PROJECT MANAGER SYSTEM MANUAL
GROUP 5

May 2, 2021

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OVERVIEW

1. Project Description

The Project Manager application is a web app that will allow users to work collaboratively on projects of varying scopes. Controlled by user accounts and configurable permissions, users can create projects to house the associated resources and conversations.

Within the scope of a project, users with sufficient permissions may attach relevant files and comments. All items can be tagged with custom keywords to facilitate searching by tag or date range. Files representing the entire project or just a subset of the search results may be downloaded.

2. Project Features

- Users
    - o Create new user account
    - o Login to existing user account
- Permissions
    - o Tied to user account
    - o Applied at the project-level
    - o Applied at the resource-level
- Projects
    - o Serve as a container for all associated resources and conversations
    - o Can be restricted with permissions
    - o Can be tagged
    - o Can be searched
    - o Can be downloaded
- Files
    - o Attached to a parent project
    - o Can be restricted with permissions
    - o Can be tagged
    - o Can be searched
    - o Can be downloaded
- Comments
    - o Attached to a parent project
    - o Can be restricted with permissions
    - o Can be tagged
    - o Can be searched
- Tags
    - o Custom keywords that can be attached to resources to facilitate searching
    - o Applied at the project-level
    - o Applied at the resource-level
    - o Can be modified

- o Can be searched
- Search
  - o Returns a subset of projects or project resources containing search criteria
  - o Can search by keyword, including tags
  - o Can search by date range
- Download
  - o Downloads all associated resources
  - o Can download an entire project
  - o Can download a subset of a project based on search results

3. Feature Table

> ℹ️ *This table reflects the current Planning, Design, Test Plan, and Development status of each feature*

Feature	Sub-Area	Planning	Design	Test Plan	Development
Users	Create New User Account	Complete	Complete	Complete	Pending
	Login to Existing User Account	Complete	Complete	Complete	Pending
	User Profile Picture	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete
Application Permissions	User Permissions	Complete	Complete	Complete	Pending
	User Interface	Complete	In Progress	In Progress	Pending
	Database Table	Complete	Complete	Complete	Complete
Project Permissions	User Permissions	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete
Navigation	Navigation User Interface	Complete	Complete	Complete	In Progress
Projects	Data Object	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Theme Color	Complete	Complete	Complete	Pending
	Create	Complete	Complete	Complete	Pending
	Delete	Complete	Complete	Complete	Pending
	Edit	Complete	Complete	Complete	Pending
	Search	Complete	Complete	Complete	Pending
	Download All Resources	Pending	Pending	Pending	Pending
	Download Search Results	Pending	Pending	Pending	Pending
	Database Table	Complete	Complete	Complete	Complete

Feature	Sub-Area	Planning	Design	Test Plan	Development
Project Tags	Data Object	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Create	Complete	Complete	Complete	Pending
	Delete	Complete	Complete	Complete	Pending
	Search	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete
Project Comments	Data Object	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Create	Complete	Complete	Complete	Pending
	Delete	Complete	Complete	Complete	Pending
	Edit	Pending	Pending	Pending	Pending
	Search	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete
Project Comment Tags	Data Object	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Create	Complete	Complete	Complete	Pending
	Delete	Complete	Complete	Complete	Pending
	Search	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete
Files	Upload File	Complete	Complete	Complete	Pending
	Download File	Complete	Complete	Complete	Pending
	Data Object	Complete	Complete	Complete	Pending
	Create	Complete	Complete	Complete	Pending
	Delete	Complete	Complete	Complete	Pending
	Search	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete

Feature	Sub-Area	Planning	Design	Test Plan	Development
File Tags	Data Object	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Create	Complete	Complete	Complete	Pending
	Delete	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete
File Comments	Data Object	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Create	Complete	Complete	Complete	Pending
	Delete	Complete	Complete	Complete	Pending
	Edit	Pending	Pending	Pending	Pending
	Search	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete
File Comment Tags	Data Object	Complete	Complete	Complete	Pending
	User Interface	Complete	Complete	Complete	Pending
	Create	Complete	Complete	Complete	Pending
	Delete	Complete	Complete	Complete	Pending
	Search	Complete	Complete	Complete	Pending
	Database Table	Complete	Complete	Complete	Complete
Tags	Database Pairing Table	Complete	Complete	Complete	Complete

4. Software Environment Specification

ℹ *Software tools necessary to resume development on this application*

The front end of this application requires an IDE capable of supporting HTML, CSS, and JavaScript. We began our development using Microsoft Visual Studio Code, however other IDEs would also be acceptable. Suggested alternatives include Microsoft Visual Studio or Atom (atom.io).

The back end of this application requires an IDE capable of supporting C#.NET project files. Our recommendation is Microsoft Visual Studio.

The database portion of this application requires Microsoft SQL Server Management Studio.

5. Framework Specification

ℹ *Development frameworks used (and planned) for this application*

The front end of this application relies heavily on React.JS to support a dynamic user interface. Additionally, HTML and CSS are leveraged. The Material UI library has also been imported for use of its responsive user interface components.

The back end of this application utilizes C#.NET from the Microsoft .NET framework.

The database of this application incorporates Microsoft SQL Server.

6. Team Roles and Responsibilities

> ℹ️ *Tentative roles and responsibilities*

- Jeff Krejcik
  - Project Management
  - System Design
  - User Interface Design
  - Data Model
  - Backend Development

- Jonathan Caputo
  - Design Support
  - User Interface Development

7. Setup Installation Procedures

> ℹ️ *Development setup requirements*

To continue development work on this application, the software tools outlined in the environment specification are necessary. Additionally, we found that several other dependencies were necessary to begin this project.

Create-React-App (CRA) was used to generate the initial project files that would support React.JS. This may no longer be necessary after the initial setup.

Node Package Manager (NPM) was needed to install CRA. Additionally, this is necessary to launch a local version of the application from a terminal.

Node.JS is a further dependency of NPM. Note that earlier versions of Windows are not supported. One of our members was unable to install this using Windows 7, so he needed to setup a virtual machine running Windows 10.

Yarn functions similarly (and potentially replaces) NPM. We needed to use this to import the Material UI library. This also provides the ability to launch the application locally from the terminal.

React.JS has already been imported into the project, so further setup needs are unlikely.

Material UI has similarly already been imported into the project.

8. User Interface Mockups

ℹ️ *This collection of mockups demonstrates the user interface design and the functionality of the application*

1 – Login Modal, Presented When Initially Accessing the Application
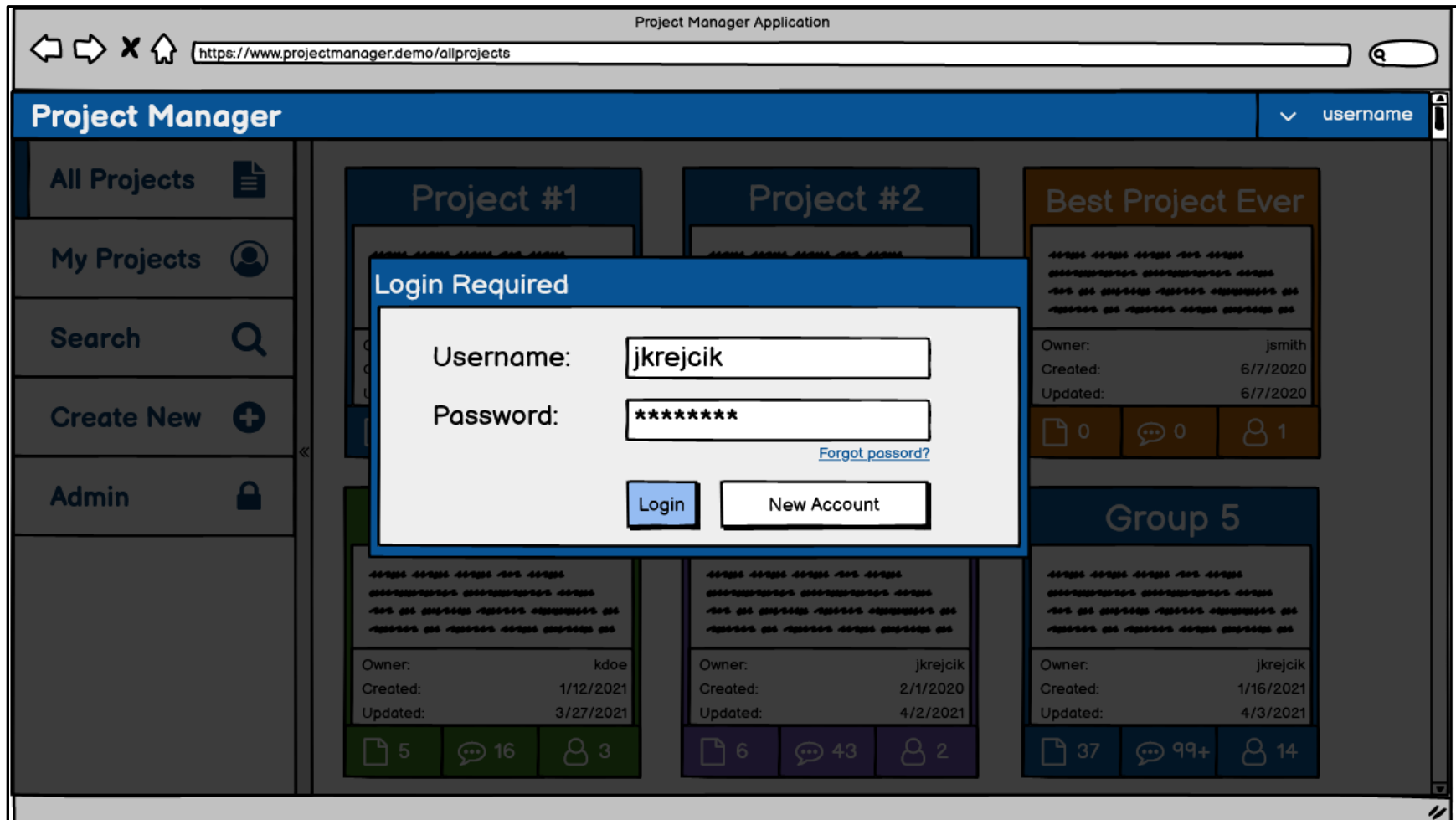
2 – Create Account Modal

3 – View of All Projects, Application Home Page
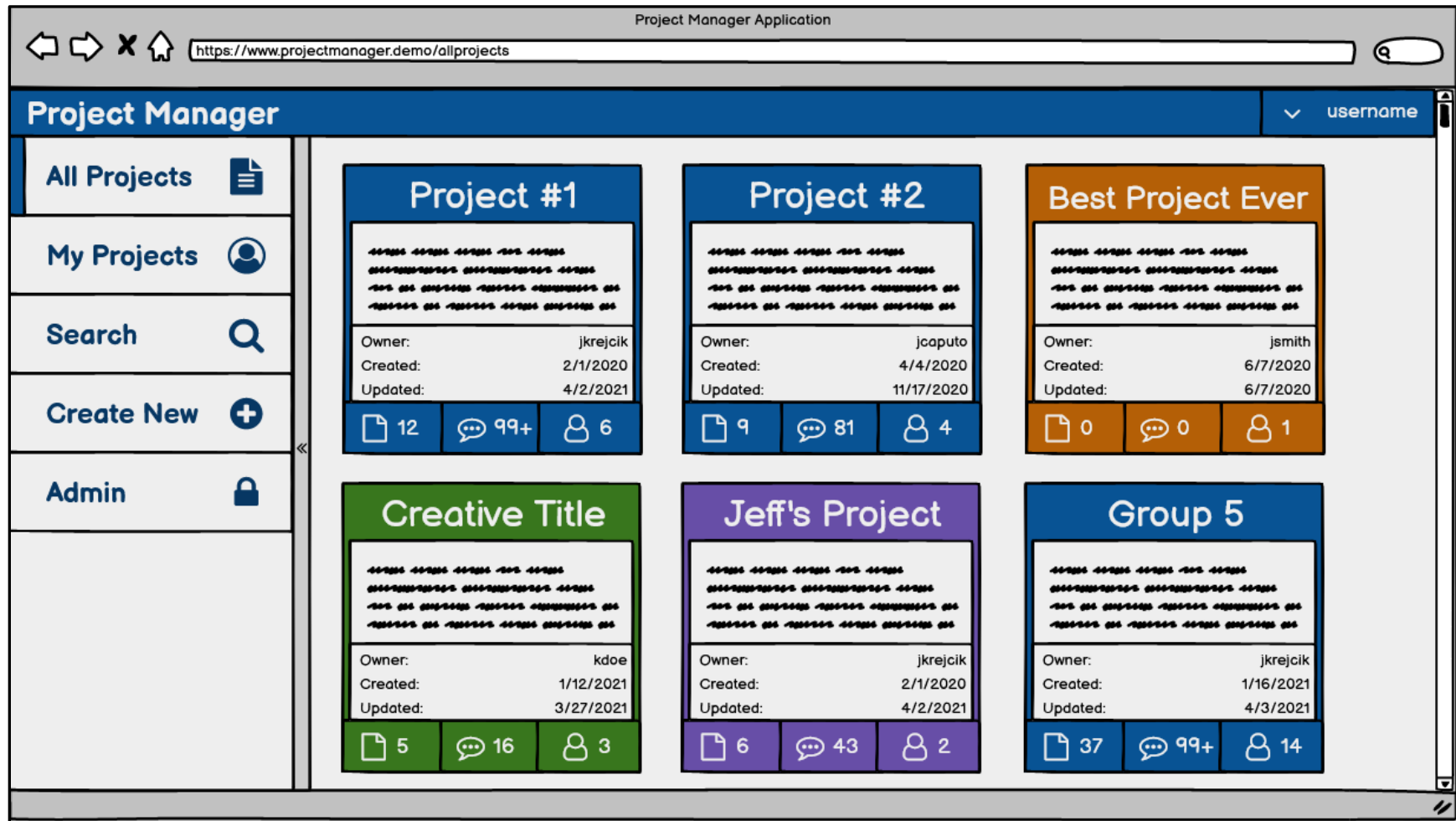
4 – View of My Projects, Filtered to Display Current User's Projects

Project Manager Application
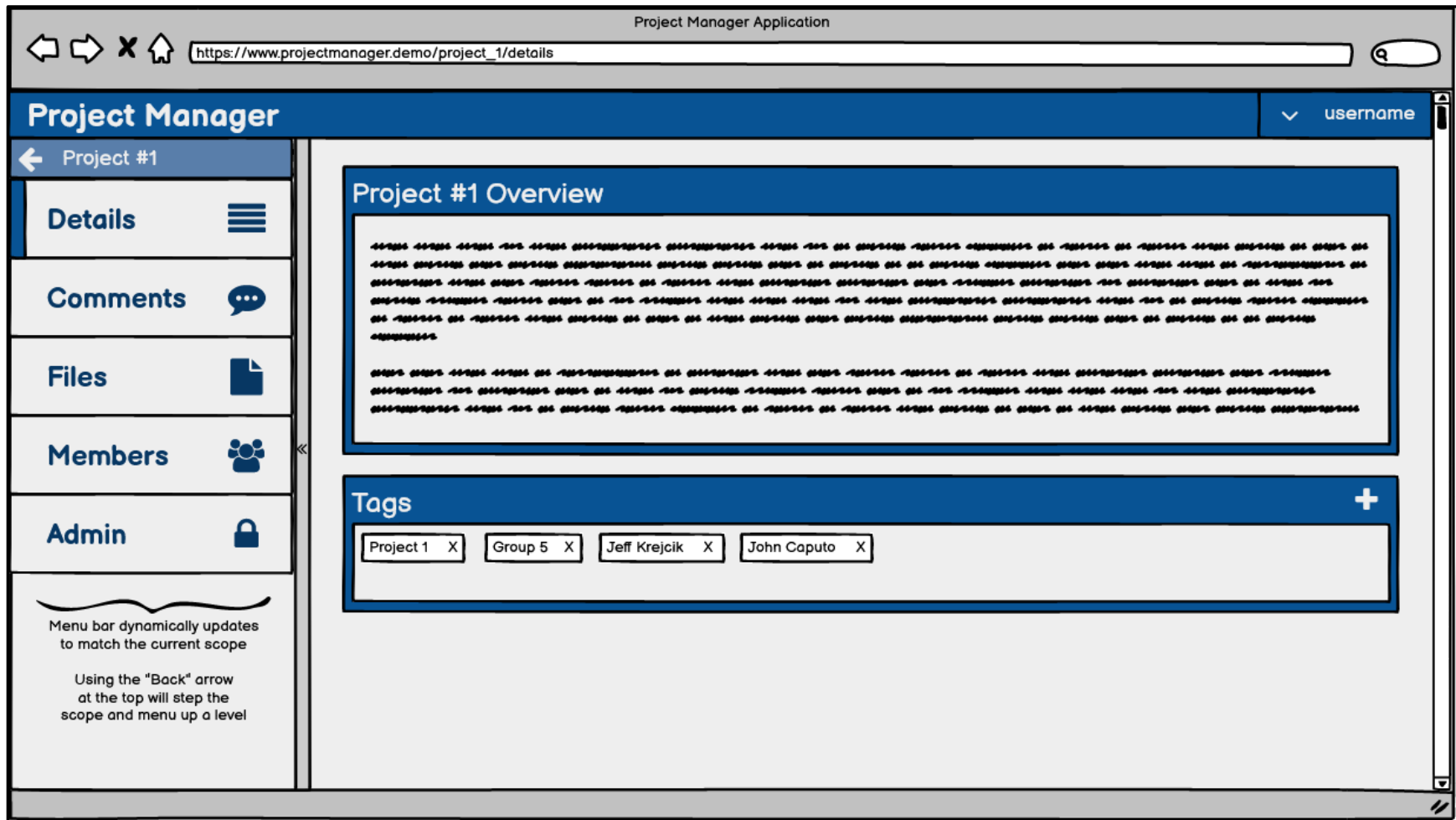
https://www.projectmanager.demo/myprojects

Project Manager

⌄ username

| All Projects 📄 |
| My Projects 👤 |
| Search 🔍 |
| Create New ➕ |
| Admin 🔒 |

Project #1

Owner: jkrejcik
Created: 2/1/2020
Updated: 4/2/2021

📄 12   💬 99+   👤 6

Project #2

Owner: jcaputo
Created: 4/4/2020
Updated: 11/17/2020

📄 9   💬 81   👤 4

Jeff's Project

Owner: jkrejcik
Created: 2/1/2020
Updated: 4/2/2021

📄 6   💬 43   👤 2

Group 5

Owner: jkrejcik
Created: 1/16/2021
Updated: 4/3/2021

📄 37   💬 99+   👤 14

5 – Collapsed Navigation Drawer
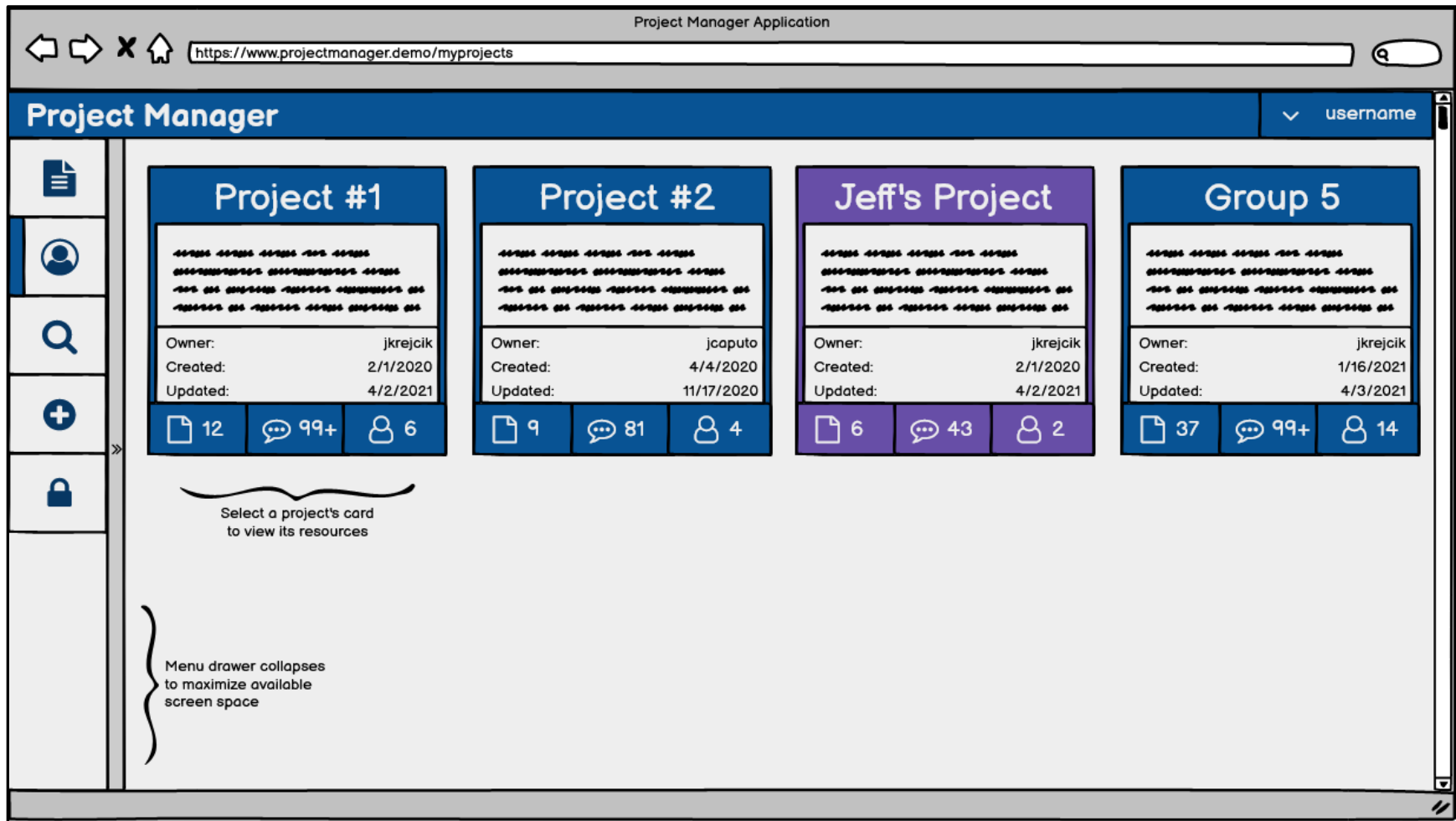
6 – Project Details, Navigation Reflects Project Context

Project Manager Application

https://www.projectmanager.demo/project_1/details

Project Manager

∨ username

← Project #1

Details ≡

Comments 💬

Files 📄

Members 👥 «

Admin 🔒

Menu bar dynamically updates
to match the current scope

Using the "Back" arrow
at the top will step the
scope and menu up a level

Project #1 Overview

Tags ✚

| Project 1 X | Group 5 X | Jeff Krejcik X | John Caputo X |

7 – Project Comments

8 – Project Comments, Reply Modal

9 – Project Files

Project Manager Application

https://www.projectmanager.demo/project_1/files

Project Manager

username

← Project #1

Details ≡

Comments 💬

Files 📄

Members 👥

Admin 🔒
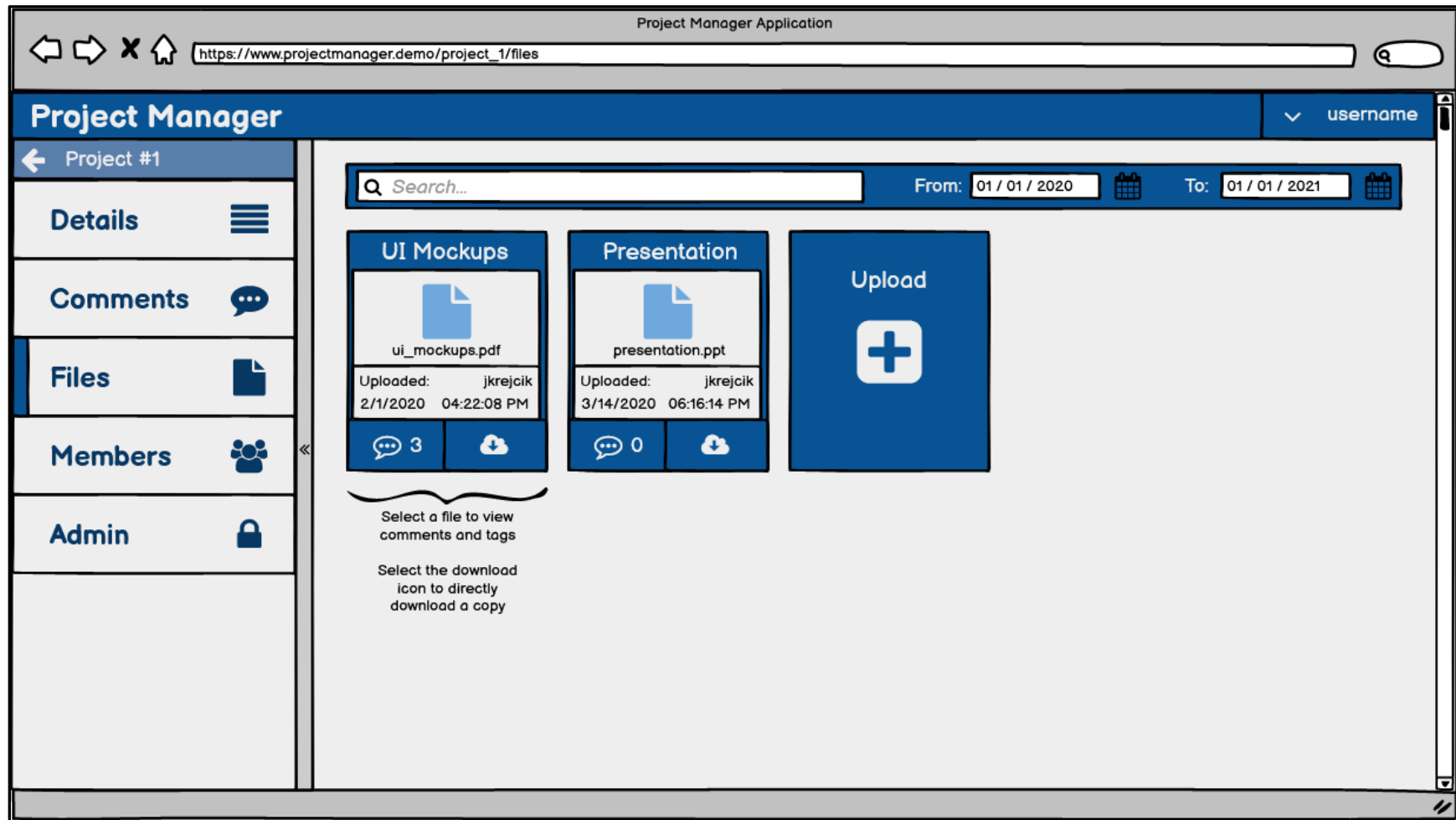
🔍 Search...   From: 01 / 01 / 2020 📅   To: 01 / 01 / 2021 📅

UI Mockups

ui_mockups.pdf

Uploaded: jkrejcik
2/1/2020   04:22:08 PM

💬 3   ☁

Presentation

presentation.ppt

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3/14/2020   06:16:14 PM

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Upload
➕

Select a file to view
comments and tags

Select the download
icon to directly
download a copy
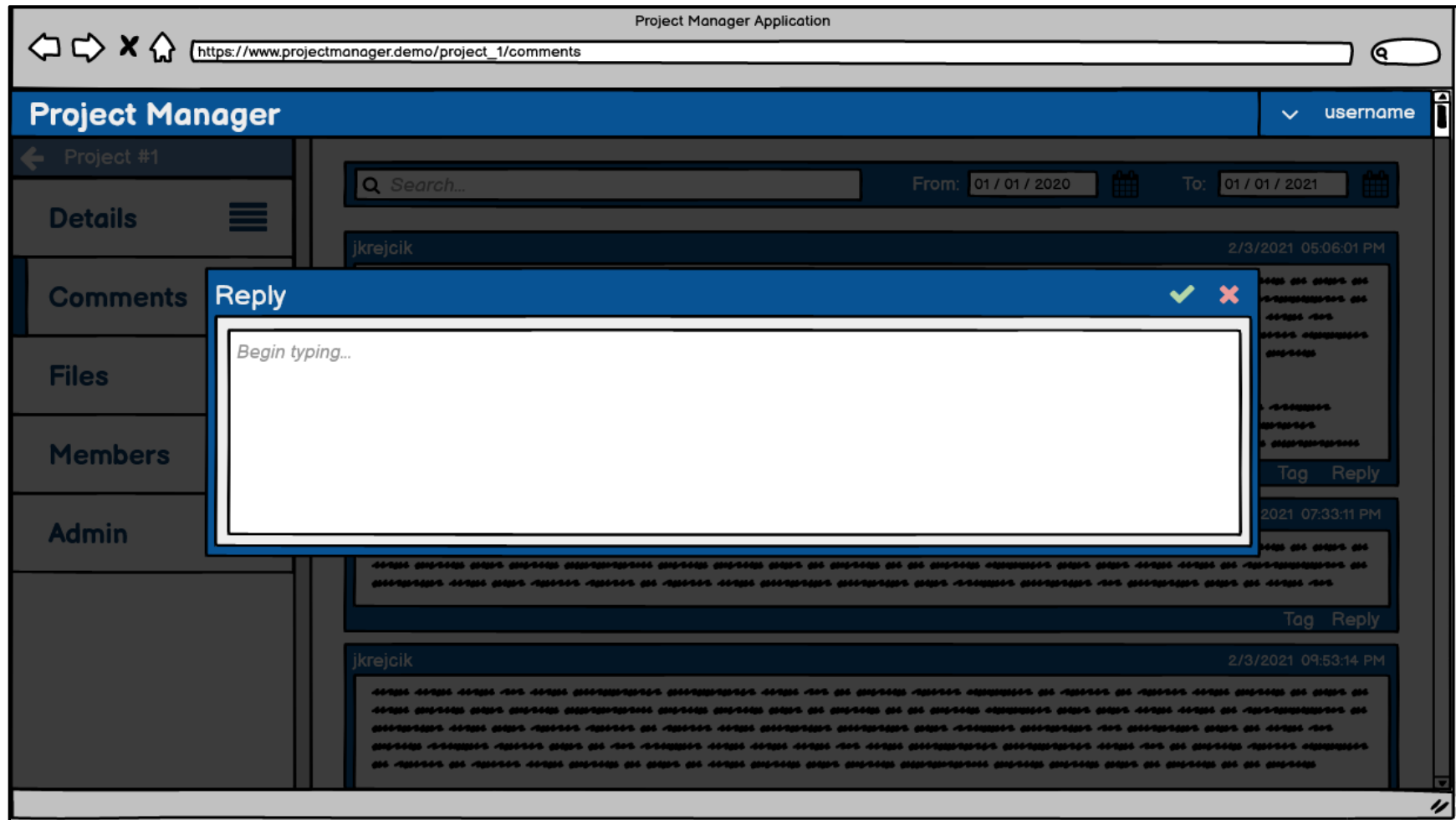
10 – File Details, Navigation Reflects File Context

Project Manager Application

https://www.projectmanager.demo/project_1/files/ui_mockups/details

Project Manager

∨ username

← File: UI Mockups

Details ☰

Comments 💬

Download ☁

File Overview

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File Details

Filename:	ui_mockups.pdf
Filetype:	PDF
Uploaded By:	jkrejcik
Uploaded Date:	2/1/2020
Uploaded Time:	04:22:08 PM

🗑

Tags ✚

| Project 1 X | Group 5 X | Jeff Krejcik X | John Caputo X | UI Mockups X |

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11 – File Comments
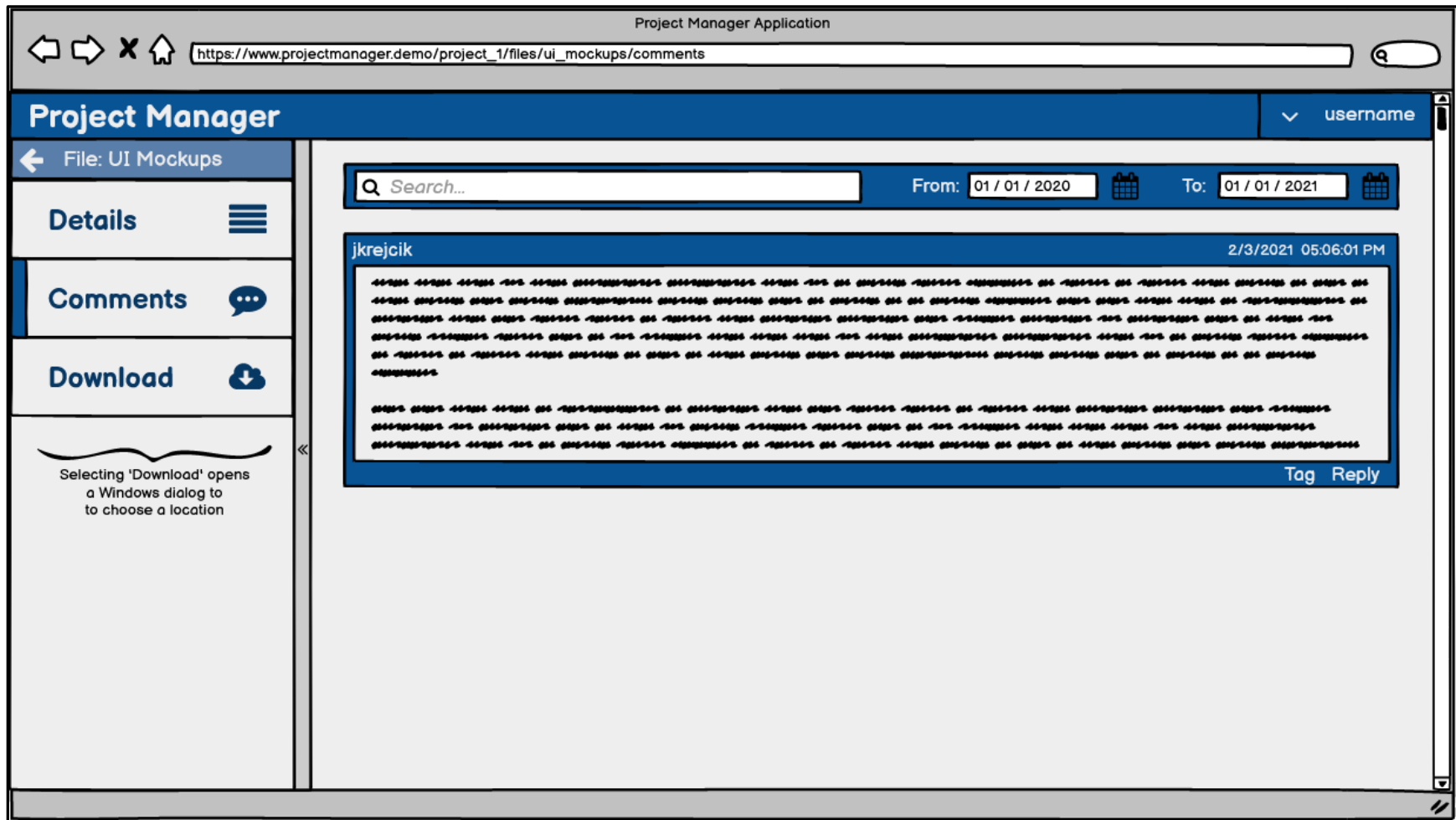
12 – Project Members, Navigation Reflects Project Context
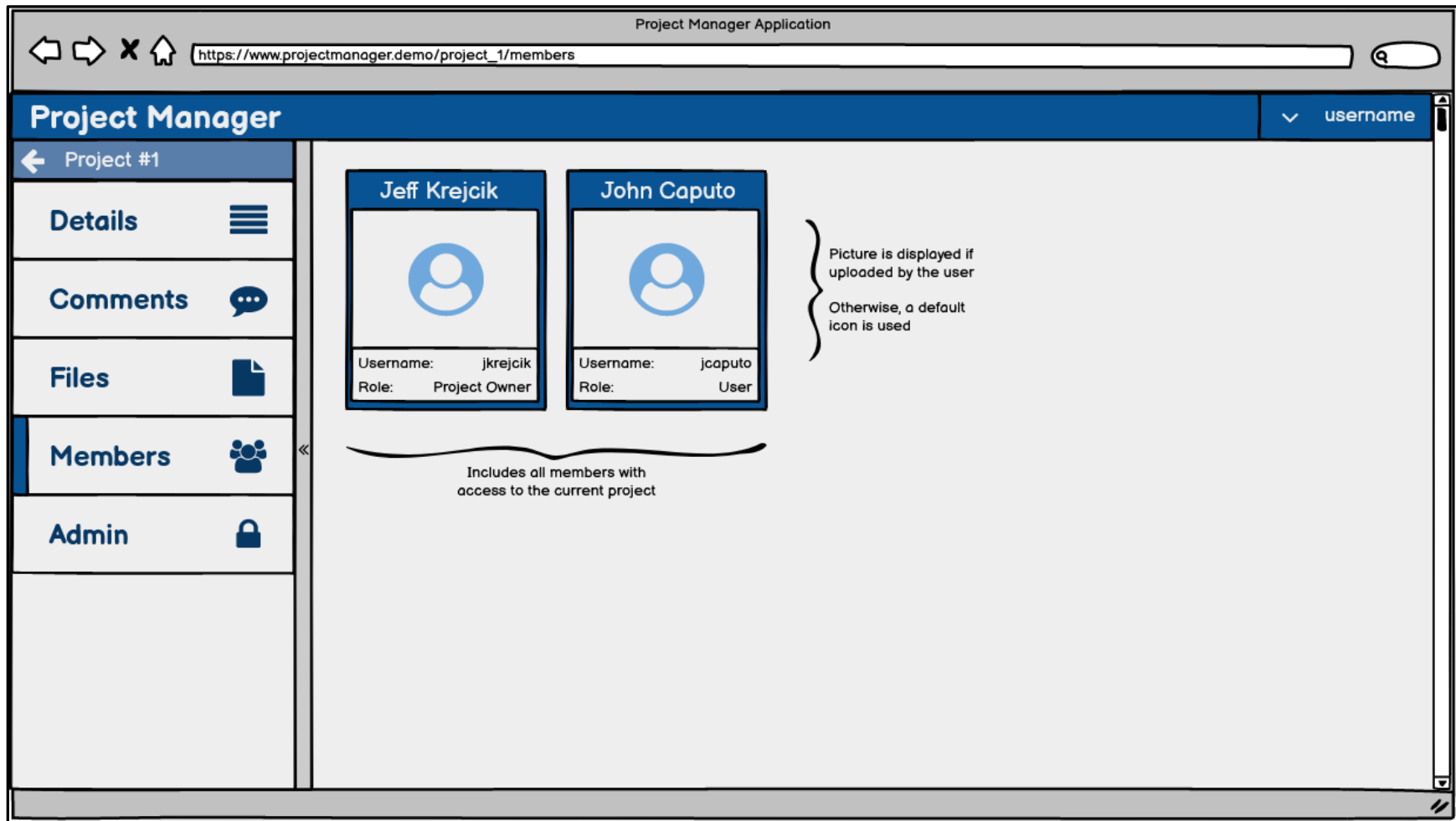
Project Manager Application

https://www.projectmanager.demo/project_1/members

Project Manager

⌄ username

← Project #1

Details ☰

Comments 💬

Files 📄

Members 👥 «

Admin 🔒

Jeff Krejcik

Username: jkrejcik
Role: Project Owner

John Caputo

Username: jcaputo
Role: User

Picture is displayed if uploaded by the user

Otherwise, a default icon is used

Includes all members with access to the current project

13 – Project Admin Settings

14 – Project Admin Settings, Edit User Permissions Modal

Project Manager Application

https://www.projectmanager.demo/project_1/admin

Project Manager   ⌄ username

← Project #1

Details ☰

Comments

Files

Members

Admin

Project Settings

Project Name: Project #1   Theme Color: ▮ ▾   Delete Project

Permissions for jcaputo ✖

Permission	View ⇕	Add New ⇕	Delete Own ⇕	Delete Other ⇕
Project Comments	☑	☑	☑	☐
Project Files	☑	☑	☑	☐
Admin Settings	☐			

+

issions Remove

✏ 🗑
✏ 🗑
✏ 🗑

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15 – Search, Navigation Reflects Application Context

16 – Create New Project

9. Data Model

> ℹ️ *Relationships between the database tables for this application*
>
> *Table creation queries are included with the project submission*
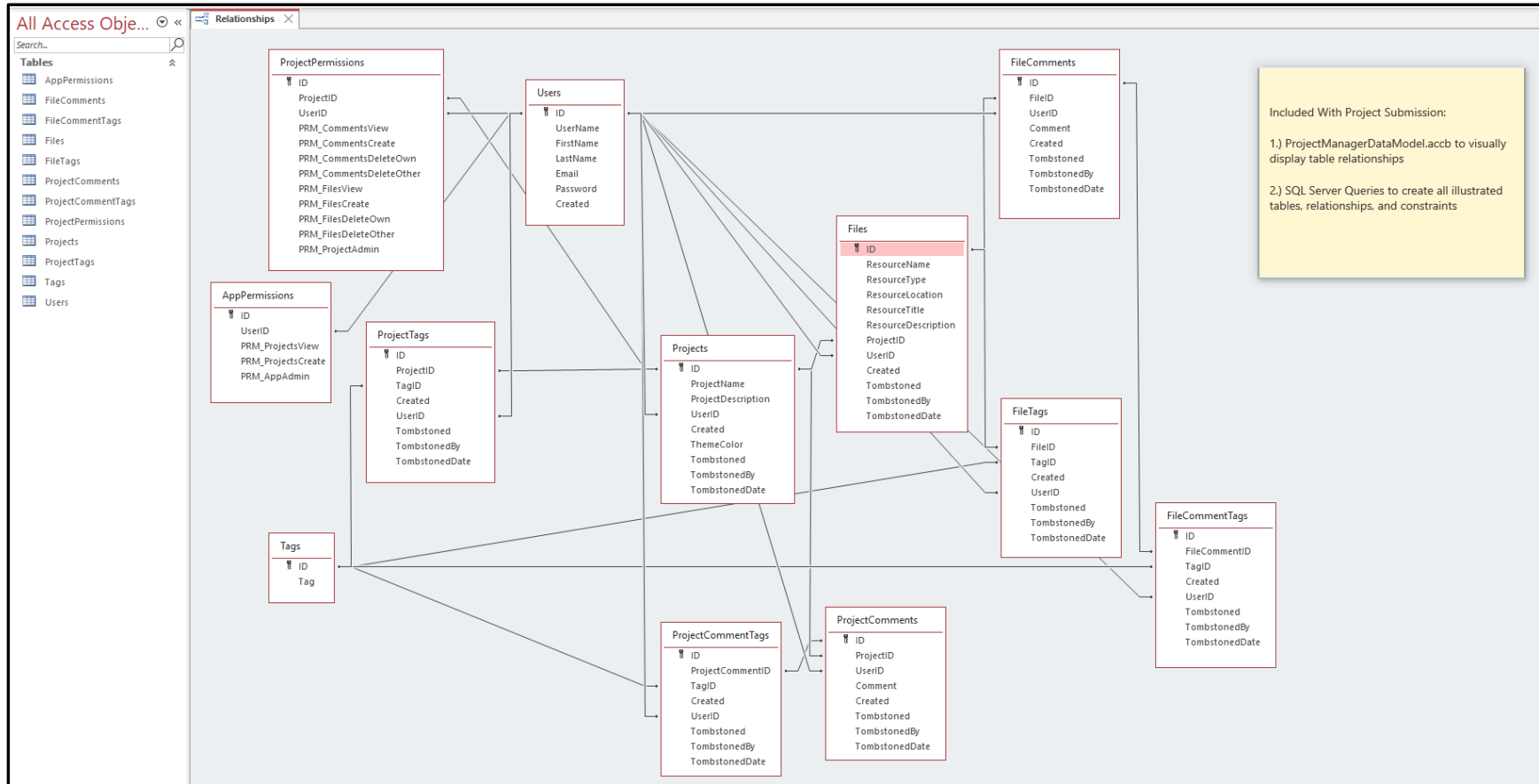
10. Node Diagram

ℹ️ *Diagram of the main flow of the application*

The following pages will the explore node diagram for our application. This diagram displays the interactions between each view and user interface element. Additionally, the data fields and custom interface elements for each view are displayed.

The first diagram will demonstrate the overall layout of connections. The important observation to be made from this representation is that the application leverages three primary contexts: The Main Application Context, the Project Context, and the File Context.

As the user drills into a project, the context will shift from the Main Application to the Project. The new context provides more targeted data and a new collection of relevant views. From the Project Context, the user can return to the Main Application Context, and must do so to access any of the Main Application's views.

From the Project Context, the user may further narrow the scope by drilling into a specific file. Doing so again changes the context from the Project to the File. Similarly, the associated views in the context are updated to match the scope. From the file context, the user may return to the Project context.

File Context
- Details
  - File details
    - File overview
    - Filename
    - Filetype
    - Upload User
    - Upload Date
    - Upload Time
    - Delete File Button — Confirmation Modal
  - Tags
- Comments
  - Displays all comments at the file-level
  - Search to filter comments
    - Filename
    - User
    - Tags
    - Date Range
- Download
  - Opens Windows dialog to download

Tags
- Custom, searchable keywords
- Add tag
- Delete tag

Comment Sheet
- Custom UI Element
  - Username
  - Comment
  - Timestamp
  - Reply
  - Tags

File Cards — Custom UI Element
- File Title
- Filename
- File Preview
- Project Owner
- Upload User
- Upload Timestamp
- Count of file comments
- Download link — Opens Windows dialog to download

User Cards — Custom UI Element
- Full Name
- Profile Image
  - User Image
  - Default Icon
- Username
- Project Role

Project Cards — Custom UI Element
- Project Name
- Project Theme Color
- Project Overview Preview
- Project Owner
- Timestamps
  - Created
  - Last Updated
- Count of Project Metrics
  - Files
  - Comments
  - Users

Project Context
- Details
  - Project overview
  - Tags
- Comments
  - Displays all comments at the project-level
  - Search to filter comments
    - Text
    - User
    - Tags
    - Date Range
- Files
  - Displays all files attached to the project
  - Search to filter files
    - Filename
    - User
    - Tags
    - Date Range
 - File-level comments
  - Upload new file — Opens Windows dialog to upload
- Members
  - Displays all users associated with a project
- Admin
  - Project Settings
    - Project Name
    - Theme Color
    - Delete Project Button — Confirmation Modal
  - Users
    - Full Name
    - User Name
    - Project Role
    - Permissions
      - Project Comments
        - View — Default: Yes
        - Add New — Default: Yes
        - Delete Own — Default: Yes
        - Delete Other — Default: No
      - Project Files
        - View — Default: Yes
        - Add New — Default: Yes
        - Delete Own — Default: Yes
        - Delete Other — Default: No
      - Admin Settings — View — Default: No
    - Delete User Button — Confirmation Modal

Main Application Context
- All Projects View
  - Displays all projects from all users
- My Projects View
  - Display only projects relevant to the current user
- Search
  - Search list of all projects
    - Title
    - Owner
    - Tags
    - Date Range
- Admin
  - Manage application-level permissions
- Login
  - Required to proceed
    - Username
    - Password
  - Forget Password
    - Email
- Create Account
  - First Name
  - Last Name
  - Email — Must be unique
  - Password
  - Confirm Password
- Create New
  - Allows for the creation of new projects
    - Project Name
    - Theme Color
    - Project Overview
    - Tags
    - Users
    - User Permissions
 - Creating a project creates a new project card

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The gray boxes to the left of the Main Application Context represent views available while in this scope. Before these can be accessed, the user must login. If an account does not exist, one may be created. If the password has been forgotten, this may be reset.

Project cards are a custom UI element that display an overview of key datapoints for each project. These may be accessed from both the "All Projects" view and the "My Projects" view. The project cards serve as the trigger to enter the Project Context, drilling into the scope of the selected project. Similarly, this context may also be entered for a targeted project from the Search view.
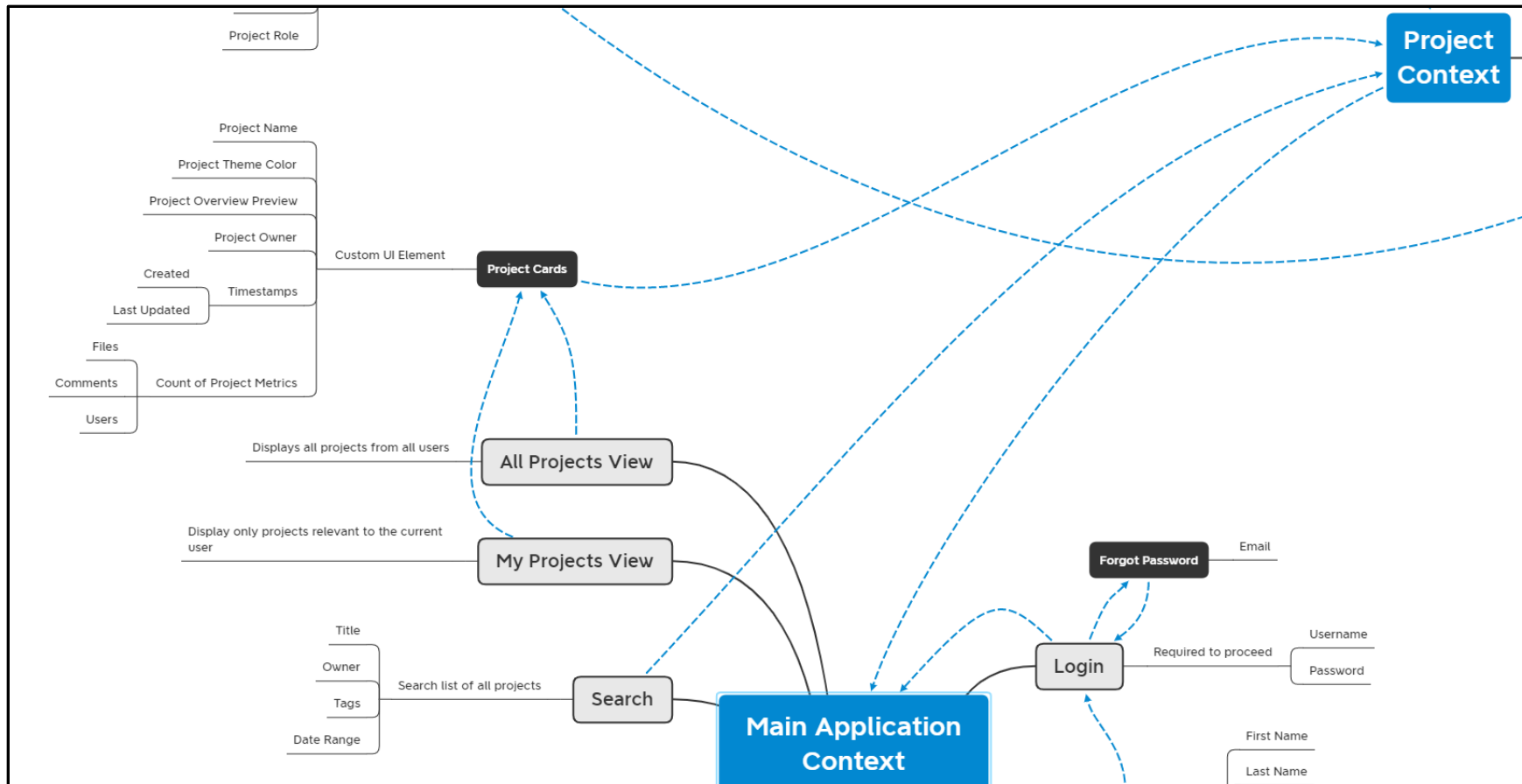
The Project Context views offer information on project details, comments, files, and members. The Members view displays similar user cards, as does the Files view for file cards.
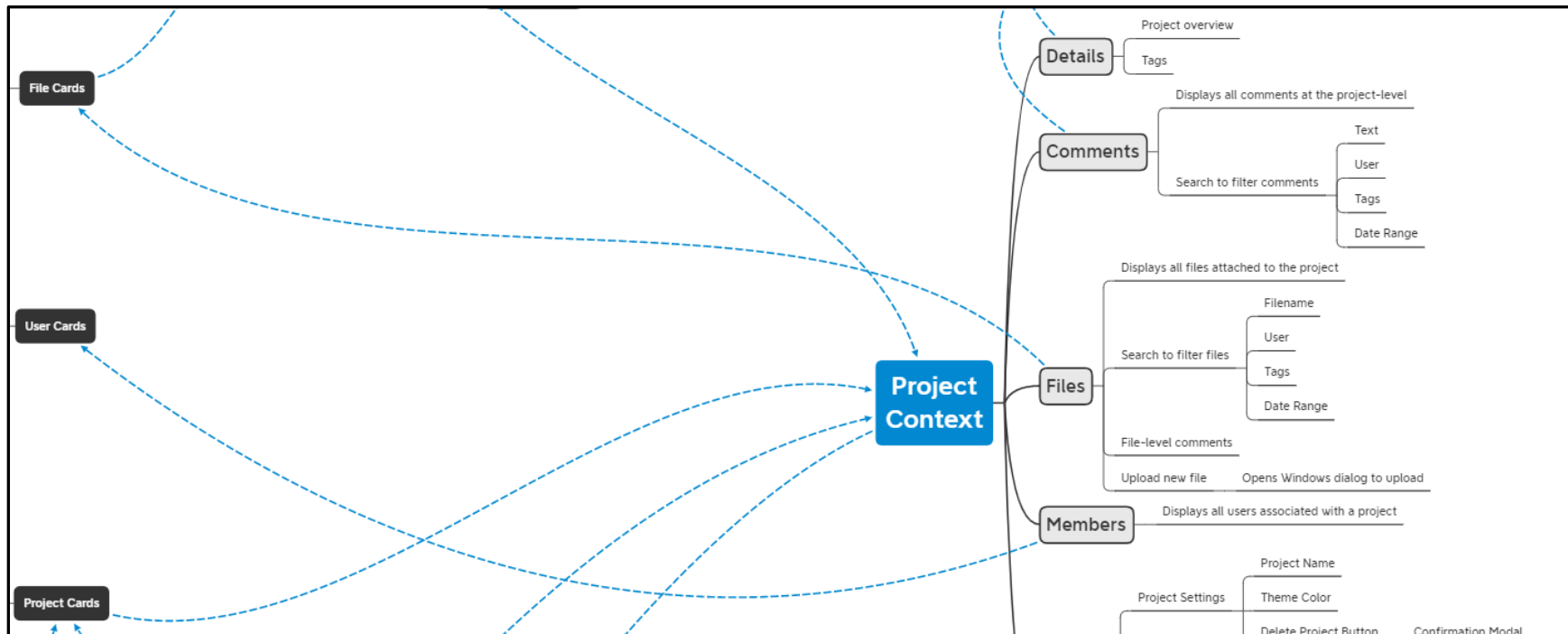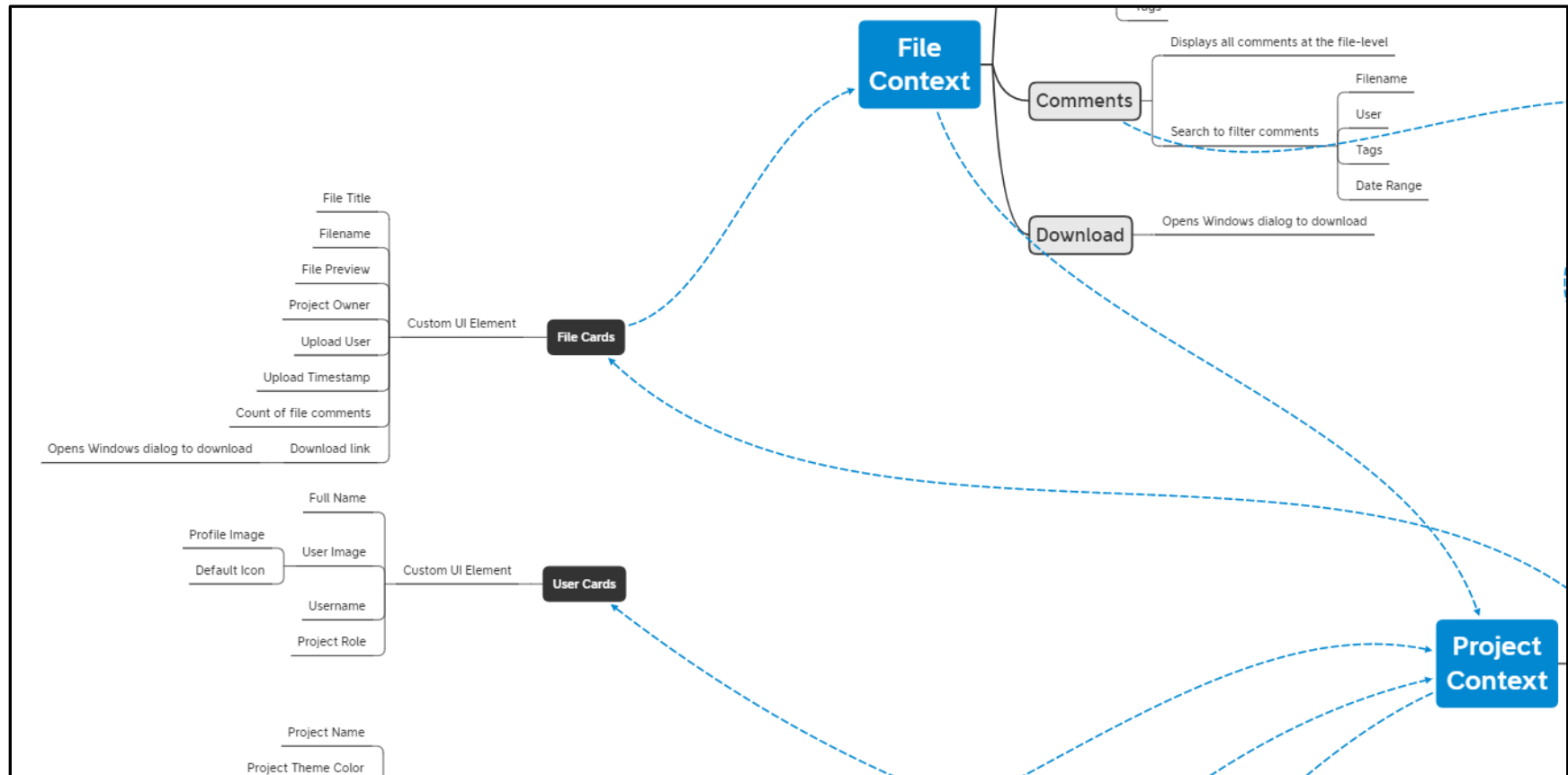
Additionally, within the Project Context, users with elevated permissions may access the Admin view. This includes options to modify key project details, including users and their permissions.
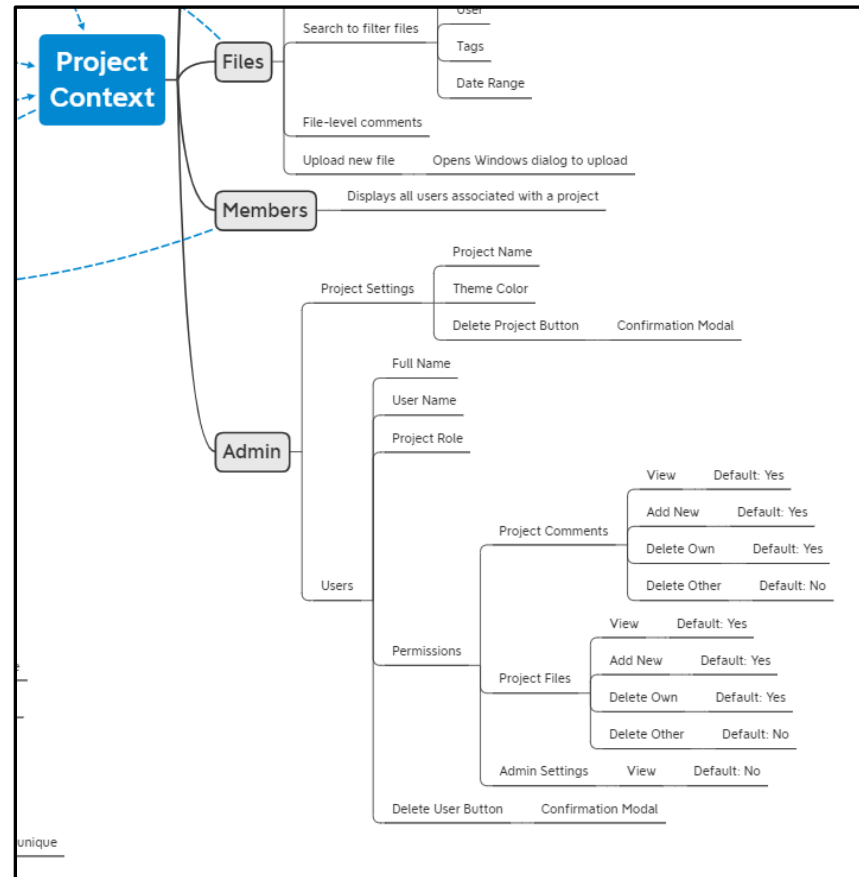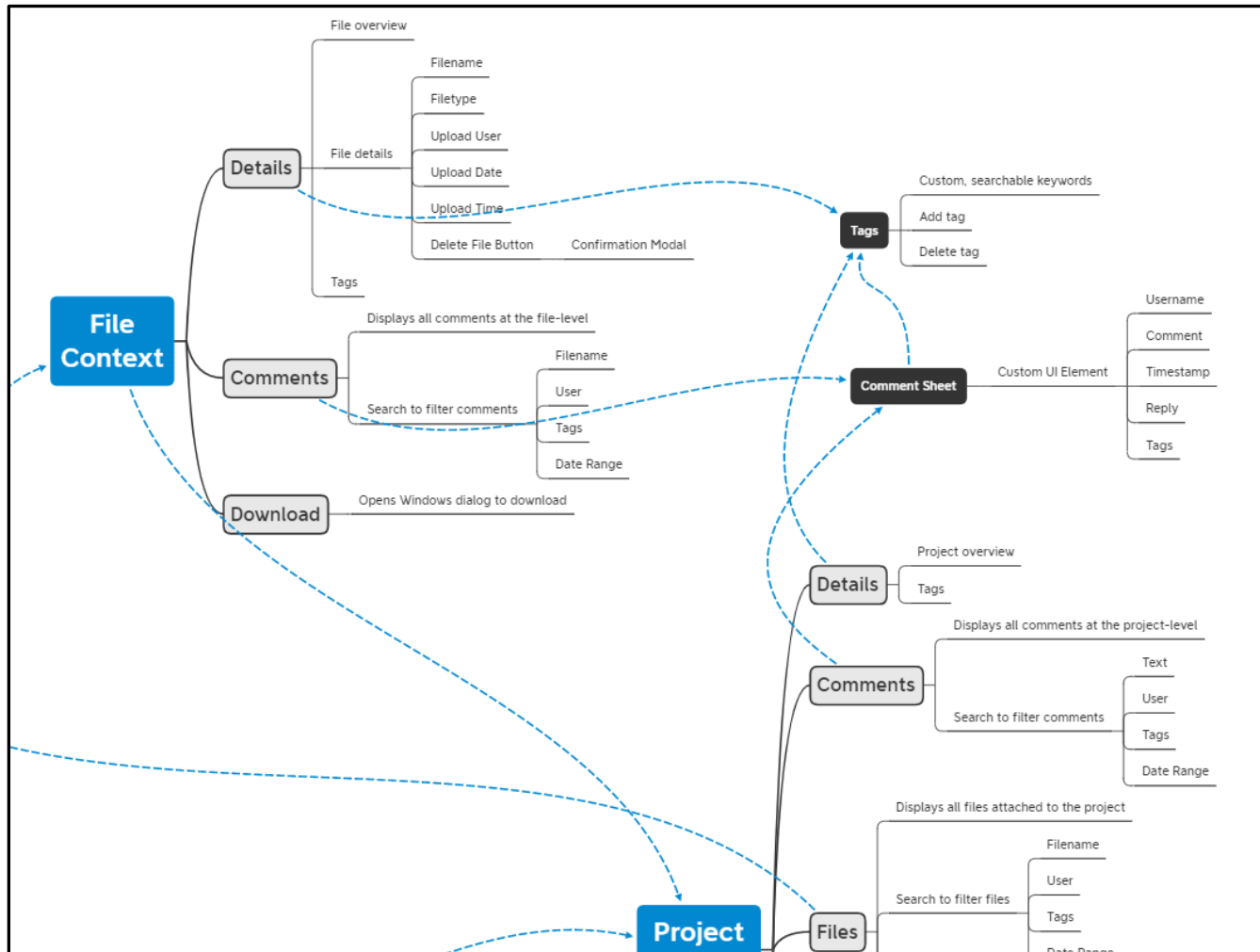
From any individual file card, the user may move to the File Context. To access views associated with the Project Context, the user must first exit the File Context.

Comments may be applied at both the file-level and the project-level, utilizing a custom comment sheet element. Tags may be applied at either the project-level, the file-level, or the comment-level.

11. Test Plan

Introduction and test cases for each feature of the application

For our application, we have opted to leverage manual testing. All data is expected to be staged manually by the tester.

Although this approach is tedious, this provides an excellent opportunity to push the user interface to its limits. Automated testing, or at least the automation of staged testing data, would be excellent future enhancements to help ease the burden of regression testing.

While testing, careful attention should be placed on the user interface. The console should also be monitored for any errors or warnings. As changes are made, the tester is expected to monitor the SQL database to confirm that insertions, updates, and deletions are being correctly applied.

To aid in testing, we have compiled a robust list of test cases and the corresponding expected behavior. These test cases are included on the following pages. A more workable, standalone copy of this test plan is also included with the project submission.

#	Feature	User Story	Area	Test Action	Expected Result
1	User Account	Create Account	User Interface	1. Select Create Account button from Login modal	1. Create Account modal opens
2	User Account	Create Account	User Interface	1. Select Cancel button from Create Account modal	1. Create Account modal closes and returns to Login modal
3	User Account	Create Account	User Interface	1. Open Create Account modal 2. Enter data into each field 3. Close Create Account modal 4. Reopen Create Account modal 5. Repeat, replacing step #3 with the valid creation of a new account	1. Create Account modal opens with data cleared from all fields
4	User Account	Create Account	Data Validation	1. Open Create Account modal 2. Leave the first field blank 3. Enter valid data in remaining fields 4. Attempt to Create Account 5. Repeat with invalid characters 6. Repeat with invalid lengths 7. Repeat with invalid formatting 8. Repeat steps 1-7 for each remaining field 9. Repeat for duplicate email address	1. Account not created 2. Modal remains open 3. Entered data persists 4. Validation text displayed for invalid field
5	User Account	Create Account	Account Creation	1. Open Create Account modal 2. Complete all fields with valid data 3. Select Create Account button	1. Account created 2. User record is created in database 3. Create Account modal closes 4. Returns to Login modal

#	Feature	User Story	Area	Test Action	Expected Result
6	User Account	Login	User Interface	1. While not logged in, attempt to access other areas of the application	1. Unable to access application beyond account modals
7	User Account	Login	Data Validation	1. Open the Login modal 2. Leave the Username field blank 3. Enter a valid Password 4. Attempt to Login 5. Repeat with an invalid Username 6. Repeat 1-5 for Password 7. Repeat with a valid but mismatched Username and Password	1. User is not logged in 2. Modal remains open 3. Entered data persists 4. Validation text displayed for invalid field
8	User Account	Login	Login	1. Open the Login modal 2. Enter a valid Username 3. Enter a valid Password 4. Select Login	1. User is logged in 2. Login modal closes 3. Username is displayed in top application banner
9	User Account	Forgot Password	Data Validation	1. Open the Login modal 2. Select the Forgot Password link 3. Attempt to complete with blank email address 4. Attempt to complete with invalid email address 5. Attempt to complete with unregistered email address	1. Password Reset email not sent 2. Forgot Password modal remains open 3. Entered data persists 4. Validation text is displayed for invalid field
10	User Account	Forgot Password	Password Reset	1. Open the Login modal 2. Select the Forgot Password link 3. Entered a valid, registered email address 4. Complete prompt	1. Password Reset email is sent 2. User password is updated in database 3. Forgot Password modal closes 4. Login modal opens

#	Feature	User Story	Area	Test Action	Expected Result
11	User Account	Logout	Logout	1. While logged in, open the user action menu from the top banner 2. Select Logout	1. User is logged out 2. User is returned to homepage 3. Login modal opens 4. User is unable to access other areas of the application
12	User Account	Change Password	Data Validation	1. While logged in, open the user action menu from the top banner 2. Select Change Password 3. Enter blank Current Password 4. Enter valid New Password 5. Attempt to submit 6. Repeat with invalid Current Password 7. Repeat with blank New Password 8. Repeat with invalid New Password	1. Password is not updated 2. Change Password modal remains open 3. Entered data persists 4. Validation text is displayed for invalid field
13	User Account	Change Password	Change Password	1. While logged in, open the user action menu from the top banner 2. Select Change Password 3. Enter valid Current Password 4. Enter valid New Password 5. Submit	1. Password is updated 2. Database record is updated 3. Password change modal is closed 4. User remains logged in
14	Navigation	Application Navigation	Navigation Drawer	1. Select the All Projects link from the navigation drawer 2. Repeat for My Projects 3. Repeat for Search 4. Repeat for Create New 5. Repeat for Admin (with permissions)	1. Corresponding application page is displayed 2. Selection is indicated in navigation drawer with blue marker

#	Feature	User Story	Area	Test Action	Expected Result
15	Navigation	Application Navigation	Home Link	1. From any page in the main application other than the home page, select the Project Manager logo in the left of the top banner 2. Repeat from any page within the context of a Project 3. Repeat from any page within the context of a File	1. User is returned to the home page (All Projects) 2. The menu drawer is updated to reflect the context of the main application 3. The active menu drawer selection reflects the All Projects page
16	Navigation	Application Navigation	Drawer Collapse	1. From any page in the main application, select the Collapse button on the navigation drawer 2. Navigate to each page	1. Navigation drawer is collapsed 2. Navigation text is hidden 3. Navigation icons remain visible 4. Navigation selection matches current page
17	Navigation	Application Navigation	Drawer Expand	1. From any page in the main application while the navigation drawer is collapsed, select the Collapse button on the navigation drawer 2. Navigate to each page	1. Navigation drawer is expanded 2. Navigation text is visible 3. Navigation icons are visible 4. Navigation selection matches current page

#	Feature	User Story	Area	Test Action	Expected Result
18	Navigation	Project Navigation	Navigation Drawer	1. Drill into the context of any Project	1. Project Details page is displayed 2. Project Name is displayed at the top of the navigation drawer 3. Navigation drawer updates to match the project context 4. Navigation drawer includes a Details link 5. Navigation drawer includes a Comments link 6. Navigation drawer includes a Files link 7. Navigation drawer contains an Admin link (with permissions) 8. Active link is set to Details
19	Navigation	Project Navigation	Navigation Drawer	1. Select the Details link from the navigation drawer 2. Repeat for Comments 3. Repeat for Files 4. Repeat for Members 5. Repeat for Admin (with permissions)	1. Corresponding project page is displayed 2. Selection is indicated in navigation drawer with blue marker
20	Navigation	Project Navigation	Drawer Collapse	1. From any page in the context of a project, select the Collapse button on the navigation drawer 2. Navigate to each page	1. Navigation drawer is collapsed 2. Navigation text is hidden 3. Navigation icons remain visible 4. Navigation selection matches current page

#	Feature	User Story	Area	Test Action	Expected Result
21	Navigation	Project Navigation	Drawer Expand	1. From any page in the context of a project while the navigation drawer is collapsed, select the Collapse button on the navigation drawer 2. Navigate to each page	1. Navigation drawer is expanded 2. Navigation text is visible 3. Navigation icons are visible 4. Navigation selection matches current page
22	Navigation	Project Navigation	Exit Project Context	1. From the All Projects page, drill into any project 2. Select the back button at the top of the navigation drawer 3. Repeat starting from My Projects page 4. Repeat starting from Search page	1. User is returned to page of origin 2. Navigation drawer returns to main application context 3. Navigation selection reflects current page
23	Navigation	File Navigation	Navigation Drawer	1. Drill into the context of any Project 2. Drill into the context of any File	1. File Details page is displayed 2. File Name is displayed at the top of the navigation drawer 3. Navigation drawer updates to match the file context 4. Navigation drawer includes a Details link 5. Navigation drawer includes a Comments link 6. Navigation drawer includes a Download link 8. Active link is set to Details
24	Navigation	File Navigation	Navigation Drawer	1. Select the Details link from the navigation drawer 2. Repeat for Comments	1. Corresponding project page is displayed 2. Selection is indicated in navigation drawer with blue marker

#	Feature	User Story	Area	Test Action	Expected Result
25	Navigation	File Navigation	Drawer Collapse	1. From any page in the context of a file, select the Collapse button on the navigation drawer 2. Navigate to each page	1. Navigation drawer is collapsed 2. Navigation text is hidden 3. Navigation icons remain visible 4. Navigation selection matches current page
26	Navigation	File Navigation	Drawer Expand	1. From any page in the context of a file while the navigation drawer is collapsed, select the Collapse button on the navigation drawer 2. Navigate to each page	1. Navigation drawer is expanded 2. Navigation text is visible 3. Navigation icons are visible 4. Navigation selection matches current page
27	Navigation	File Navigation	Exit Project Context	1. Select the back button at the top of the navigation drawer	1. User is returned to Files page of the current project 2. Navigation drawer returns to the project context 3. Navigation selection reflects current page
28	All Projects	Project Card Display	Data	1. Navigate to the All Projects page 2. Ensure that at least one project has been created by the current user 3. Ensure that at least one project has been created by another user and that the current user is a member of that project 4. Ensure that at least on project has been created by another user ant that the current user is NOT a member of that project	1. All projects are visible to the current user

#	Feature	User Story	Area	Test Action	Expected Result
29	All Projects	Project Card Display	User Interface	1. Navigate to the All Projects page with multiple projects staged	1. Project cards utilize available space 2. Project cards flex/wrap to next row 3. Scrolling vertically reveals additional projects
30	All Projects	Project Card Display	User Interface	1. Navigate to the All Projects page with multiple projects staged 2. Collapse navigation drawer	1. Project cards utilize available space 2. Project cards flex/wrap to next row 3. Scrolling vertically reveals additional projects
31	All Projects	Project Card Display	Sorting	1. Navigate to the All Projects page with multiple projects staged	1. Project cards are sorted by date updated descending
32	All Projects	Project Card Display	Project Details	1. Navigate to the All Projects page with multiple projects staged 2. Review project card details	1. The correct project name is displayed 2. A truncated preview of the correct project overview is displayed 3. The correct username of the project owner is displayed 4. The correct date the project was created is displayed 5. The correct date of the last update is displayed 6. A count of the number of project files is displayed 7. A count of the number of project-level comments is displayed 8. A count of the project members is displayed

#	Feature	User Story	Area	Test Action	Expected Result
33	All Projects	Project Card Display	Updated Timestamp	1. Review a project card and note the updated timestamp 2. Drill into the project 3. Edit the project overview 4. Return to project card and review the updated timestamp 4. Repeat for theme color change 5. Repeat for project tag addition and deletion 6. Repeat for project comment addition and deletion 7. Repeat for project comment tag addition and deletion 8. Repeat for file addition and deletion 9. Repeat for file tag addition and deletion 10. Repeat for file comment addition and deletion 11. Repeat for file comment tag addition and deletion 12. Repeat for user addition and deletion	1. Project card updated timestamp reflects latest change

#	Feature	User Story	Area	Test Action	Expected Result
34	All Projects	Project Card Display	File Count	1. Review a project card and note the number of current files 2. Drill into the project 3. Add a new file 4. Return to project card and review the number of current files 4. Repeat for file deletion	1. File count increases with file addition 2. File count decreases with file deletion 3. File counts exceeding 99 are displayed as 99+
35	All Projects	Project Card Display	Comment Count	1. Review a project card and note the number of current comments 2. Drill into the project 3. Add a new comment 4. Return to project card and review the number of current comments 4. Repeat for comment deletion	1. Comment count increases with comment addition 2. Comment count decreases with comment deletion 3. Comment counts exceeding 99 are displayed as 99+
36	All Projects	Project Card Display	Comment Count	1. Review a project card and note the number of current comments 2. Drill into the project 3. Drill into any file in the project 4. Add a new comment 5. Return to project card and review the number of current comment 6. Repeat for comment deletion	1. File comments are NOT reflected in count of project comments 2. Project comment count remains unchanged
37	All Projects	Project Card Display	User Count	1. Review a project card and note the number of current users 2. Drill into the project 3. Add a new user 4. Return to project card and review the number of current users 5. Repeat for user deletion	1. User count increases with user addition 2. User count decreases with user deletion 3. User counts exceeding 99 are displayed as 99+

#	Feature	User Story	Area	Test Action	Expected Result
38	My Projects	Project Card Display	Data	1. Navigate to the My Projects page 2. Ensure that at least one project has been created by the current user 3. Ensure that at least one project has been created by another user and that the current user is a member of that project 4. Ensure that at least on project has been created by another user ant that the current user is NOT a member of that project	1. Projects created by the current user are visible 2. Projects created by other users where the current user is a member are visible 3. Projects created by other users where the current user is NOT a member are not visible
39	My Projects	Project Card Display	User Interface	1. Navigate to the My Projects page with multiple projects staged where the current user is either the owner or a member	1. Project cards utilize available space 2. Project cards flex/wrap to next row 3. Scrolling vertically reveals additional projects
40	My Projects	Project Card Display	User Interface	1. Navigate to the My Projects page with multiple projects staged 2. Collapse navigation drawer	1. Project cards utilize available space 2. Project cards flex/wrap to next row 3. Scrolling vertically reveals additional projects
41	My Projects	Project Card Display	Sorting	1. Navigate to the My Projects page with multiple projects staged	1. Project cards are sorted by date updated descending

#	Feature	User Story	Area	Test Action	Expected Result
42	My Projects	Project Card Display	Project Details	1. Navigate to the My Projects page with multiple projects staged 2. Review project card details	1. The correct project name is displayed 2. A truncated preview of the correct project overview is displayed 3. The correct username of the project owner is displayed 4. The correct date the project was created is displayed 5. The correct date of the last update is displayed 6. A count of the number of project files is displayed 7. A count of the number of project-level comments is displayed 8. A count of the project members is displayed

#	Feature	User Story	Area	Test Action	Expected Result
43	My Projects	Project Card Display	Updated Timestamp	1. Review a project card and note the updated timestamp 2. Drill into the project 3. Edit the project overview 4. Return to project card and review the updated timestamp 4. Repeat for theme color change 5. Repeat for project tag addition and deletion 6. Repeat for project comment addition and deletion 7. Repeat for project comment tag addition and deletion 8. Repeat for file addition and deletion 9. Repeat for file tag addition and deletion 10. Repeat for file comment addition and deletion 11. Repeat for file comment tag addition and deletion 12. Repeat for user addition and deletion	1. Project card updated timestamp reflects latest change

#	Feature	User Story	Area	Test Action	Expected Result
44	My Projects	Project Card Display	File Count	1. Review a project card and note the number of current files 2. Drill into the project 3. Add a new file 4. Return to project card and review the number of current files 4. Repeat for file deletion	1. File count increases with file addition 2. File count decreases with file deletion 3. File counts exceeding 99 are displayed as 99+
45	My Projects	Project Card Display	Comment Count	1. Review a project card and note the number of current comments 2. Drill into the project 3. Add a new comment 4. Return to project card and review the number of current comments 4. Repeat for comment deletion	1. Comment count increases with comment addition 2. Comment count decreases with comment deletion 3. Comment counts exceeding 99 are displayed as 99+
46	My Projects	Project Card Display	Comment Count	1. Review a project card and note the number of current comments 2. Drill into the project 3. Drill into any file in the project 4. Add a new comment 5. Return to project card and review the number of current comment 6. Repeat for comment deletion	1. File comments are NOT reflected in count of project comments 2. Project comment count remains unchanged
47	My Projects	Project Card Display	User Count	1. Review a project card and note the number of current users 2. Drill into the project 3. Add a new user 4. Return to project card and review the number of current users 5. Repeat for user deletion	1. User count increases with user addition 2. User count decreases with user deletion 3. User counts exceeding 99 are displayed as 99+

#	Feature	User Story	Area	Test Action	Expected Result
48	Search	Search Results	No Criteria	1. Navigate to the Search page 2. Do not enter any search criteria 3. Review search results 4. Compare search results to project card	1. By default, all active projects are displayed 2. By default, search results are sorted by Project Name ascending 3. Search result data matches all attributes on project card for the associated project
49	Search	Search Results	Project Name	1. Navigate to the Search page 2. Search by Project Name 3. Review search results	1. Results matching the project name are displayed 2. By default, search results are sorted by Project Name ascending
50	Search	Search Results	Project Owner	1. Navigate to the Search page 2. Search by Project Owner 3. Review search results	1. Results matching the project owner are displayed 2. By default, search results are sorted by Project Name ascending
51	Search	Search Results	Project Tags	1. Navigate to the Search page 2. Search by any tag applied to the desired project 3. Review search results	1. Results matching the tag are displayed 2. By default, search results are sorted by Project Name ascending
52	Search	Search Results	Project Tags	1. Navigate to the Search page 2. Search by a tag applied to a project comment but NOT a project 3. Review search results 4. Repeat for a tag applied to a file 5. Repeat for a tag applied to a file comment	1. Results return project comments only 2. No results are returned 3. By default, search results are sorted by Project Name ascending

#	Feature	User Story	Area	Test Action	Expected Result
53	Search	Search Results	Date Range	1. Navigate to the Search page 2. Search by a date range 3. Review search results	1. Results matching the date range (last updated) are displayed 2. By default, search results are sorted by Project Name ascending
54	Search	Search Results	Sorting	1. Navigate to the Search page with multiple results visible 2. Sort by Project Name descending 3. Review search results 4. Repeat for Project Name ascending 5. Repeat for Owner ascending and descending 6. Repeat for Created ascending and descending 7. Repeat for Updated ascending and descending 8. Repeat for # Files ascending and descending 9. Repeat for # Members ascending and descending 10. Repeat for # Comments ascending and descending	1. Search results are correctly sorted based on most recent selection 2. When the sort value is the same between multiple projects, Project Name ascending is applied as the secondary criteria
55	Search	Search Results	Navigation	1. Navigate to the Search page 2. Perform a search 3. Select any of the search results 4. Repeat after sorting 5. Repeat after performing subsequent search	1. The user is taken to the Details page for the associated project 2. Selecting the Back button from the project's navigation drawer returns to the Search page with the previous query still active

#	Feature	User Story	Area	Test Action	Expected Result
56	Create New	Create Project	Data Validation	1. Navigate to the Create New page 2. Leave Project Name blank 3. Attempt to create project 4. Repeat with invalid Project Name 5. Repeat with duplicate Project Name	1. Project Name is a required field 2. Project is not created 3. Current page persists 4. Entered data persists 5. Validation text is displayed
57	Create New	Create Project	Project Name	1. Navigate to the Create New page 2. Enter a valid, unique Project Name 3. Leave other fields blank 4. Create Project	1. Project is created 2. User is returned to All Projects page 3. New project is displayed on All Projects page 4. All relevant attributes are displayed on project card 5. All relevant attributes are displayed within the context of the new project, including name, overview, tags, and users 6. Project owner reflects user that created the project 7. Created timestamp reflects current date and time 8. Updated timestamp reflects current date and time

#	Feature	User Story	Area	Test Action	Expected Result
58	Create New	Create Project	Theme Color	1. Navigate to the Create New page 2. Enter a valid, unique Project Name 3. Select a non-default theme color 4. Create Project	1. Project is created 2. User is returned to All Projects page 3. New project is displayed on All Projects page 4. The coloring of the project card reflects the selected theme color 6. Project owner reflects user that created the project 7. Created timestamp reflects current date and time 8. Updated timestamp reflects current date and time
59	Create New	Create Project	Project Overview	1. Navigate to the Create New page 2. Enter a valid, unique Project Name 3. Enter a Project Overview 4. Create Project	1. Project is created 2. User is returned to All Projects page 3. New project is displayed on All Projects page 4. All relevant attributes are displayed on project card 5. All relevant attributes are displayed within the context of the new project, including name, overview, tags, and users 6. Project owner reflects user that created the project 7. Created timestamp reflects current date and time 8. Updated timestamp reflects current date and time

#	Feature	User Story	Area	Test Action	Expected Result
60	Create New	Create Project	Tags	1. Navigate to the Create New page 2. Enter a valid, unique Project Name 3. Enter Project Tags 4. Create Project	1. Project is created 2. User is returned to All Projects page 3. New project is displayed on All Projects page 4. All relevant attributes are displayed on project card 5. All relevant attributes are displayed within the context of the new project, including name, overview, tags, and users 6. Project owner reflects user that created the project 7. Created timestamp reflects current date and time 8. Updated timestamp reflects current date and time

#	Feature	User Story	Area	Test Action	Expected Result
61	Create New	Create Project	Users	1. Navigate to the Create New page 2. Enter a valid, unique Project Name 3. Assign users to the project 4. Create Project	1. Project is created 2. User is returned to All Projects page 3. New project is displayed on All Projects page 4. All relevant attributes are displayed on project card 5. All relevant attributes are displayed within the context of the new project, including name, overview, tags, and users 6. Project owner reflects user that created the project 7. Created timestamp reflects current date and time 8. Updated timestamp reflects current date and time
62	Project	Details	Project Overview	1. Navigate to the Details page of any project 2. Review Project Overview	1. Project Name is appended to sheet title 2. Correct Project Overview is displayed 3. Sheet size adjusts to best fit text description

#	Feature	User Story	Area	Test Action	Expected Result
63	Project	Details	Project Overview	1. Navigate to the Details page of any project 2. Review Project Overview 3. Navigate to the Admin page of the project 4. Update and save the Project Overview 5. Return to the Details page 6. Review Project Overview	1. Project Overview text reflects updates
64	Project	Details	Tags	1. Navigate to the Details page of any project 2. Add a tag	1. Tag modal opens 2. Tag input captured 3. In database, if the tag already exists, the previous ID is applied to the project 4. In database, if the tag does not yet exist, a new entry is created in the Tags table and the ID is applied to the project
65	Project	Details	Tags	1. Navigate to the Details page of any project 2. Delete an existing tag	1. The tag is removed from the project 2. The record associating the tag with the project is removed from the database 3. The tag is NOT removed from the tags table, this is left for reuse with other projects/comments/files

#	Feature	User Story	Area	Test Action	Expected Result
66	Project	Comments	View Comments	1. Navigate to the Comments page of any project 2. Review existing comments	1. Comments are displayed in sheets 2. Comment sheets are dynamically sized to fit both their content and the page space 3. Comments display the name of the user that created them 4. Comments display the date and time that it was created 5. Comments are sorted by date descending 6. Comments have a Reply link 7. Comments have a Tag link
67	Project	Comments	Add Comment	1. Navigate to the Comments page of any project 2. Add a new comment	1. Comment modal opens 2. After saving, comment is added to list of existing comments 3. Username and timestamp match the current user and date/time
68	Project	Comments	Reply	1. Navigate to the Comments page of any project 2. Select the Reply link on an existing comment 3. Add a new response	1. Comment modal opens 2. After saving, comment is added to list of existing comments 3. Username and timestamp match the current user and date/time

#	Feature	User Story	Area	Test Action	Expected Result
69	Project	Comments	Tags	1. Navigate to the Comments page of any project 2. Select the Tags link on an existing comment 3. In the Tags modal, add a new tag	1. Comment modal opens 2. Tag is associated with comment 3. In database, if the tag already exists, the existing tag is associated with the comment 4. In database, if the tag does not already exist, a new entry is created in the Tags table and that ID is associated with the current comment
70	Project	Comments	Tags	1. Navigate to the Comments page of any project 2. Select the Tags link on an existing comment 3. In the Tags modal, delete an existing tag	1. The tag is removed from the comment 2. The record associating the tag with the comment is removed from the database 3. The tag is NOT removed from the tags table, this is left for reuse with other projects/comments/files
71	Project	Comments	Search	1. Navigate to the Comments page of any project 2. Search by text 3. Review search results 4. Repeat for username 5. Repeat for tag 6. Repeat for date range	1. List of comments is filtered to only those matching the current search criteria 2. Comments are sorted by date created descending
72	Project	Files	Navigation	1. Navigate to the Files page of a project	1. The Files navigation link is indicated as the active option 2. Cards for each file attached to the project are displayed

#	Feature	User Story	Area	Test Action	Expected Result
73	Project	File Card Display	Data	1. Navigate to the Files page of a project 2. Ensure that multiple files have been attached to the project 3. Review file card	1. Cards for each file attached to the current project are displayed 2. Files attached to other projects are not displayed 3. File title is displayed 4. File preview is displayed 5. File name (actual) is displayed 6. File uploader is displayed 7. File uploaded date is displayed 8. Count of file comments is displayed
74	Project	File Card Display	User Interface	1. Navigate to the Files page of a project 2. Ensure that multiple files have been attached to the project	1. File cards utilize available space 2. File cards flex/wrap to next row 3. Scrolling vertically reveals additional files
75	Project	File Card Display	User Interface	1. Navigate to the Files page of a project 2. Ensure that multiple files have been attached to the project 3. Collapse the navigation drawer	1. File cards utilize available space 2. File cards flex/wrap to next row 3. Scrolling vertically reveals additional files
76	Project	File Card Display	Sorting	1. Navigate to the Files page of a project 2. Ensure that multiple files have been attached to the project	1. Project cards are sorted by date updated descending
77	Project	File Card Display	Download Link	1. Navigate to the Files page of a project 2. Ensure that multiple files have been attached to the project 3. Select the Download Link on a file card	1. Windows dialog opens 2. Selecting a path and saving the file downloads a copy to the user's local machine

#	Feature	User Story	Area	Test Action	Expected Result
78	Project	File Card Display	Upload	1. Navigate to the Files page of a project 2. Select the Upload link	1. Windows dialog opens 2. Selecting a file uploads the file to the current project
79	Project	Members	Navigation	1. Navigate to the Members page of a project	1. The Members navigation link is indicated as the active option 2. Cards are displayed for each member associated with the project
80	Project	Member Card Display	Data	1. Navigate to the Members page of a project 2. Ensure that multiple members have been attached to the project 3. Review member card	1. Cards for each member attached to the current project are displayed 2. Members attached to other projects but NOT the current project are not displayed 3. User full name is displayed 4. User image is displayed if available 5. Default image is displayed if user image is unavailable 6. Username is displayed 7. User role is displayed
81	Project	File Card Display	User Interface	1. Navigate to the Members page of a project 2. Ensure that multiple members have been attached to the project	1. Member cards utilize available space 2. Member cards flex/wrap to next row 3. Scrolling vertically reveals additional members

#	Feature	User Story	Area	Test Action	Expected Result
82	Project	File Card Display	User Interface	1. Navigate to the Members page of a project 2. Ensure that multiple members have been attached to the project 3. Collapse the navigation drawer	1. Member cards utilize available space 2. Member cards flex/wrap to next row 3. Scrolling vertically reveals additional members
83	Project	File Card Display	Sorting	1. Navigate to the Members page of a project 2. Ensure that multiple members have been attached to the project	1. Member card for project owner is displayed first 2. All remaining members are sorted by username ascending
84	Project	Admin	Navigation	1. Navigate to the Admin page of a project	1. Admin navigation option is indicated as current selection 2. Project Name is displayed as an editable textbox 3. Theme Color is displayed as an editable drop down list 4. Delete Project button is displayed 5. User list is displayed 6. All users, usernames, and roles associated with the current project are displayed
85	Project	Admin	Project Name	1. Navigate to the Admin page of a project 2. Edit Project Name to an invalid value 3. Attempt to save 4. Repeat for blank Project Name 5. Repeat for duplicate Project Name	1. Project Name is not updated 2. Validation text is displayed 3. Input field is reverted to last valid project name

#	Feature	User Story	Area	Test Action	Expected Result
86	Project	Admin	Project Name	1. Navigate to the Admin page of a project 2. Edit Project Name to a valid, unique value 3. Save	1. Project Name is updated 2. All implementations of Project Name reflect the new value
87	Project	Admin	Theme Color	1. Navigate to the Admin page of a project 2. Select a new Theme Color from the drop down list 3. Save	1. Theme color is updated 2. Project card on All Projects and My Projects pages are updated to reflect new theme color
88	Project	Admin	Add User	1. Navigate to the Admin page of a project 2. Select the Add button on the Users sheet 3. Enter an invalid username 4. Attempt to save 5. Repeat for blank username 6. Repeat for duplicate username	1. User modal opens 2. User is not added 3. User modal remains open 4. Entered data persists 5. Validation text is displayed
89	Project	Admin	Add User	1. Navigate to the Admin page of a project 2. Select the Add button on the Users sheet 3. Enter a valid username that is not already associated with the current project 4. Save	1. User modal opens 2. User is added 3. User modal closes 4. User is displayed in Users list on Admin page 5. User card is added to Project Members page with full name, username, timestamp, and picture (if available, default image if not) 6. Project user count on Project Card and Search results is incremented

#	Feature	User Story	Area	Test Action	Expected Result
90	Project	Admin	Delete User	1. Navigate to the Admin page of a project 2. Select the delete button next to a user in the Users sheet 3. Select No on the confirmation modal	1. Confirmation modal opens 2. Confirmation modal closes 3. User remains associated with the current project 4. Existing user permissions persist 5. User card remains on Project Members page 6. Project Member Count on project card and search results is unchanged
91	Project	Admin	Delete User	1. Navigate to the Admin page of a project 2. Select the delete button next to a user in the Users sheet 3. Select No on the confirmation modal	1. Confirmation modal opens 2. Confirmation modal closes 3. User is removed from the current project 4. Existing user permissions are deleted from database 5. User card removed from Project Members page 6. Project Member Count on project card and search results is decremented
92	Project	Admin	User Permissions	1. Navigate to the Admin page of a project 2. Select the Edit Permissions button next to a user in the Users sheet	1. Permissions modal opens for current user 2. Username and current permission configuration is displayed

#	Feature	User Story	Area	Test Action	Expected Result
93	Project	Admin	User Permissions	1. Navigate to the Admin page of a project 2. Select the Edit Permissions button next to a user in the Users sheet 3. Adjust current permission configuration 4. Repeat for each permission	1. User permissions are updated 2. Associated permission database record is updated 3. User visibility to Admin navigation option matches their permissions
94	Project	Admin	Delete Project	1. Navigate to the Admin page of a project 2. Select the Delete Project button 3. Select No on the confirmation modal	1. Confirmation modal opens 2. Confirmation modal closes 3. Current project remains 4. Existing project name, overview, theme color, members, comments, files, and tags persist 5. Project card remains on the All Projects and My Projects pages 6. Project can still be found in the Search page
95	Project	Admin	Delete Project	1. Navigate to the Admin page of a project 2. Select the Delete Project button 3. Select Yes on the confirmation modal	1. Confirmation modal opens 2. Confirmation modal closes 3. Current project is marked as tombstoned in the database 4. Existing project name, overview, theme color, members, comments, files, and tags are no longer visible 5. Project card is removed from the All Projects and My Projects pages 6. Project can no longer be found in the Search page

#	Feature	User Story	Area	Test Action	Expected Result
96	Files	Details	Navigation	1. Navigate to the Files page of a project 2. Drill into a file	1. Navigation drawer is updated to reflect the context of the current file 2. File name is displayed at the top of the navigation drawer
97	Files	Details	Overview	1. Navigate to the Files page of a project 2. Drill into a file 3. Review the File Overview	1. File overview is displayed 2. File overview content is correct for the current file 3. File Overview sheet is dynamically sized to match the overview text and available screen space
98	Files	Details	File Details	1. Navigate to the Files page of a project 2. Drill into a file 3. Review the File Details	1. File Details sheet is displayed 2. Actual filename is displayed and accurate 3. File type is displayed and accurate 4. File uploader is displayed and accurate 5. File uploaded date is displayed and accurate 6. File uploaded time is displayed and accurate 7. Delete File button is displayed

#	Feature	User Story	Area	Test Action	Expected Result
99	Files	Details	Delete File	1. Navigate to the Files page of a project 2. Drill into a file 3. Select the Delete File button 4. Select No on the confirmation modal	1. Confirmation modal opens 2. Confirmation modal closes 3. Current file remains 4. Existing file details, comments, and tags persist 5. File card remains on the Files page of the current project 6. File counts on the project cards and search results are unchanged
100	Files	Details	Delete File	1. Navigate to the Files page of a project 2. Drill into a file 3. Select the Delete File button 4. Select Yes on the confirmation modal	1. Confirmation modal opens 2. Confirmation modal closes 3. Current file is marked as tombstoned in the database 4. Existing file details, comments, and tags are no longer visible 5. File card is removed from the Files page of the current project 6. File counts on the project cards and search results are decremented
101	Files	Details	File Tags	1. Navigate to the Details page of any file 2. Add a file tag	1. Tag modal opens 2. Tag input captured 3. In database, if the tag already exists, the previous ID is applied to the file 4. In database, if the tag does not yet exist, a new entry is created in the Tags table and the ID is applied to the file

#	Feature	User Story	Area	Test Action	Expected Result
102	Files	Details	File Tags	1. Navigate to the Details page of any file 2. Delete an existing file tag	1. The tag is removed from the project 2. The record associating the tag with the file is removed from the database 3. The tag is NOT removed from the tags table, this is left for reuse with other projects/comments/files
103	Files	Comments	View Comments	1. Navigate to the Comments page of any file 2. Review existing comments	1. Comments are displayed in sheets 2. Comment sheets are dynamically sized to fit both their content and the page space 3. Comments display the name of the user that created them 4. Comments display the date and time that it was created 5. Comments are sorted by date descending 6. Comments have a Reply link 7. Comments have a Tag link
104	Files	Comments	Add Comment	1. Navigate to the Comments page of any file 2. Add a new comment	1. Comment modal opens 2. After saving, comment is added to list of existing comments 3. Username and timestamp match the current user and date/time 4. Comment count on file card is incremented

#	Feature	User Story	Area	Test Action	Expected Result
105	Files	Comments	Reply	1. Navigate to the Comments page of any file 2. Select the Reply link on an existing comment 3. Add a new response	1. Comment modal opens 2. After saving, comment is added to list of existing comments 3. Username and timestamp match the current user and date/time 4. Comment count on file card is incremented
106	Files	Comments	File Comment Tags	1. Navigate to the Comments page of any file 2. Select the Tags link on an existing comment 3. In the Tags modal, add a new tag	1. Comment modal opens 2. Tag is associated with comment 3. In database, if the tag already exists, the existing tag is associated with the comment 4. In database, if the tag does not already exist, a new entry is created in the Tags table and that ID is associated with the current comment
107	Files	Comments	File Comment Tags	1. Navigate to the Comments page of any file 2. Select the Tags link on an existing comment 3. In the Tags modal, delete an existing tag	1. The tag is removed from the comment 2. The record associating the tag with the comment is removed from the database 3. The tag is NOT removed from the tags table, this is left for reuse with other projects/comments/files

#	Feature	User Story	Area	Test Action	Expected Result
108	Files	Comments	Search	1. Navigate to the Comments page of any file 2. Search by text 3. Review search results 4. Repeat for username 5. Repeat for tag 6. Repeat for date range	1. List of comments is filtered to only those matching the current search criteria 2. Comments are sorted by date created descending
109	Files	Navigation	Download Link	1. Navigate to the Files page of a project 2. Drill into a file 3. Select the Download ink in the navigation drawer	1. Windows dialog opens 2. Selecting a path and saving the file downloads a copy to the user's local machine

12. Conclusion

Project reflection and next steps

As with most software projects, we found ourselves battling scope creep as we explored our design ideas. This was significantly amplified by losing two of our team members very early into the project. Trying to carry the weight of a full team while running at 50% capacity, we found, was incredibly difficult. Due to this, we were required to make substantial concessions in our goals.

Considering these constraints, we opted to focus the vast majority of our efforts on the planning and design components of this project. This attention is illustrated by each section within this project manual. A large amount of time was dedicated to the user interface mockups, the testing plan, the node graph overhaul, and the overall planning of the application.

Conversely, this resulted in very little time remaining for the actual development component of this application. We successfully configured the environments and began some rough user interface work; however, we were not able to achieve a functional application. This is unfortunate, but it seemed to be an appropriate sacrifice considering the circumstances. Our efforts with the planning and design work should be an excellent resource for anyone resuming the development of this application.

If a group were to continue working where we left off, the development component is the next logical step. Any outstanding design work is incredibly minimal, reducing nearly all barriers to coding. The feature table in this document provides an overview of the pending items. The user interface mockups and the node diagram offer a detailed representation of our vision and goals for this application. If there is further capacity, automating our manual test scenarios would be an excellent objective.

Overall, we are disappointed with the development progress of our project, yet very proud of the planning and design components.

13. Changelog

1. **Feature Table**
   a. Created feature table to display status of all features, including:
      i. Planning
      ii. Design
      iii. Test Plan
      iv. Development

2. **Data Model**
   a. Added Table: **AppPermissions**
   b. Added Table: **ProjectPermissions**
   c. Added Table: **FileComments**
   d. Added Table: **FileCommentsTags**
   e. Added Table: **FileTags**
   f. Renamed Table: **Comments** to **ProjectComments**
   g. Renamed Table: **CommentTags** to **ProjectCommentTags**
   h. Minor field revisions to existing tables
   i. Revised data model to display the relationships of the new tables
   j. Created SQL Server queries to create all tables, relationships, and constraints

3. **Node Diagram**
   a. The supplied node diagram is a complete overhaul from our previous submission
   b. The decision to start from scratch was based on grading feedback from our midterm submission
   c. The original node diagram documents were left in the Xmind file for comparison and have been flagged as "OLD"

4. **Test Plan**
   a. Created manual test plan with test cases for all features

5. **Project Manual**
    a. Removed team member credits: Uzra Fatma
        i. Zero contact and participation
        ii. Zero contributions to any of the submitted project documents
    b. Removed team member credits: Eduardo Ramirez
        i. Zero contact and participation
        ii. Zero contributions to any of the submitted project documents
    c. Added Feature Table
    d. Revised Software Environment Specification
        i. Added software tools
    e. Revised Framework Specification
        i. Added Yarn
        ii. Added Node.js
        iii. Added Material UI
    f. Revised Team Roles and Responsibilities
        i. Removed Uzra and Ed
        ii. Attempted to rebalance responsibilities
            1. Note that we did not complete all of these
    g. Revised Setup Installation Procedures
        i. Added development setup items
    h. Added Data Model
    i. Added Node Diagram
    j. Added Test Plan