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# **Software Design Document**

**for**

# **TowerOfDaedelus\_WebApp**

**Version 1.0 approved**

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## Revision History

Name	Date	Reason for Changes	Version

## 2 Introduction

This section provides an overview of the entire requirement document. This document describes all data, functional and behavioral requirements for software.

### 2.1 Goals and objectives

The purpose of the system is to automate and improve the efficiency of various aspects of the Towers of Daedalus Roleplay. Additionally, the software aims to improve accountability and tracking of various aspects of the roleplay and to reduce the risk of mistakes or errors.

### 2.2 Statement of Scope

The system is implemented to improve the efficiency of the roleplay by automating and centralizing the processes of dice rolling, application submission, Game Master Requests, as well as serving as a site for public story information to be shared. All these processes can be done within the site and communicate with a central database as well as a discord bot. The central database stores all the relevant information for the site, while the discord bot facilitates communication between the designated discord server and the website.

### 2.3 Software context

The system is designed to facilitate various tasks that both players and administrators of the VR Chat Roleplay may need. Many of the systems must be capable of being utilized within a VR Overlay such as OVR Toolkit or XSO Overlay. The system user interface is designed specifically to support input from a VR controller pointer. This design principle is similar to the design principles for a mobile device but must account for even less accuracy in the user inputs.

### 2.4 Major constraints

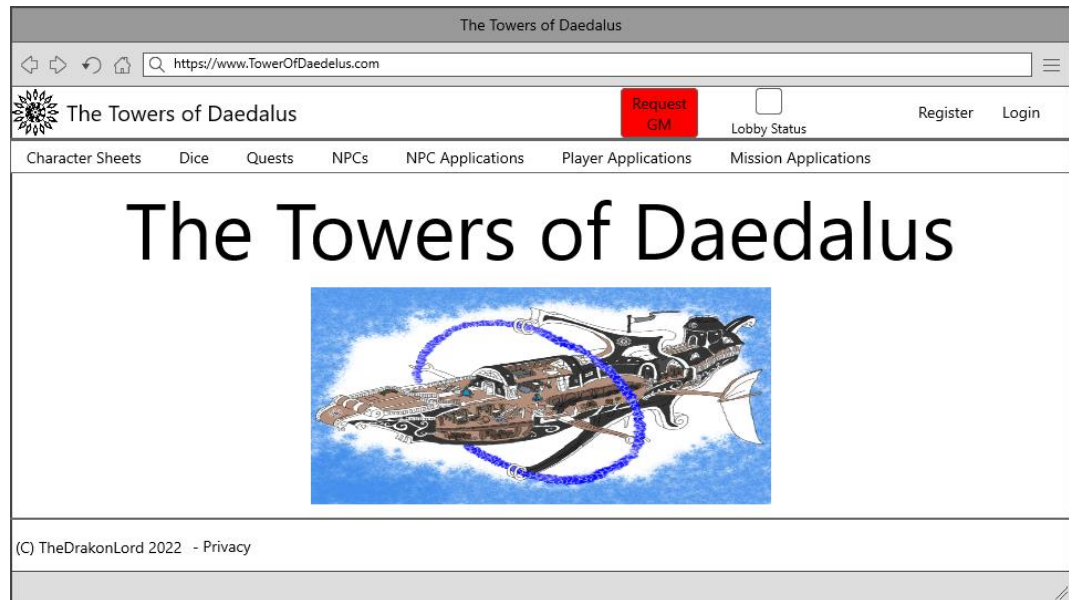
The system must support all major desktop and mobile browsers. Additionally, the system must properly support input from a Virtual Reality overlay. The system will also run within a web server in a Linux environment and will utilize the ASP.NET Core platform.

## 3 Data and Component Design

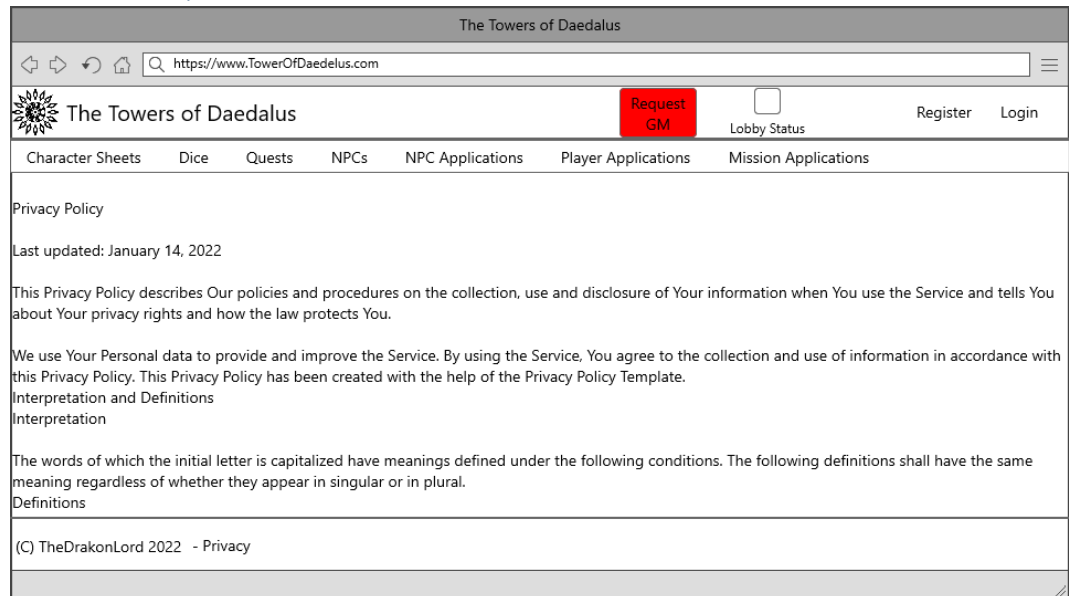
This section provides the detail for all the functional components as well as a description of all the data components.

## 3.1 Web Page Software Structure

### 3.1.1 Index



### 3.1.2 Privacy



### 3.1.3 Character sheets

#### 3.1.3.1 Character Sheet List

The screenshot shows the 'Character Sheet List' page. At the top, there's a navigation bar with 'The Towers of Daedalus' logo, a 'Request GM' button, a 'Lobby Status' button, and 'Register' and 'Login' links. Below this is a tabbed interface with 'Character Sheets' selected. A search filter is present. The main content is a table with three columns: 'Character Name', 'Player Name', and 'View Character'. The table lists eight characters, each with a 'View' button. At the bottom, there's a footer with '(C) TheDrakonLord 2022 - Privacy'.

Character Name	Player Name	View Character
Character 1	Player 1	<button>View</button>
Character 2	Player 2	<button>View</button>
Character 3	Player 3	<button>View</button>
Character 4	Player 4	<button>View</button>
Character 5	Player 5	<button>View</button>
Character 6	Player 6	<button>View</button>
Character 7	Player 7	<button>View</button>
Character 8	Player 8	<button>View</button>

#### 3.1.3.2 View Character Sheet

The screenshot shows the 'View Character Sheet' page. It features a 'Basic details' section with input fields for 'Name', 'Player', and 'Occupation', a text area for 'Occupation Description', and another for 'Biography'. Below these are 'Stats' for MND, STR, AGL, CON, and SOL. A large placeholder for a character portrait is on the right. The navigation bar and footer are consistent with the previous screenshot.

**Basic details**

Name  Player  Occupation

Occupation Description

Biography

Stats MND  STR  AGL  CON  SOL

#### 3.1.3.3 Character Creation



The screenshot shows the 'Add Trait' form in the Tower of Daedalus web application. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The page header includes the site logo, name, a 'Request GM' button, a 'Lobby Status' button, and 'Register' and 'Login' links. The navigation bar has tabs for 'Character Sheets', 'Dice', 'Quests', 'NPCs', 'NPC Applications', 'Player Applications', and 'Mission Applications'. The form is divided into several sections: 'Name' and 'Occupation' input fields; 'Occupation Description' and 'Biography' text areas; 'Stats' with five stat boxes (MND, STR, AGL, CON, SOL) each with a value of 0 and a plus/minus button; 'Points Remaining to Spend' with a value of 15; 'Origin Trait' section with 'Origin Description' text area, 'Languages' input field, and 'Vision Types' input field; and a 'Traits' section with 'Trait Points' input field (value 0) and an 'Add Trait' button. A 'Submit' button is at the bottom right. The footer contains the copyright notice '(C) TheDrakonLord 2022 - Privacy'.

#### 3.1.3.4 Add Trait

This screenshot shows the 'Add Trait' form with the trait configuration options. The 'Trait Name' input field is present. The 'Visibility' toggle switch is turned on. There are three columns of radio button options: 'Passive' (selected) and 'Active'; 'Major' (selected) and 'Minor'; and 'Edge' (selected), 'Flaw', and 'Equipment'. The 'Trait Description' text area is large and empty. A 'Submit' button is at the bottom right. The footer contains the copyright notice '(C) TheDrakonLord 2022 - Privacy'.

### 3.1.4 Dice Rolling

#### 3.1.4.1 Dice Rolling

The Towers of Daedalus

Request GM

Lobby Status

Register

Login

Character Sheets

Dice

Quests

NPCs

NPC Applications

Player Applications

Mission Applications

Number of Rolls

1

12

3

Advantage

Disadvantage

Death Roll

View Logs

20

D20

D100

D12

D10

D8

D6

D4

GM Modifier

-12

12

0

Select Character

MND

STR

AGL

CON

SOL

Set

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3.1.4.2 Dice Log

The Towers of Daedalus

Request GM

Lobby Status

Register

Login

Character Sheets

Dice

Quests

NPCs

NPC Applications

Player Applications

Mission Applications

Filter

Roll

Date/Time	Game Master	Result	Die	Raw Roll	GM Modifier	Advantage	Disadvantage	Death Roll	Character	Ability Score
Date, Time	GM1	20	20	20	0	NO	NO	YES	Character 1	None
Date, Time	GM2	15	20	10	2	NO	NO	NO	Character 1	MND
Date, Time	GM3	3	20	3	0	NO	YES	NO	No Selection	
Date, Time	GM1	12	20	6	6	YES	NO	NO	No Selection	
Date, Time	GM3	1	20	1	0	NO	NO	NO	No Selection	
Date, Time	GM4	8	20	8	0	NO	NO	NO	No Selection	
Date, Time	GM1	19	20	15	4	NO	NO	NO	No Selection	
Date, Time	GM3	6	20	16	4	NO	NO	NO	No Selection	

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3.1.5 Game Master Requests

3.1.5.1 Make Request

The screenshot shows the 'Request GM' form in the 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The page header includes the site logo, navigation links (Character Sheets, Dice, Quests, NPCs, NPC Applications, Player Applications, Mission Applications), and user options (Request GM, Lobby Status, Register, Login). The form contains a 'Location' text input, a 'Reason' text area, and an 'Urgency' section with three radio buttons: 'High', 'Normal' (selected), and 'Low'. 'Cancel' and 'Submit' buttons are at the bottom. A footer note reads '(C) TheDrakonLord 2022 - Privacy'.

### 3.1.5.2 Request Status

The screenshot shows the 'Request Status' page. The layout is identical to the previous form, but the main content area contains a table with four columns: 'Request Submitted', 'GM on the way', and 'Request Complete'. The first row of the table has a greyed-out cell under 'Request Submitted'. The footer note '(C) TheDrakonLord 2022 - Privacy' is present.

	Request Submitted	GM on the way	Request Complete

### 3.1.5.3 Request List

The screenshot shows the 'Request GM' page of the 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The page header includes the site logo, a 'Request GM' button, a 'Lobby Status' button, and links for 'Register' and 'Login'. A navigation bar contains links for 'Character Sheets', 'Dice', 'Quests', 'NPCs', 'NPC Applications', 'Player Applications', and 'Mission Applications'. Below this is a 'Filter' search bar. The main content area is a table with 4 columns: 'Timestamp', 'Requester', 'Status', and 'View Details'. The table contains 8 rows of data. The 'View Details' column has a 'View' button for each row. At the bottom of the page, there is a footer with the text '(C) TheDrakonLord 2022 - Privacy'.

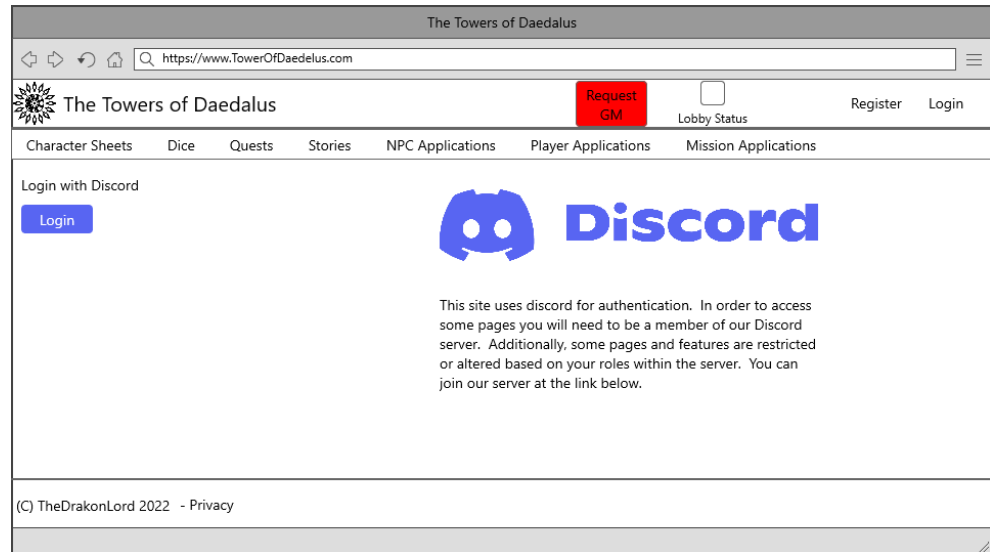
Timestamp	Requester	Status	View Details
Date, Time	Player 1	Answered by GM1	<button>View</button>
Date, Time	Player 2	Answered by GM1	<button>View</button>
Date, Time	Player 3	Answered by GM4	<button>View</button>
Date, Time	Player 4	Answered by GM3	<button>View</button>
Date, Time	Player 5	Open, Urgent	<button>View</button>
Date, Time	Player 6	Open	<button>View</button>
Date, Time	Player 7	Open	<button>View</button>
Date, Time	Player 8	Open, Urgent	<button>View</button>

### 3.1.5.4 Request Details

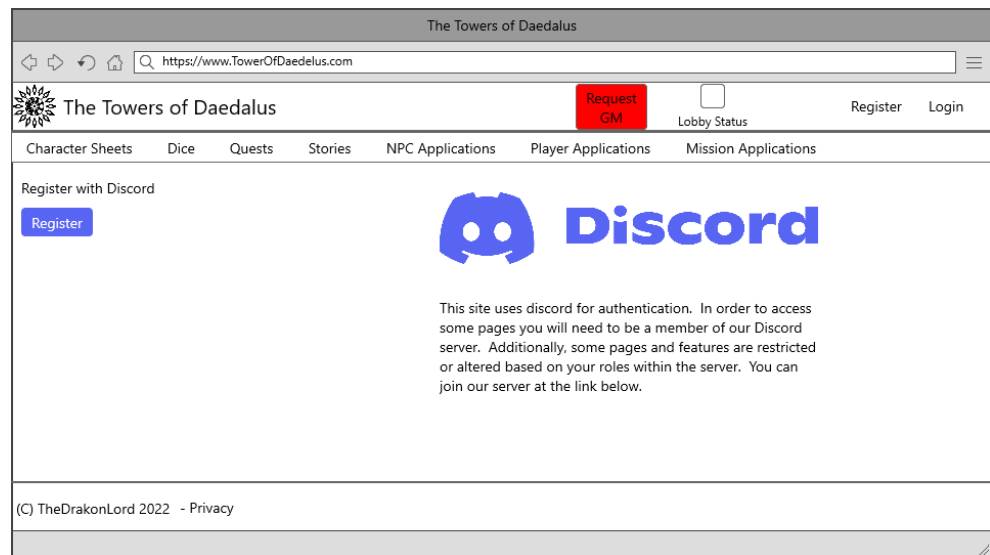
The screenshot shows the 'Request Details' page of the 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The page header includes the site logo, a 'Request GM' button, a 'Lobby Status' button, and links for 'Register' and 'Login'. A navigation bar contains links for 'Character Sheets', 'Dice', 'Quests', 'NPCs', 'NPC Applications', 'Player Applications', and 'Mission Applications'. The main content area is a form with the following fields: 'Requestor' (text input with 'Player 1'), 'Status' (dropdown menu with 'Open'), 'Urgency' (dropdown menu with 'High'), 'Opened' (text input with 'Date,Time'), 'Location' (text input with 'Map Location'), and 'Reason' (text area with 'MY CHARACTER IS DYING! HALP!'). There are two buttons: 'Mark as On The Way' and 'Mark as Answered'. A 'Back' button is located at the bottom left. At the bottom of the page, there is a footer with the text '(C) TheDrakonLord 2022 - Privacy'.

### 3.1.6 Microsoft Identity

#### 3.1.6.1 Login



### 3.1.6.2 Registration



### 3.1.7 Mission Applications

#### 3.1.7.1 Application List

The Towers of Daedalus

Request GM Lobby Status Register Login

Character Sheets Dice Quests Stories NPC Applications Player Applications Mission Applications

Filter

Submission Date/Time	UserName	Status	View Application
Date, Time	User 1	Approved	View
Date, Time	User 2	Rejected	View
Date, Time	User 3	Rejected	View
Date, Time	User 4	Approved	View
Date, Time	User 5	Open	View
Date, Time	User 6	Open	View
Date, Time	User 7	Open	View
Date, Time	User 8	Open	View

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### 3.1.7.2 Application Details

The Towers of Daedalus

Request GM Lobby Status Register Login

Character Sheets Dice Quests Stories NPC Applications Player Applications Mission Applications

Applicant Username User 1 Related External GM Discord Username EGM 1

Application Status Open

Mission Objective mission objective description

Team Member 1 Team member 1 Team Member 3 Team member 3

Team Member 2 Team member 2 Team Member 4 Team member 4

Team Description additional team members

Mark as Under Review Reject Approve

(C) TheDrakonLord 2022 - Privacy

### 3.1.7.3 Submit Application

The Towers of Daedalus

Item1

https://www.towerOfDaedalus.com

The Towers of Daedalus

Request GM

Lobby Status

Register

Login

Character Sheets

Dice

Quests

Stories

NPC Applications

Player Applications

Mission Applications

Is there a Game Master from another RP in charge of your story? If so, who?

Related External GM Discord Username

What do you hope to achieve during this mission?

Mission Objective

Select team members going on the mission with you:

Select Team Member...

Select Team Member...

Select Team Member...

Select Team Member...

If you don't see your team member listed, describe them below:

Team Description

Submit

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3.1.7.4      Application Status

The Towers of Daedalus

Item1

https://www.TowerOfDaedalus.com

The Towers of Daedalus

Request GM

Lobby Status

Register

Login

Character Sheets

Dice

Quests

Stories

NPC Applications

Player Applications

Mission Applications

	Application Submitted	Under Review	Application Complete

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3.1.8      NPC Applications

3.1.8.1      Application List

The Towers of Daedalus

Request GM

Lobby Status

Register Login

Character Sheets Dice Quests Stories NPC Applications Player Applications Mission Applications

Filter

Submission Date/Time	UserName	Status	View Application
Date, Time	User 1	Approved	View
Date, Time	User 2	Rejected	View
Date, Time	User 3	Rejected	View
Date, Time	User 4	Approved	View
Date, Time	User 5	Open	View
Date, Time	User 6	Open	View
Date, Time	User 7	Open	View
Date, Time	User 8	Open	View

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### 3.1.8.2 Application Details

The Towers of Daedalus

Request GM

Lobby Status

Register Login

Character Sheets Dice Quests Stories NPC Applications Player Applications Mission Applications

Applicant Username: User 1

Application Status: Open

Experience Rating

Level of Experience: 5

Previous Experience

Previous Experience 1: RP 1

Previous Experience 2: RP 2

Previous Experience 3: RP 3

Previous Experience 4:

Previous Experience 5:

Vouches

Vouch 1: User 2

Vouch 2: User 3

Vouch 3: User 4

Mark as Under Review

Reject

Approve

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### 3.1.8.3 Submit Application



The screenshot shows the 'NPC Applications' page of 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The page has a navigation bar with links: Character Sheets, Dice, Quests, Stories, NPC Applications (highlighted), Player Applications, and Mission Applications. There are also buttons for 'Request GM' (red), 'Lobby Status', 'Register', and 'Login'. The main content area contains a slider for 'On a scale of 1-10, what is your level of experience in RP?' with a blue dot at 5. Below this is a 'Previous Experience' section with five input fields and a 'Vouches' section with three input fields. A 'Submit' button is at the bottom right. The footer contains '(C) TheDrakonLord 2022 - Privacy'.

The Towers of Daedalus

Request GM Lobby Status Register Login

Character Sheets Dice Quests Stories NPC Applications Player Applications Mission Applications

On a scale of 1-10, what is your level of experience in RP?

1 5 10

**Previous Experience**  
List any previous experience you have roleplaying

Previous Experience 1  
Previous Experience 2  
Previous Experience 3  
Previous Experience 4  
Previous Experience 5

**Vouches**  
List the discord usernames of existing members of the RP who can vouch for you

Vouch 1  
Vouch 2  
Vouch 3

Submit

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### 3.1.8.4 Application Status

The screenshot shows the 'Application Status' page of 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The page has a navigation bar with links: Character Sheets, Dice, Quests, Stories, NPC Applications (highlighted), Player Applications, and Mission Applications. There are also buttons for 'Request GM' (red), 'Lobby Status', 'Register', and 'Login'. The main content area contains a table with three columns: 'Application Submitted', 'Under Review', and 'Application Complete'. The first row of the table is highlighted in grey. The footer contains '(C) TheDrakonLord 2022 - Privacy'.

The Towers of Daedalus

Request GM Lobby Status Register Login

Character Sheets Dice Quests Stories NPC Applications Player Applications Mission Applications

	Application Submitted	Under Review	Application Complete

(C) TheDrakonLord 2022 - Privacy

## 3.1.9 NPCs

### 3.1.9.1 NPC List

The screenshot shows the 'NPCs' page of the 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedelus.com'. The page has a navigation bar with links: 'Character Sheets', 'Dice', 'Quests', 'NPCs' (highlighted), 'NPC Applications', 'Player Applications', and 'Mission Applications'. There are also buttons for 'Request GM' (red), 'Lobby Status', 'Register', and 'Login'. Below the navigation bar is a search filter and an 'Add NPC' button. The main content area is a table with 3 columns: 'Quest Name', 'Brief Description', and 'View Quest'. The table contains 8 rows of quest data. At the bottom, there is a footer with the text '(C) TheDrakonLord 2022 - Privacy'.

Quest Name	Brief Description	View Quest
Quest 1	Description 1	<button>View</button>
Quest 2	Description 2	<button>View</button>
Quest 3	Description 3	<button>View</button>
Quest 4	Description 4	<button>View</button>
Quest 5	Description 5	<button>View</button>
Quest 6	Description 6	<button>View</button>
Quest 7	Description 7	<button>View</button>
Quest 8	Description 8	<button>View</button>

### 3.1.9.2 NPC Details

The screenshot shows the 'NPC Details' page of the 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedelus.com'. The page has a navigation bar with links: 'Character Sheets', 'Dice', 'Quests', 'NPCs' (highlighted), 'NPC Applications', 'Player Applications', and 'Mission Applications'. There are also buttons for 'Request GM' (red), 'Lobby Status', 'Register', and 'Login'. Below the navigation bar is a form for editing an NPC. The form has several fields: 'Name' (NPC 1), 'Occupation Description' (Occupation Description 1), 'Recurring' (True), 'GMNPC' (True), 'Title' (Title 1), 'Important Events' (event 1, event 2, event 3), 'Occupation' (Occupation 1), 'Affiliation' (Affiliation 1), 'Description' (Description 1), 'Family' (Family 1), 'Player' (Player 1), and 'Trivia' (Trivia 1, Trivia 2, Triva 3). There is a placeholder for a profile picture on the right. At the bottom, there is a footer with the text '(C) TheDrakonLord 2022 - Privacy'.

### 3.1.9.3 Add NPC

The screenshot shows the 'NPCs' form in the 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The page header includes the site logo, a 'Request GM' button, a 'Lobby Status' checkbox, and 'Register' and 'Login' links. The navigation menu has tabs for 'Character Sheets', 'Dice', 'Quests', 'NPCs' (selected), 'NPC Applications', 'Player Applications', and 'Mission Applications'. The form contains several input fields: 'Name', 'Recurring' (checkbox), 'GMNPC' (checkbox), 'Title', 'Occupation', 'Affiliation', 'Family', 'Player', 'Avatar', 'Occupation Description', 'Important Events', 'Description', 'Trivia', and 'Brief Description'. A 'Submit' button is at the bottom right. The footer text is '(C) TheDrakonLord 2022 - Privacy'.

### 3.1.10 Permanent Player Applications

#### 3.1.10.1 Application List

The screenshot shows the 'Player Applications' table in the 'The Towers of Daedalus' web application. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The page header includes the site logo, a 'Request GM' button, a 'Lobby Status' checkbox, and 'Register' and 'Login' links. The navigation menu has tabs for 'Character Sheets', 'Dice', 'Quests', 'Stories', 'NPC Applications', 'Player Applications' (selected), and 'Mission Applications'. A search filter is present above the table. The table has four columns: 'Submission Date/Time', 'UserName', 'Status', and 'View Application'. The 'View Application' column contains 'View' buttons. The footer text is '(C) TheDrakonLord 2022 - Privacy'.

Submission Date/Time	UserName	Status	View Application
Date, Time	User 1	Approved	View
Date, Time	User 2	Rejected	View
Date, Time	User 3	Rejected	View
Date, Time	User 4	Approved	View
Date, Time	User 5	Open	View
Date, Time	User 6	Open	View
Date, Time	User 7	Open	View
Date, Time	User 8	Open	View

#### 3.1.10.2 Application Details

The screenshot shows the 'Submit Application' form in the Tower of Daedalus web app. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The app header includes the logo, 'The Towers of Daedalus', a 'Request GM' button, a 'Lobby Status' button, and 'Register' and 'Login' links. The navigation bar has links for 'Character Sheets', 'Dice', 'Quests', 'Stories', 'NPC Applications', 'Player Applications' (highlighted), and 'Mission Applications'. The form contains the following fields and sections:

- Applicant Username:** A text input field with 'User 1' entered.
- Application Status:** A dropdown menu with 'Open' selected.
- Experience Rating:** A section with a 'Level of Experience' input field set to '5'.
- Previous Experience:** A section with five input fields for 'Previous Experience 1' through '5'. The first three are filled with 'RP 1', 'RP 2', and 'RP 3' respectively.
- Vouches:** A section with three input fields for 'Vouch 1', 'Vouch 2', and 'Vouch 3'. They are filled with 'User 2', 'User 3', and 'User 4' respectively.
- Buttons:** 'Mark as Under Review' (grey), 'Reject' (red), and 'Approve' (green).
- Footer:** '(C) TheDrakonLord 2022 - Privacy'.

### 3.1.10.3 Submit Application

The screenshot shows the 'Application Status' form in the Tower of Daedalus web app. The browser address bar shows 'https://www.TowerOfDaedalus.com'. The app header and navigation bar are identical to the previous screenshot. The form contains the following fields and sections:

- Experience Rating:** A section with the text 'On a scale of 1-10, what is your level of experience in RP?' and a horizontal slider with a blue circle at '5'.
- Previous Experience:** A section with the text 'List any previous experience you have roleplaying' and five input fields for 'Previous Experience 1' through '5'.
- Vouches:** A section with the text 'List the discord usernames of existing members of the RP who can vouch for you' and three input fields for 'Vouch 1', 'Vouch 2', and 'Vouch 3'.
- Buttons:** A 'Submit' button (grey).
- Footer:** '(C) TheDrakonLord 2022 - Privacy'.

### 3.1.10.4 Application Status

The screenshot shows the 'Player Applications' page. The header includes the site name 'The Towers of Daedalus', a 'Request GM' button, a 'Lobby Status' checkbox, and 'Register' and 'Login' links. The navigation bar has links for 'Character Sheets', 'Dice', 'Quests', 'Stories', 'NPC Applications', 'Player Applications' (active), and 'Mission Applications'. The main content area is a table with three columns: 'Application Submitted', 'Under Review', and 'Application Complete'. The first row of the table is highlighted in grey. The footer contains the text '(C) TheDrakonLord 2022 - Privacy'.

	Application Submitted	Under Review	Application Complete

### 3.1.11 Quests

#### 3.1.11.1 Quest List

The screenshot shows the 'Quests' page. The header is identical to the previous page. The navigation bar has 'Quests' active. The main content area features a 'Filter' input field and an 'Add Quest' button. Below is a table with three columns: 'Quest Name', 'Brief Description', and 'View Quest'. The table contains eight rows of quest data. The footer contains the text '(C) TheDrakonLord 2022 - Privacy'.

Quest Name	Brief Description	View Quest
Quest 1	Description 1	<button>View</button>
Quest 2	Description 2	<button>View</button>
Quest 3	Description 3	<button>View</button>
Quest 4	Description 4	<button>View</button>
Quest 5	Description 5	<button>View</button>
Quest 6	Description 6	<button>View</button>
Quest 7	Description 7	<button>View</button>
Quest 8	Description 8	<button>View</button>

#### 3.1.11.2 Quest Details

### 3.1.11.3 Add Quest

## 3.2 Component Rationale

### 3.2.1 Index

This page is the user interface (UI) the user will see when first visiting the website. The top portion of the page is shard across the whole site and features the site title and logo on the left. The middle features a button that redirects users to the GM request page. Next to the request button is an indicator that represents the current status of the role play lobby. To the far right is the Microsoft Identity account management section. Below the top bar is a navigation menu that will allow users to quickly navigate to other sections of the site. The center of the page contains the site title and a featured article gallery. The featured article gallery rotates through articles that are currently marked as featured. Selecting an article opens its world anvil page in a new tab. The bottom bar is also shared across the whole site. It contains the copyright notice as well as links to legal information such as the privacy policy.

### 3.2.2 Privacy

This page features the privacy policy for the site. It has no special features and is simply formatted text.

### 3.2.3 Character Sheets

#### 3.2.3.1 *Character Sheet list*

This page lists all of the character sheets that are stored in the database. Clicking on the view button redirects the user to a page that shows detailed information on the selected character. Also on this page is a search box that allows the user to filter by either the character or player name. In the upper right, the create character button will take users to the create character page.

#### 3.2.3.2 *View Character Sheet*

This page shows detailed information on a specific character. The boxes to the left show the specific data while the portrait to the right shows the character's art. User's can scroll down to see more information.

#### 3.2.3.3 *Character Creation*

This page allows users to create a new character by filling in the displayed fields. To the right, users can click the add trait button to add traits to their character sheet. Once added, traits will appear below the "trait points" box and above the "add trait" button in a pre-defined order.

#### 3.2.3.4 *Add Trait*

This page allows users to add a trait to their character. The top portion allows users to define the name and visibility of the trait as well as if the trait is active or passive, major or minor, and whether it is an edge, flaw, or equipment type trait. The box at the bottom allows users to enter the full description of the trait and the button at the bottom of the page allows users to submit the information they have entered.

### 3.2.4 Dice Rolling

#### 3.2.4.1 *Dice Rolling*

This page allows users to roll dice. The section on the upper left allows the users to specify the number of rolls to make at once (defaults to one). The bottom left allows users to specify options such as advantage or disadvantage and to mark the roll as a death roll (all of these options default to off). The bottom middle section allows users to specify the type of dice to roll (the default is a d20). The upper right section allows users to specify the modifier to be added or subtracted from the roll (the default is zero). The bottom right section allows users to specify a character to associate with the roll and a modifier to be added based on that character's score in the selected stat. A button in the middle allows the user to roll with the selected options. The result will be displayed in the upper middle. The "view logs" button in the bottom left allows users to view the dice roll log.

#### [\*3.2.4.2 Dice Log\*](#)

This page shows all the rolls made on the system. The button in the upper right will take the user to the dice rolling page. The search box in the upper left allows users to filter the log by a specified condition.

### **3.2.5 Game Master Requests**

#### [\*3.2.5.1 Make Request\*](#)

This page allows users to submit a request for a GM to aid them. They are able to specify their character's current location as well as the details and urgency of their request. Once the form is filled out, they can click the submit button.

#### [\*3.2.5.2 Request Status\*](#)

This page displays the current status of a user's GM request. Anytime a user has an open request, they are directed to this page rather than the submit page. As the status changes, this page will update to reflect the new status.

#### [\*3.2.5.3 Request List\*](#)

This page displays a list of all requests that are currently active. The search box in the upper left allows the user to filter the request list by a specified condition. Selecting the view button next to a request entry will redirect the user to a page with the details of the request.

#### [\*3.2.5.4 Request Details\*](#)

This page displays the details of a request submitted by a user. The buttons on the right allow a user to indicate that a GM is on the way or that the request is complete. The back button on the lower left allows a user to return to the request list.

### **3.2.6 Microsoft Identity**

#### [\*3.2.6.1 Login\*](#)

The login page displays information on the login process and allows users to log in via external authentication with discord.

#### [\*3.2.6.2 Registration\*](#)

The registration page displays information on the registration process and allows users to register via external authentication with discord.

### **3.2.7 Mission Applications**

#### [\*3.2.7.1 Application List\*](#)

This page shows a list of applications submitted by users. The search box in the upper left allows users to filter the data displayed by specified conditions. The view button next to each entry allows users to view detailed information on the application.

#### [\*3.2.7.2 Application Details\*](#)

This page shows the details of a specific application. The buttons to the bottom right allow a user to mark an application as under review, approved, or rejected.



#### [\*3.2.7.3 Submit Application\*](#)

This page allows a user to submit an application. Once all the details are filled in, the user can click the submit button to send their application for review.

#### [\*3.2.7.4 Application Status\*](#)

When a user has an open application, they can view this page to review its status. As the status of the application changes, this page will update to reflect those changes.

### **3.2.8 NPC Applications**

#### [\*3.2.8.1 Application List\*](#)

This page shows a list of applications submitted by users. The search box in the upper left allows users to filter the data displayed by specified conditions. The view button next to each entry allows users to view detailed information on the application.

#### [\*3.2.8.2 Application Details\*](#)

This page shows the details of a specific application. The buttons to the bottom right allow a user to mark an application as under review, approved, or rejected.

#### [\*3.2.8.3 Submit Application\*](#)

This page allows a user to submit an application. Once all the details are filled in, the user can click the submit button to send their application for review.

#### [\*3.2.8.4 Application Status\*](#)

When a user has an open application, they can view this page to review its status. As the status of the application changes, this page will update to reflect those changes.

### **3.2.9 NPCs**

#### [\*3.2.9.1 NPC List\*](#)

This page shows a list of NPCs. The search box in the upper left allows users to filter the data displayed by specified conditions. The view button next to each entry allows users to view detailed information on the NPC. The add npc button allows users to add a new NPC

#### [\*3.2.9.2 NPC Details\*](#)

This page displays the details of a specific NPC. The box on the far right displays the linked art for the NPC.

#### [\*3.2.9.3 Add NPC\*](#)

This page allows users to add a npc to the list of NPCs. Once the form is filled in, a user can click the submit button to submit the NPC to the database.

### 3.2.10 Permanent Player Applications

#### 3.2.10.1 *Application List*

This page shows a list of applications submitted by users. The search box in the upper left allows users to filter the data displayed by specified conditions. The view button next to each entry allows users to view detailed information on the application.

#### 3.2.10.2 *Application Details*

This page shows the details of a specific application. The buttons to the bottom right allow a user to mark an application as under review, approved, or rejected.

#### 3.2.10.3 *Submit Application*

This page allows a user to submit an application. Once all the details are filled in, the user can click the submit button to send their application for review.

#### 3.2.10.4 *Application Status*

When a user has an open application, they can view this page to review its status. As the status of the application changes, this page will update to reflect those changes.

### 3.2.11 Quests

#### 3.2.11.1 *Quest List*

This page shows a list of quests. The search box in the upper left allows users to filter the data displayed by specified conditions. The view button next to each entry allows users to view detailed information on the quest. The add quest button allows users to add a new NPC

#### 3.2.11.2 *Quest Details*

This page displays the details of a specific NPC. The active indicator in the bottom right indicates whether the quest is active or not and can be changed by users with the proper permissions.

#### 3.2.11.3 *Add Quest*

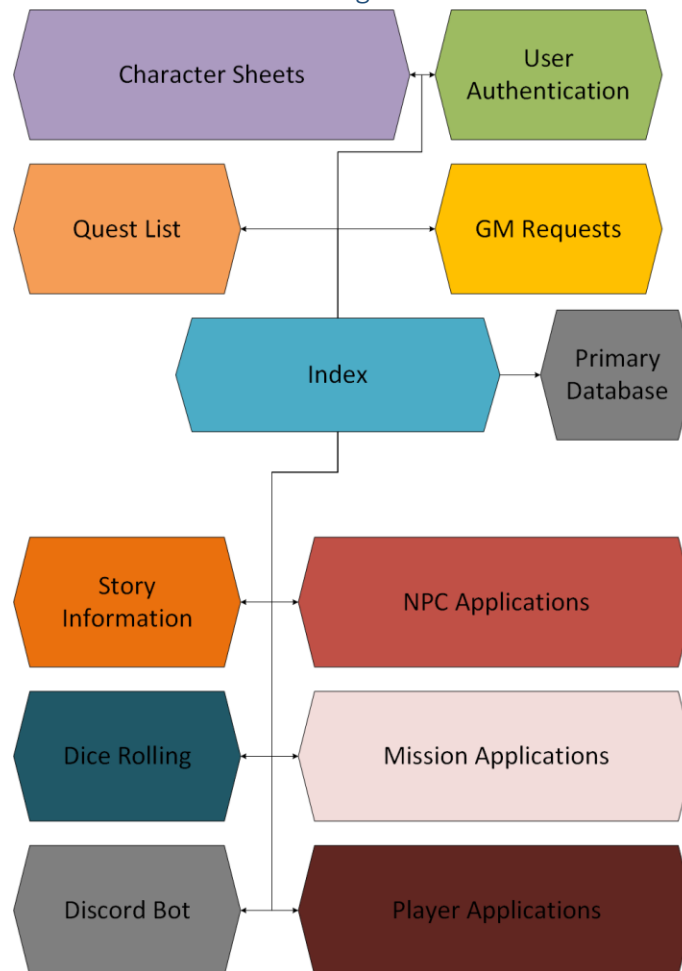
This page allows users to add a quest to the list of quests. Once the form is filled in, a user can click the submit button to submit the quest to the database.

The remainder of the database will consist of tables used to store data utilized by the rest of the system. Many of the tables will tie a given user id as an index.

## 4 Architecture Overview

### 4.1 Architectural Boundaries

#### 4.1.1 Level 0 Context Diagram

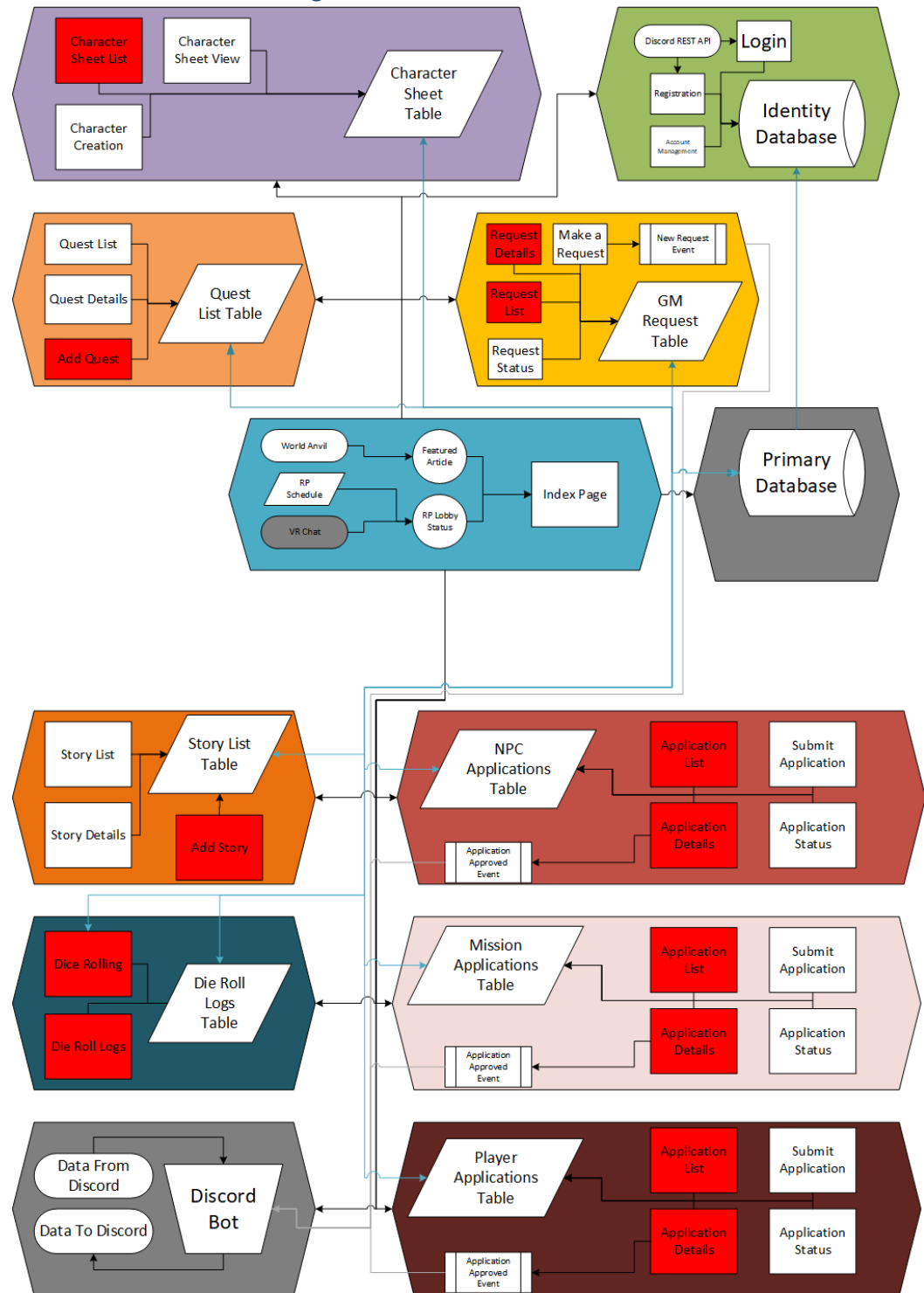


#### 4.1.2 Rationale for the Level 0 Context

The system has several components. The index page serves as the landing point for when users first accesses the system. The character sheets component contains all the systems necessary for creating, viewing, and managing character sheets. The User Authentication component is managed by the Microsoft Identity framework and maintains the authentication and authorization processes used throughout the site. The primary database component stores all the persistent information used by other components. The story information component contains all the systems necessary for creating, viewing, and managing prominent NPC data. The dice rolling component contains all the systems necessary for rolling dice and viewing the dice roll log. The three application components: NPC, Mission, and Player, each contain the systems necessary for submitting, tracking, and managing applications submitted by users. The Discord bot component enables the system to communicate and interact with the designated discord server. Through this component, the system is able to perform such

tasks as sending users messages via direct message, sending messages in specific channels in the server, and updating roles members of the server have.

#### 4.1.3 Level 1 Context Diagram



#### 4.1.4 Rationale for the Level 1 Context

Within the index component, there is an index page which features two subcomponents. The featured article subcomponent pulls information from the primary database as well as uses external data from the world anvil to display featured articles on the index page. The Lobby Status subcomponent pulls information from a table in the database to determine its current status and may in the future utilize data directly from VR Chat.

The Character sheet component contains several pages that get store and retrieve data from a table that is part of the primary database.

The user authentication component has the login, registration, and account management pages that load and store data from the identity portion of the database. During login and registration, the system pulls data from the Discord API that is used in both login, registration, and establishing user permissions.

The Quest list component has the list, details, and add quest pages that all store and load data from a table within the primary database. The add quest page can only be accessed by users with specific permissions.

The GM Requests component has a detail, list, status, and make request pages that all store and load data from a table within the primary database. In addition, when a new request is made, a subroutine is triggered within the Discord bot component that sends a message within the designated discord. The Request details and request list pages can only be accessed by users with specific permissions.

The Primary Database component serves as the primary storage location for all data that is stored and loaded by the system.

The Story information component contains list, detail, and add story pages that all store and load data from a table within the primary database. The add story page may only be accessed by users with specific permissions.

The Dice Rolling Component has a dice rolling and dice roll log pages that both store and load data from a table within the primary database. Both pages may only be accessed by users with specific permissions.

The NPC Applications component has several pages: submit application, application status, application list, and application details. The application list and application details pages may only be accessed by users with specific permissions. Each of these pages, store, and load data from a table within the primary database. When an NPC application is approved or rejected a subroutine is triggered in the Discord bot component the sends a message to the applicant and updates roles within the designated Discord server as necessary.

The Mission Applications component has several pages: submit application, application status, application list, and application details. The application list and application details pages may only be accessed by users with specific permissions.

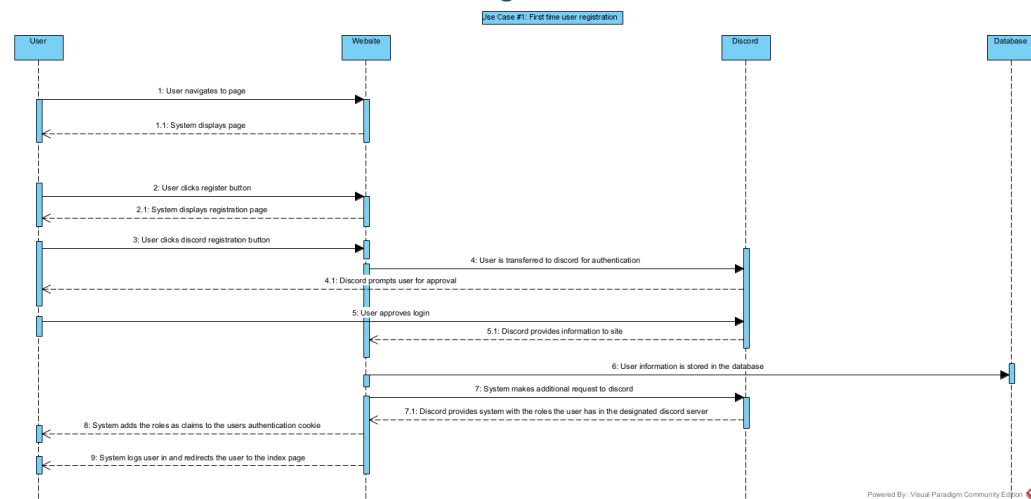
Each of these pages, store, and load data from a table within the primary database. When a mission application is approved or rejected a subroutine is triggered in the Discord bot component the sends a message to the applicant and updates roles within the designated Discord server as necessary.

The Player Applications component has several pages: submit application, application status, application list, and application details. The application list and application details pages may only be accessed by users with specific permissions. Each of these pages, store, and load data from a table within the primary database. When a player application is approved or rejected a subroutine is triggered in the Discord bot component the sends a message to the applicant and updates roles within the designated Discord server as necessary.

The Discord Bot component contains a program that sends and receives data to and from Discord. This may take the form of sending direct messages to specific users, sending messages in specific channels in the designated Discord server, or updating the roles of users in the designated Discord server.

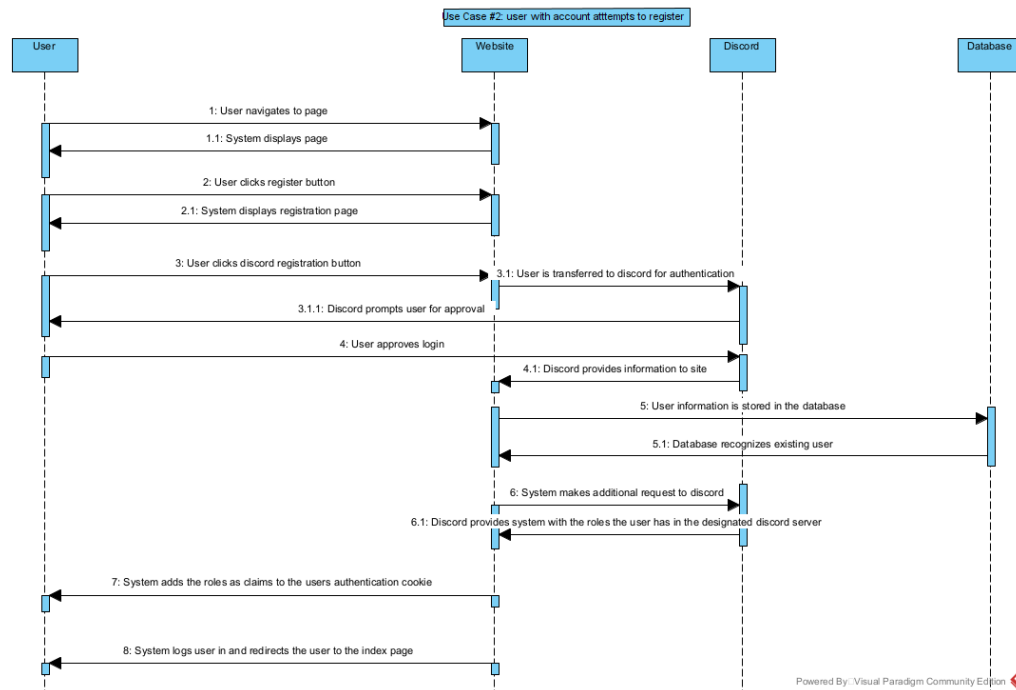
## 4.2 Use Case specification achievement

### 4.2.1 Use Case #1: First time user registration



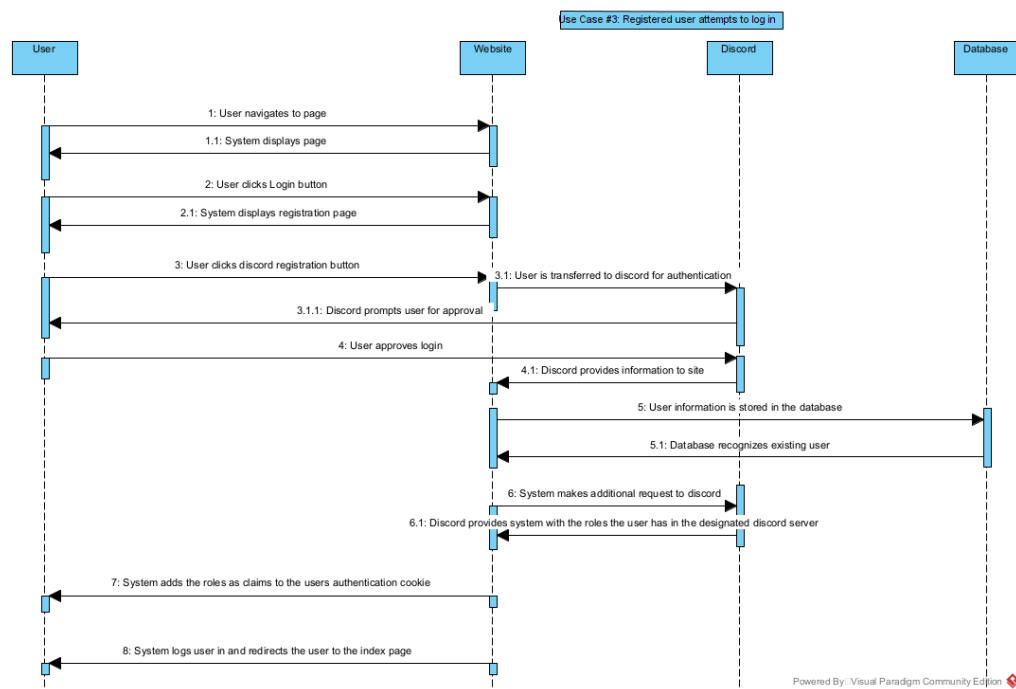
The first time a user registers, the system passes them to the Discord Open Authentication 2 system. From there Discord passes back a token representing their session and the system makes another request for the user's roles within the designated discord server. The system then assigns those role IDs as claims within the user's security cookie. The user is then redirected back to the home page.

## 4.2.2 Use Case #2: User with account attempts to register



When a user with an account attempts to register, the attempt is handled as a log in instead. The remainder of the process happens the same as in use case #1.

## 4.2.3 Use Case #3: Registered User attempts to log in

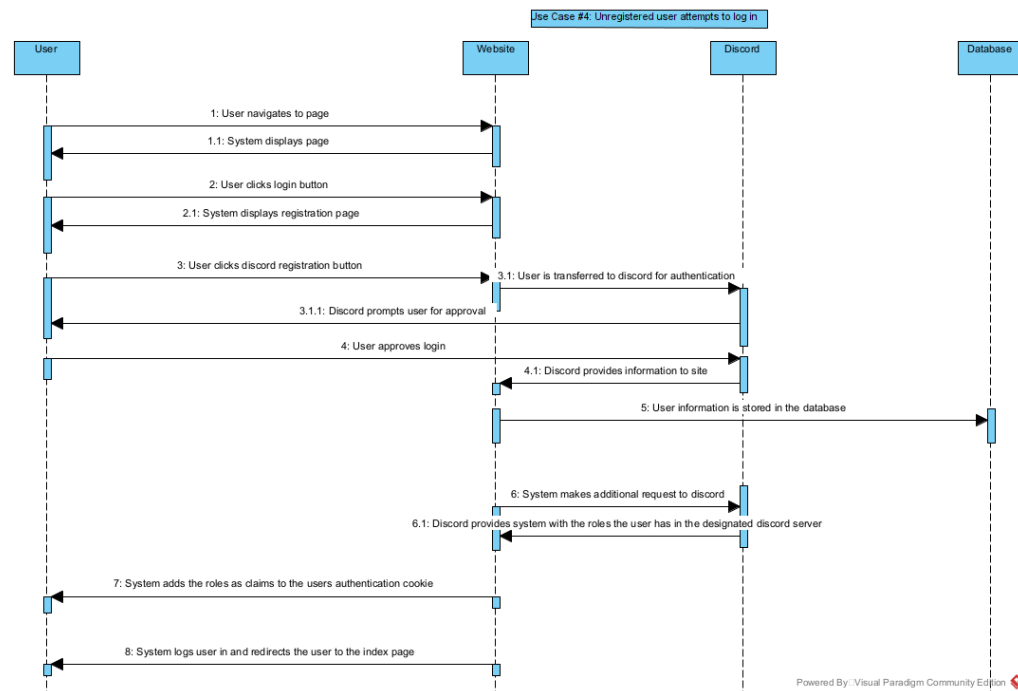


When a registered user logs in, the system passes them to the Discord Open Authentication 2 service. Once authentication is complete, the system sends another



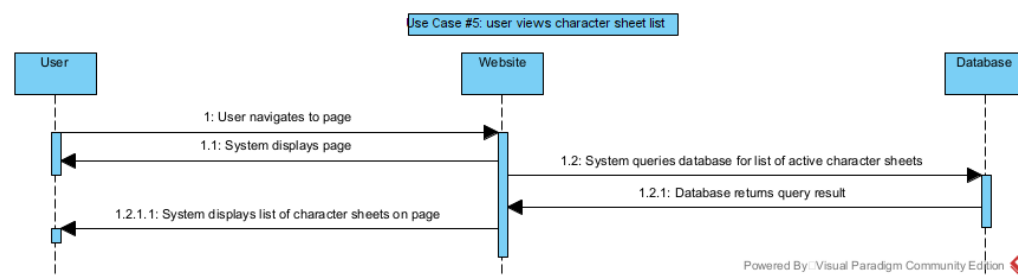
request for the user's roles within the designated Discord server. The system then refreshes the claims within their authentication cookie.

#### 4.2.4 Use Case #4: Unregistered user attempts to log in



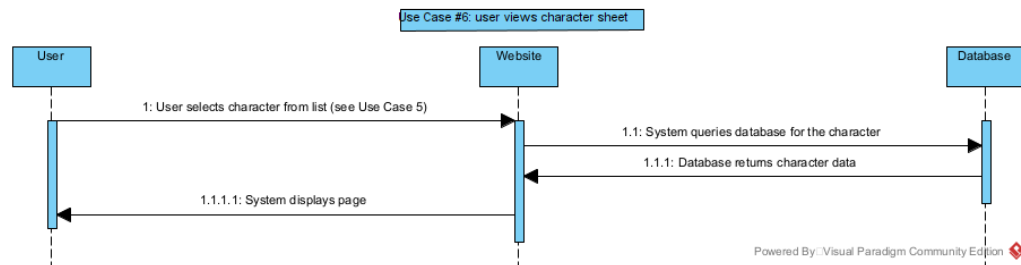
When an unregistered user attempts to log in the user is redirected into the registration process instead. From there the process is handled similarly to use case #1.

#### 4.2.5 Use Case #5: User views character sheet list



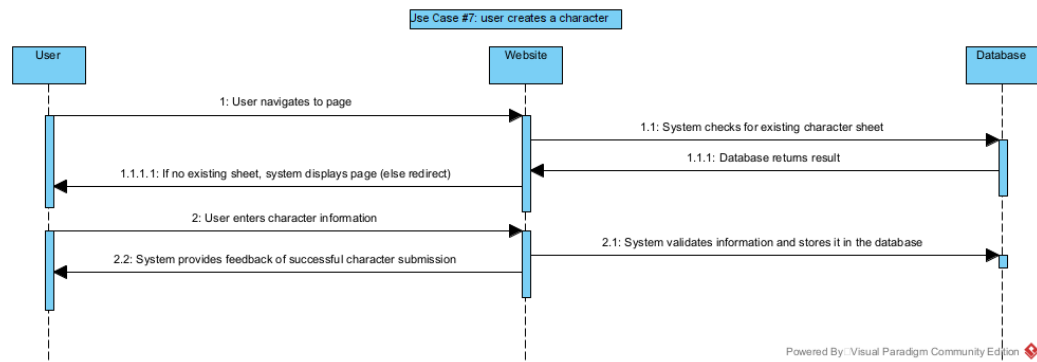
When a user views the character sheet list, they first navigate to the page. The system responds by delivering the requested page and then querying the database for a list of active character sheets. From there, the database returns the query result and displays the results within the page.

#### 4.2.6 Use Case #6: User views character sheet



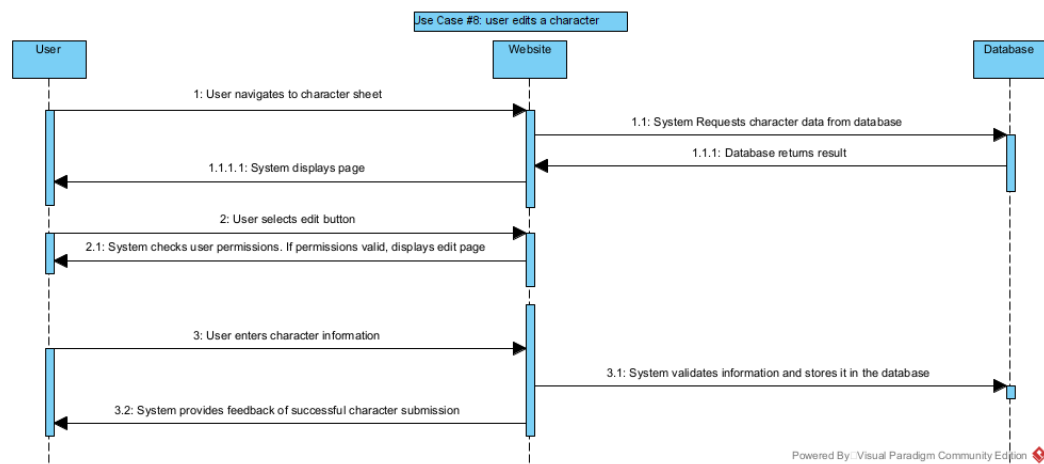
When a user views the character sheet, the system first queries the database for the full set of information on the character and then displays that information on the character sheet details page.

#### 4.2.7 Use Case #7: User creates a character



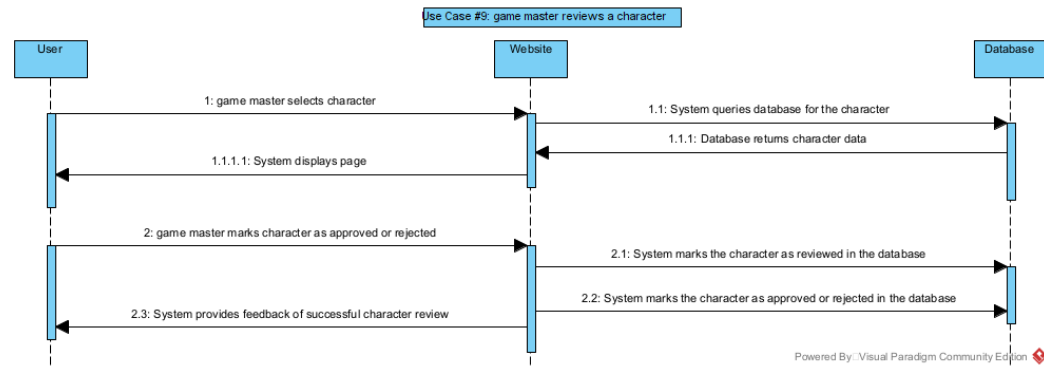
When a user creates a character, the system first checks for if the user has an existing character sheet. If the user does not have an existing sheet, the system sends the character creation page. Once the user has completed character creation, the system stores the character data in the database and displays feedback that the user has successfully completed character creation.

#### 4.2.8 Use Case #8: User edits a character



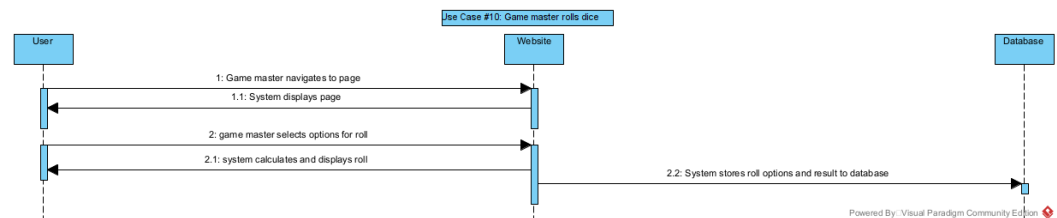
When a user edits a character, the system requests the character's data from the database and then displays the character creation page with the character's data filled in. The user then edits the character data as necessary and submits the data. The system then updates the entry in the database and sends a confirmation that the update to the character data was successful.

#### 4.2.9 Use Case #9: Game master reviews a character



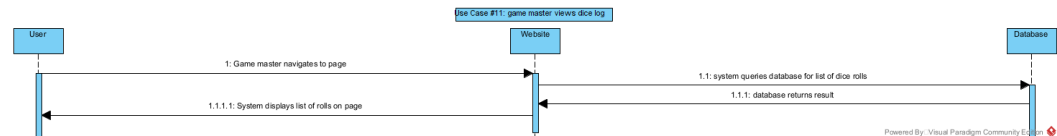
When a game master reviews a character, the system retrieves the character data from the database and displays the character details page. The game master then marks the character as either approved or rejected. The system first marks the character as reviewed in the database and then marks the character as either approved or rejected in the database. The system then displays feedback that the character review was successful.

#### 4.2.10 Use Case #10: Game master rolls dice



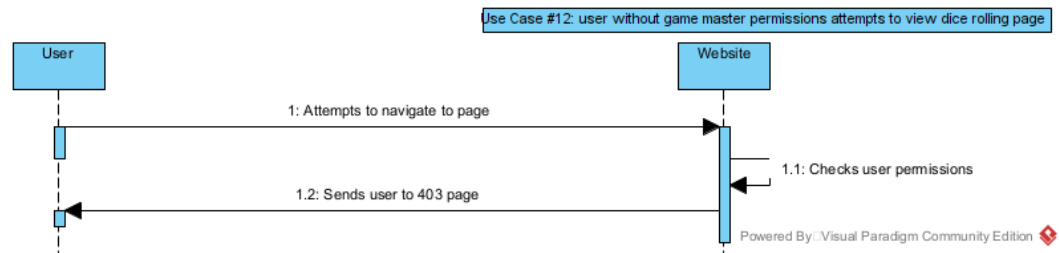
When a game master rolls dice, the system first displays the dice rolling page. The game master then selects the options and initiates the roll. The system then calculates the roll and displays the result. Once the result is displayed, the system stores the result and the options selected in the database.

#### 4.2.11 Use Case #11: Game master views dice log



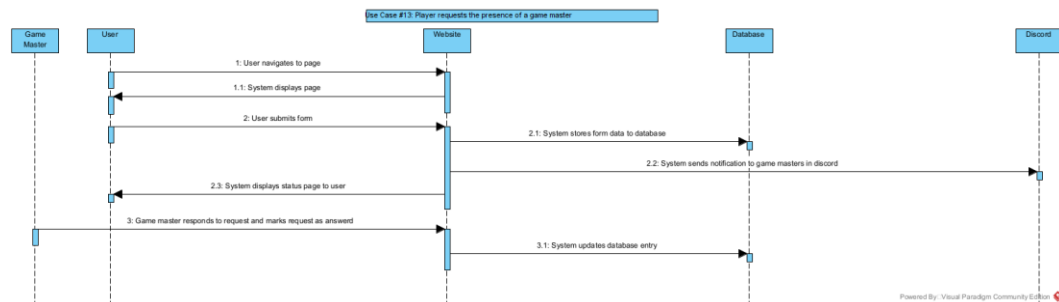
When a game master views the dice log, the system first queries the database for the list of dice rolls made. Once the result is returned by the database, the system displays a page with the result displayed on it.

#### 4.2.12 Use Case #12: User without game master permissions attempts to view dice rolling page



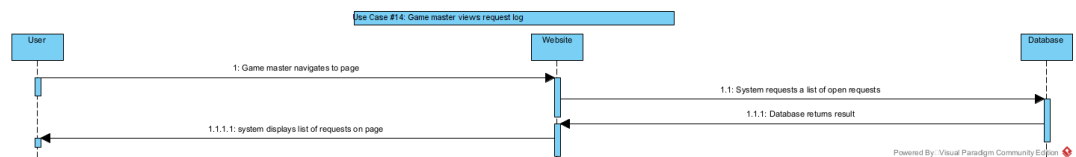
When a user without game master permissions attempts to view the dice rolling page, the system first checks their permissions and sends the user to the error 403 page instead.

#### 4.2.13 Use Case #13: Player requests the presence of a game master



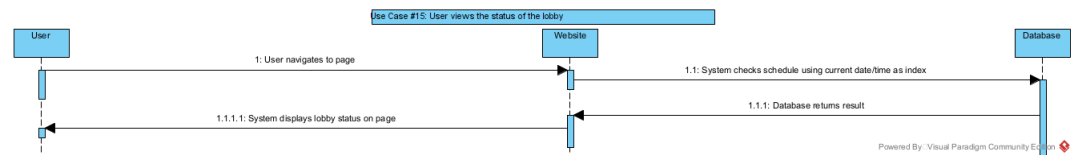
When a player requests the presence of a game master, the system first displays the request submission page. The player fills out the form and submits it. Once the form is submitted, the system stores the submission in the database and sends a message to the designated discord indicating that a player has submitted a request. The system then displays a page to the player with the current status of their request. The game master then answers the request and marks the request as answered. The system then updates the entry in the database to reflect the request as answered.

#### 4.2.14 Use Case #14: Game master views request log



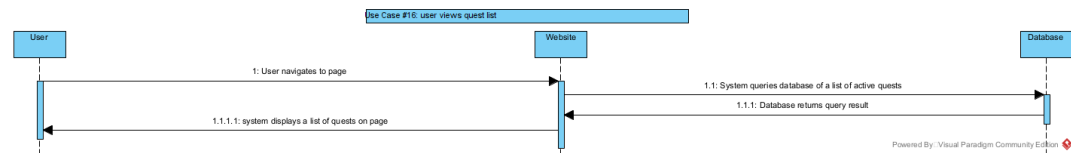
When a game master views the request log, the system first queries the database for a list of active requests. The system then displays a page with the query result displayed upon it.

#### 4.2.15 Use Case #15: User views the status of the lobby



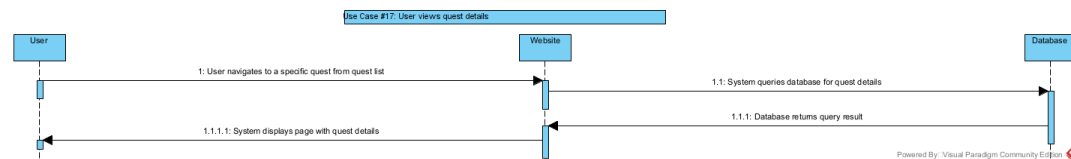
When a user views the status of the lobby, the system first queries the database for what the current status is. The system then displays the result on the page.

#### 4.2.16 Use Case #16: User views quest list



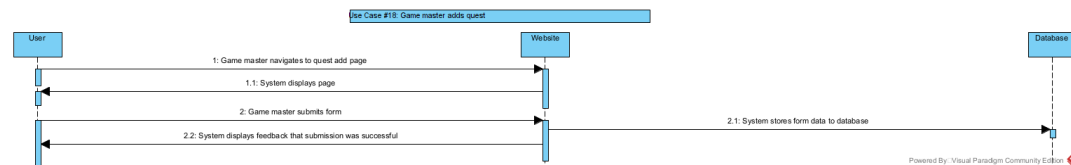
When a user views the quest list, the system first queries the database for a list of active quests. Once the database returns the result, the system displays the result on a page.

#### 4.2.17 Use Case #17: User views quest details



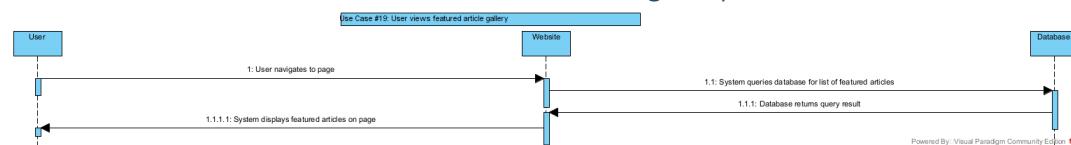
When a user views the details of a quest, the system first queries the database for the details of that quest. The system then displays the results of the query on the quest details page.

#### 4.2.18 Use Case #18: Game master adds quest



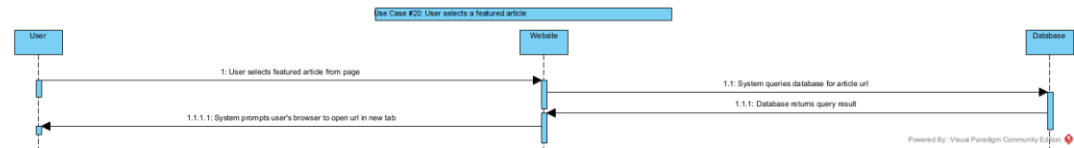
When a game master adds a quest, the system first displays the quest add page. The game master then fills out the form and submits it. The system then stores the quest details in the database and displays a confirmation page stating that the submission was successful.

#### 4.2.19 Use Case #19: User views featured article gallery



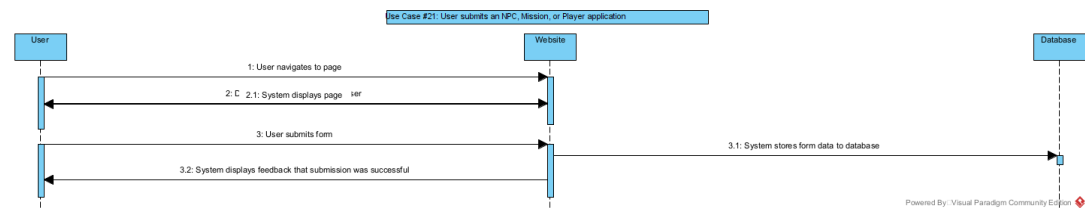
When a user views the featured article gallery, the system first retrieves the list of featured articles from the database. Once the database returns the result, the system then displays the results within the featured article gallery on the page.

#### 4.2.20 Use Case #20: User selects a featured article



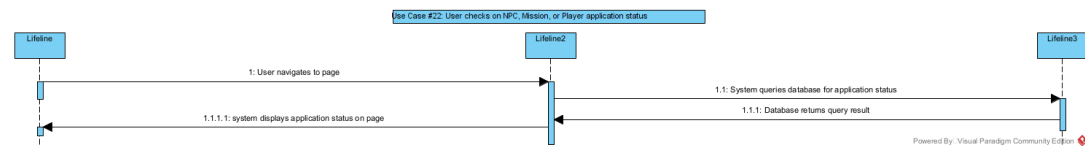
When the user selects a featured article from the gallery, the system obtains the URL for the article from the database and then sends the result as a new tab within the user's browser.

#### 4.2.21 Use Case #21: User submits an application



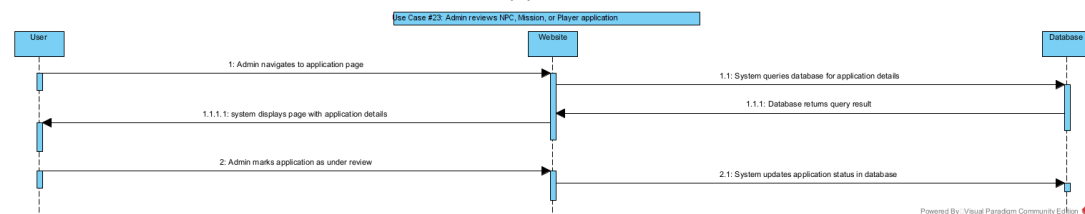
When a user submits an application, the system first displays the application submission page. The user then fills out the form and submits it. When the form is submitted, the system stores the data in the database and displays a confirmation message that the submission was successful.

#### 4.2.22 Use Case #22: User checks on application status



When a user checks on an applications status, the system first obtains the status of the application from the database. The system then displays the result of the query on the status page.

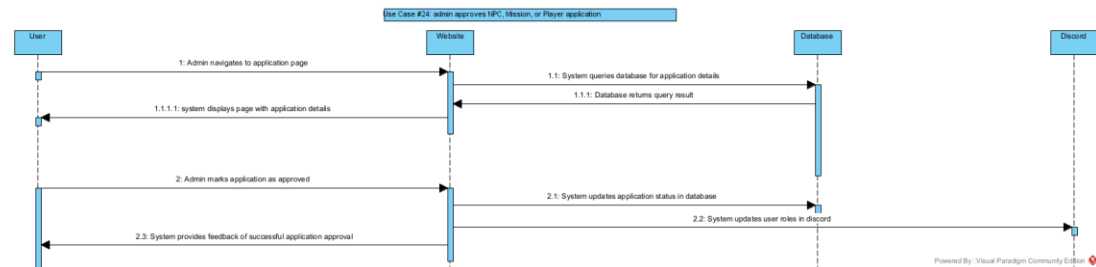
#### 4.2.23 Use Case #23: Admin reviews application



When an admin reviews an application, the system first obtains the application details from the database and displays the result on the application details page. The admin

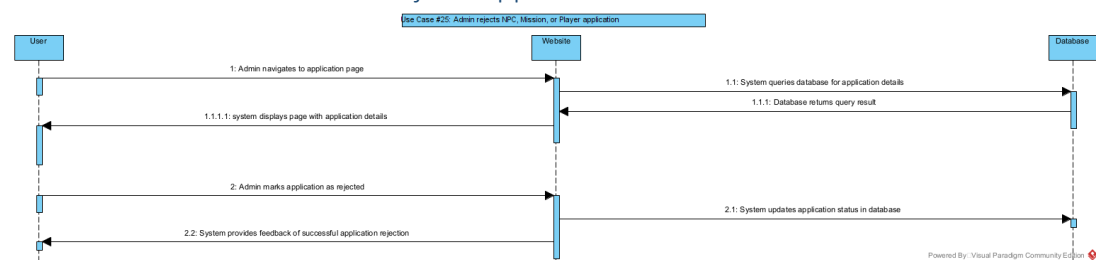
the marks the application as under review and the system updates the application's status in the database.

#### 4.2.24 Use Case #24: Admin approves application



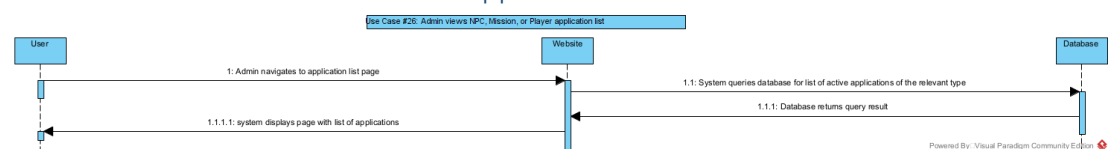
When an admin approves an application, the system first obtains the details of the application from the database and displays the result on the application details page. The admin then marks the application as approved, and the system updates the status of the application in the database. The system then sends a message to the user in discord indicating that their application was approved. The system also updates the user's roles within the designated discord. The system then displays a status message indicating that the application was successfully approved.

#### 4.2.25 Use Case #25: Admin rejects application



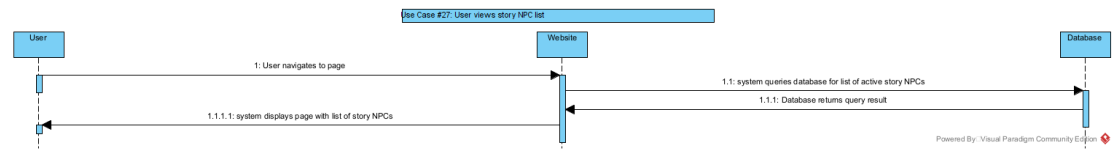
When an admin rejects an application, the system first obtains the details of the application from the database and displays the result on the application details page. The admin then marks the application as rejected, and the system updates the status of the application in the database. The system then sends a message to the user in discord indicating that their application was rejected. The system then displays a status message indicating that the application was successfully approved.

#### 4.2.26 Use Case #26: Admin views application list



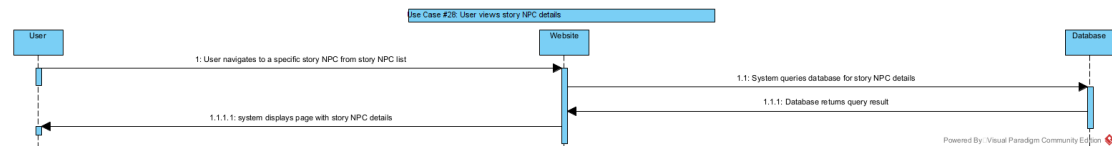
When an admin views the application list, the system first obtains the list of active applications from the database. The system then displays the result on the application list page.

#### 4.2.27 Use Case #27: User views Story NPC list



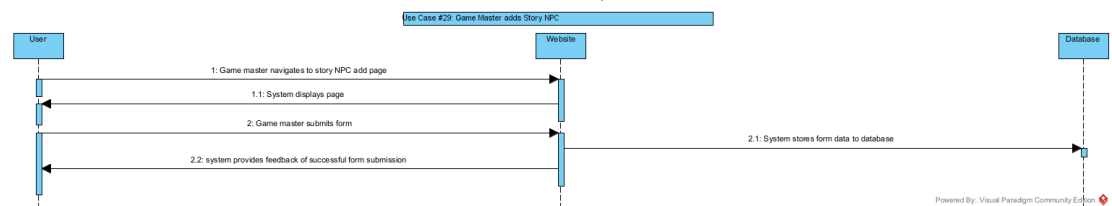
When a user views the story NPC list, the system first obtains the list of story NPCs from the database. The system then displays the result on the story NPC list page.

#### 4.2.28 Use Case #28: User views Story NPC details



When a user views the details of a story NPC, the system first obtains the details of the NPC from the database. The system then displays the results on the NPC details page.

#### 4.2.29 Use Case #29: Game master adds Story NPC



When a game master adds a story NPC, the system first displays the add NPC page. The game master then fills in the form and submits the information. The system then stores the data in the database and displays a confirmation message indicating that the NPC was successfully added.

### 4.3 Outside system requirements

The system is dependent on the Discord API for both authentication, authorization, and communication processes used by the system. Additionally, the system is dependent on the Random.org API for generating true random numbers. The system may also, in the future, be dependent on the VR Chat API for obtaining certain information such as the status of the lobby.

## 5 Restrictions, Limitations, and Constraints

The system may not be monetized or display ads as doing so would violate the terms of the random.org API. Additionally, the system must support users interacting with it while in a virtual reality environment. As such, elements of the user interface must be sufficiently large so that the decreased accuracy of user inputs while in virtual reality is mitigated. The system should also be efficient, accurate, and responsive.



## 6 Appendix A: Glossary

### 6.1.1 Discord

Discord is a VoIP, instant messaging, and digital distribution platform. Users communicate with voice calls, video calls, text messaging, media, and files in private chats or as part of communities called "servers".

### 6.1.2 Game Master (GM)

A Game Master is a player that serves the roles of referee, storyteller, and actor within a role play environment.

### 6.1.3 Game Master Non-Player Character (GMNPC)

A GMNPC is a non-player character that has been deemed significant enough to the story that it needs to be played by the game master directly. This is typically reserved for primary antagonists or characters who have secret knowledge that the GMs are not ready for other players to know.

### 6.1.4 HTTP (Hypertext Transfer Protocol)

A protocol which allows the fetching of resources, such as HTML documents.

### 6.1.5 HTTPS (Hypertext Transfer Protocol Over Secure Socket Layer)

A protocol which allows the fetching of resources, such as HTML documents that does so over a connection encrypted by the Secure Socket Layer (SSL) protocol.

### 6.1.6 Interface

A device or program allowing the user to communicate with the system.

### 6.1.7 IPv6 (Internet Protocol version 6)

The communications protocol that provides an identification and location system for computers on networks and routes traffic across the Internet.

### 6.1.8 Non-Player Character (NPC)

A non-player character is a character that serves to support the player characters and make the world feel alive. NPCs typically do not have agency to affect the world at large.

### 6.1.9 Operating System

The software that supports a computer's basic functions.

### 6.1.10 OAuth2 (Open Authentication 2)

OAuth is an open standard for access delegation, commonly used as a way for Internet users to grant websites or applications access to their information on other websites but without giving them the passwords.

### 6.1.11 Player Character (PC)

Player characters are the focus of the story. They have the most agency to affect the world around them. Player characters are typically only ever played by one singular player and are typically retired when the player can no longer participate.

### 6.1.12 Server

A computer or computer program which manages access to a centralized resource or service in a network.

### 6.1.13 SQL (Structure Query Language)

A standardized query language for requesting information from a database.

#### 6.1.14 Stakeholder

A person with an interest or concern in something, especially a business.

#### 6.1.15 TCP (Transmission Control Protocol)

TCP is a communication protocol that focuses on ensuring that every packet is sent and received in good working order.

#### 6.1.16 User

A person who operates the system or computer.

#### 6.1.17 Virtual Reality (VR)

Virtual reality (VR) is a simulated experience that can be like or completely different from the real world. Applications of virtual reality include entertainment (particularly video games), education (such as medical or military training) and business (such as virtual meetings).

#### 6.1.18 VR Chat (VRC)

VR Chat is an online virtual world platform. Created by Graham Gaylor and Jesse Joudrey and operated by VR Chat, Inc

#### 6.1.19 VR Chat Role Play (VRC RP)

A VR Chat Role Play is a role-playing experience that occurs within the game VR Chat. VRC RPs typically involve several Game Masters who craft a story for a cast of Player Characters.

#### 6.1.20 Website

A location connected to the internet that maintains one or more pages on the World Wide Web.