** |
| Iteration Planning | Document affiliated project tasks to be completed  Estimate effort hours to complete tasks  Assign tasks to team members, individually or in small groups | Project Manager  Developers  Tester |
| Iteration Closeout | Record actual times needed to complete tasks  Update individuals who contributed to task completion  Add/ Delete any task that was or was not needed in Iteration  Total the amount of effort spent on Iteration | Project Manager  Developers  Tester |
| Project Technical Acumen Prep | Research development platform for project software  Familiarize with coding syntax and processes  Decide SDLC process | Developers |
| Design Prototyping (Graphics) | Integrate visual requirements from client with user interface  Create graphic representing the frontend without backend functionality | Developers |
| Project Charter | Define stakeholders, preliminary schedule, and budget  Articulate project purpose, goals and objectives, and scope  Outline the major deliverables and project priorities  Detail risks to the project and determine project success standards | Project Manager |
| Requirement Documentation | Review project purpose, scope, goals, and definitions  Reiterate general design constraints of projects  List nonfunctional requirements for operational, security, performance, and interface standards  List functional required and optional use cases for the system | Project Manager |
| Project Plan | Review project purpose, scope, goals, and definitions  State group startup plan detailing communications, technical process, and tools  Organize a work plan to cover the project’s tasks, release plan, iterations plans, and budget  Formulate a control plan to monitor progress and collect metrics for future projects  Configure risk, configuration, verification and validation management plans | Project Manager |
| Risk Management Document | List out potential risks for the project and calculate exposures  Rank the risks from most urgent to least urgent  Provide risk responses to the top two risks | Project Manager |
| Architecture Document | State design goals and system behavior  Detail the various types of views – logical, process, development, physical, and use case | Project Manager |
| Test Plan | Establish terminology used in testing process  Dictate items tested and not tested  State approach to testing along with pass/fail criteria  List test deliverables | Project Manager  Tester |
| Project Results | Compiles major milestones and deliverables for completed project  Attributes of this documentation feature a PowerPoint, code, and a database | Project Manager  Developers |
| Design Prototype Presentation | Provide final design prototype, with no functionality, to present to stakeholders  Await stakeholder approval to move forward with functionality implementation | Project Manager  Developers |
| Final Prototype Presentation | Provide final web application prototype, with full functionality, to present to stakeholders | Project Manager  Developers  Tester |
| Project Closeout | Take general overview of completed work, documentation, and processes  Analyze routines that worked well and ones that can use improvement for future projects | Project Manager  Developers  Tester |

1. **SUPPORTING PROCESS PLANS**
   1. **Risk Management Plan**

The current rank prioritization, from high to low, of our risks is as follows:

1. No experience with development platform or programming language
2. Groupthink prohibiting creativity and new perspectives
3. Failure to combine segments of code from different individuals
4. Teammates “going dark” and failing to communicate with the group
5. Dissatisfaction from Project Stakeholders on our design prototype

Within the technical realm, the biggest obstacle is that none of our team members have had formal experience using the .NET web development platform. However, we believe after looking into tutorials and other open-source projects on the internet we should be able to acquire the necessary skills to complete the project. Another risk we face is the uncertainty of whether we will be able to combine our individually, assigned segments of code. We decided to approach this possibility by encouraging continuous communication on the steps we are taking through the development process by ourselves. If everyone can keep their coding styles consistent, there should not be too much difficulty adding in new code portions. The last of our technical risks is if the Project Stakeholders are not satisfied with our design page prototypes. This dissatisfaction would set the team back in schedule and force us to rearrange our efforts in future iterations to account for edits. One way we plan on avoiding this risk is by asking for further requirement clarification throughout the entire development process. This should ensure that both our developers and stakeholders are on the same page about what is desired from the final product.

From a non-technical standpoint, our biggest challenge is upholding clear and consistent communication. While it is a team expectation, we do not have any disciplinary actions in place if a teammate decides to “go dark” for a period of time. It is the hope that individuals will share a mutual feeling of responsibility to contribute. The other risk we face, from working in a group, is groupthink. We are a group of people that have never worked together before; therefore, no one wants to accidentally offend another person if they have ideas for improvements to their work. To overcome this, we have decided to partner up on most deliverables. This way at least two people can collaborate the initial concept and then the work would not just be representative of one person. This would make constructive feedback easier to give.

To monitor all the aforementioned risks, the group has established an expectation to routinely discuss concerns and questions at weekly meetings. Any serious issues that should be addressed before the weekly meeting can be sent in our Discord server for immediate feedback. Furthermore, any problems or conflicts that cannot be resolved by the group individually will then be sourced out to the Project Sponsor for their perspective and advice. Any problems with the development of the project, in particular, will be sourced out to the clients to receive clearer requirements. In the event that a risk comes to fruition, this would upset the overall project schedule. Our team is prepared to add in additional weekly meetings and dedicate more time and effort to resume the schedule, if necessary.

* 1. **Configuration Management Plan**

All group determined review procedures and change management processes are listed below.

1. All work products will be uploaded to the designated GitHub repository.
2. Documentation for the project will be uploaded into the repository’s “Project Documentation” folder.
3. Documentation and design prototypes uploaded to GitHub will be named in relation to what it is or what it contains. For example, the Project Charter document file will be labelled as Project\_Charter.
4. Source code will be uploaded to the repository in the corresponding iteration folder. For example, if the team is currently in Iteration 2 the source code would be uploaded into the folder named “Iteration 2”
5. Source code for the project will be uploaded with the contributor’s name and date. For example, Lauren\_3-2-2021
6. At the end of each iteration, developers will be expected to submit finalized source code for their assigned tasks on GitHub by the predetermined date.
7. Developers working on the same task, throughout an iteration, can download any code needed from the associated iteration folder on GitHub.
8. All iteration tasks assigned will be featured in the weekly meeting notes and on the GitHub project tab under the appropriate iteration.
9. No individual is allowed to delete efforts from the GitHub repository without majority group approval, even if the task was removed from the iteration.
10. Once the task removal from GitHub is approved by the group, only the Project Manager can deleted the file in question.
11. Any tasks that are added, changed, or removed from the iteration will need to be documented in the meeting notes and iteration closeout spreadsheet.
12. All official proposals for major project changes must be presented in a weekly meeting and must receive a majority agreement from the team.
13. Official proposals for project changes must include:
14. The change
15. Purpose for the change
16. Timeline of implementation
17. Who it’ll impact in the group
18. How it will impact the project in the short and long term
19. All individual responses and declarations to changes must be made within 24 hours of the proposal. Otherwise, that individual’s weight in the final decision is revoked.
20. All documentation, required by the Project Sponsor, for the project will feature a table for “Change History”. This table lists the date of the change, a description, and the name of the individual who made the edit.
    1. **Verification and Validation Plan**

The dedicated times for verification during this project are at the end of iterations. Together the team will inspect the task up for review and validate that it meets quality standards. The process by which the group intends to implement this status check is listed below chronologically. In the event that a task is not validated, one of our project’s risks, the contingency plan mentioned in the *Risk Management Plan* section will be deployed. This verification and validation plan is expected to be used for individual smaller tasks and deliverables.

1. A task from the iteration plan is completed.
2. At the group’s weekly meeting they perform a retrospective over the iteration closeout. Within this discussion, individuals with assigned tasks are prompted to present their finalized submissions.
3. The individual with the task presentation is expected to mention the following about their assignment:
4. Task name
5. Description
6. Process of implementation
7. The project requirements fulfilled
8. Potential bugs and shortcomings
9. After the team is briefed the previous information, we assess what project requirements the task should have fulfilled. If all are completed, proceed to step 5. If not, the quality standard has not been met and the task will need to be continued/ improved.
10. Next the team weighs on the severity of the potential bugs and shortcomings. If the majority of the team deems the possible issues are miniscule, then proceed to step 6. If not, the standard has not been met and the task will need to be continued/ improved.
11. Lastly, if the process of implementation is compatible with the project constraints then the work product is officially deemed quality. If not, the standard has not been met and the task will need to be continued/ improved.
12. All tasks that pass the verification and validation plan are marked as completed.
13. All tasks that do not pass the verification and validation plan are reassigned back to members in the next iterations with group feedback on what features to improve. The risk contingency plan is also enacted.
    1. **Product Acceptance Plan**

Once all the iteration tasks have been successfully vetted through the validation and verification process, the functioning prototype is then tested again to assure the cumulative product can meet the same standards. In terms of product quality and functionality, this means the prototype fulfills all stakeholder requirements and constraints listed in the *Requirements Document*. In addition to fulfilling all the requirements, an overview is executed to ensure all planned project milestones and deliverables, listed in the *Project Deliverables* section, are completed. After certification, these qualifications have been achieved, the prototype is then manually tested by every member of the development team. Each individual performs the sequences of the use cases also provided in the *Requirements Document*. If every person reports zero errors, the prototype is then pushed to automated testing, which is created and supervised by our group’s tester. The tests implemented are listed in detail in the *Test Plan Document*. The last portion of our Product Acceptance Plan is based on stakeholder satisfaction and feedback. The prototype can be defined a success if it meets all of the criteria listed above. This conclusion would signify the end of our project.