



SPACE SURFER

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PROJECT OVERVIEW

GOALS

Enhance Productivity: Offer an all-in-one user-friendly platform that provides tools and features that not only accelerate daily productivity but also streamline the reservation process, eliminating time-consuming searches and ensuring hassle-free bookings.

Effective Administrative Control: Offer tools and controls that enable effective administrative oversight and management of reservations and floor plans.

Specialized Features For Employee Reservations: Equip employees with specialized features for reserving spaces, and utilities within their office environment, accommodating for both in-person and remote employees.

Facilitating Access and Convenience For General Users: Ensure that general users can effortlessly discover and reserve a wide range of amenities, providing them with a convenient and seamless experience when planning their activities.

VALUES

The value of Space Surfer comes from its ability to help users be more productive in their work and personal lives by eliminating the need to manually find places to work, facilities, tools, and utilities to use, and services to rent. Not only is our website valuable for the general public to use, but also for employers and facility managers who wish to streamline their company's use of space. Therefore, providing a site specializing in reservations is great for efficiently allocating spaces for use as well as promoting a busy and productive environment. Through our website's scope, which expands beyond just office spaces, we

create a convenient place for all types of work, both professionally and recreationally, to be done.

BUSINESS DRIVERS

Boosted Workplace Productivity: By streamlining the reservation process through the platform, SpaceSurfer aims to improve both individual and team productivity. This ensures that time isn't wasted in finding or managing spaces, but rather invested in productive tasks.

Cost Reduction: Organized allocation and use of office spaces can lead to significant savings. By preventing overbooking, underutilization, or mismanagement of spaces, the platform directly impacts organization costs.

Effective Administrative Oversight: Strong administrative management is at the heart of the platform. This allows for agile adjustments, ensuring that the office spaces and facilities are always aligned with the organization's needs.

PROJECT SCOPE

SpaceSurfer will be designed to streamline facility management for various organizations, spanning from office spaces to public amenities like restaurants, libraries, and parks.

SpaceSurfer prioritizes reservation accuracy and respects time constraints, allowing users to book up to one week in advance. Focusing on security, SpaceSurfer implements robust measures in place to safeguard sensitive data across all facility types, ensuring compliance with privacy regulations. SpaceSurfer cannot be used to directly communicate between employees and managers.

Initial System:

- Single-page web application
- Be available in Irvine, California
- PST timezone
- Utilizing the Imperial System
- Support American English Language
- Score of 75 or more for every category on Google's Pagespeed Insights

Support:

- Standard desktop display resolution (1920 x 1080)
- Tablet and phone display resolutions
- Compatible with browsers using Google Chrome version 105.0.5195.127 or later

USER TYPE REQUIREMENTS

	Super Admin	Company Manager	Public Facility Manager	Employee	General User
Add/delete floor plans	Yes	Yes	Yes	No	No
Add/delete inventory	Yes	Yes	No	No	No
Delete/Modify users' reservations	Yes	Yes (only reservations within the office building)	Yes	No	No
View all bookings	Yes	Yes (only bookings within the office building)	Yes (only bookings in corresponding facility)	No	No
Delete other user's account	Yes	Yes (only employees)	No	No	No
Manage user permissions	Yes	No	No	No	No
Reserve available spaces	Yes	Yes	Yes	Yes	Yes
Delete/modify personal reservations	Yes	Yes	Yes	Yes	Yes
Add/delete rentable inventory for employees	Yes	Yes	No	No	No
Add/delete reservable parking spots	Yes	Yes	No	No	No
Delete account and all saved information	Yes	Yes	Yes	Yes	Yes
View floor plan	Yes	Yes	Yes	Yes	Yes
Rent out inventory	Yes	Yes	No	Yes	No
Provide feedback about reserved space	Yes	Yes	Yes	Yes	Yes
Create accounts for employees	No	Yes	No	No	No

Super Admin

- Full Control Over Resources: The Super Admin is empowered to add or delete floor plans and inventory, and manage inventory for employees and reservable parking spots, ensuring comprehensive management over the system's resources.
- User and Reservation Management: This role can delete or modify reservations made by users and view all bookings across the platform
- User Account Control: The Super Admin can delete other users' accounts (including Company Manager, Public Facility Manager, General User, and Employee) and manage their **permissions, ensuring secure and appropriate access across the platform.**

Company Manager

- Resource and Office Management: Company Managers have the capability to add and delete floor plans, inventory, reservable parking spots, and rentable inventory specific to employees, enabling them to tailor the system to their company's needs.
- Reservation Oversight: They can delete and modify reservations within their office building and view these specific bookings, allowing them to manage and adapt to their company's space utilization.
- Employee Management: Company Managers can delete the accounts of employees and create new accounts for them, ensuring the system's user base is accurate and up-to-date.

Public Facility Manager

- Facility-Specific Oversight: Public Facility Managers can add/delete floor plans and also have the ability to view them, ensuring they can effectively manage and monitor the physical spaces within their facility.
- Reservation Management: They can delete reservations made to their spaces by users and view all bookings within their facility, allowing them to ensure efficient usage of the space.

Employee

- Limited Interaction: Employees can reserve available spaces and modify or delete their personal reservations, allowing them to utilize available spaces for their needs.
- Feedback Provision: They also have the ability to provide feedback about reserved spaces, which can inform future improvements and adaptations.
- Inventory Usage: Employees can rent inventory that their Company provides, ensuring they have the resources they need for effective utilization of spaces.

General User

- Basic Usage and Feedback: General Users can reserve available spaces from facilities, delete or modify their personal reservations, view floor plans for facilities, and provide feedback about reserved spaces

PHASE 1 REQUIREMENTS

User Data Protection Manager (CPRA)

1. **CPRA - 01 (Effort points: 60)**

As a registered, logged in user, I want the ability to access all Personally Identifiable Information (PII) data collected about me, so that I can be fully informed of the extent and type of information the platform holds about me, allowing me to exercise my rights in line with data protection regulations.

2. **CPRA -02 (Effort points: 40)**

As a registered, logged in user, I want the ability to delete all PII data collected about me, so that I have control over my personal data, ensuring my privacy rights are respected.

Required Input(s)

User inputs are required to verify that the user is who they say they are.

- Username
 - Must match username of logged in user
- Password
 - Must match password for logged in user account

App Permissions

- View, delete
- Scope: PII data

Target Audience

- All registered users who wish to access their PII data collected in the database and be able to delete them

Pre-conditions

- Users must be registered and logged in
- User must access the profile personalization page

Success Outcome(s) - CPRA 01

Backend

- For CPRA 01: User's data will be available for the user to download as a .txt file within 3 min of submitting a request

- Correct data is pulled from the data store
- Data is read into a .txt file and is sent to the user's email
- For CPRA 02: information will be deleted from the database within 5 seconds
 - User's account will be deleted from the database
- Operation is logged
 - Record of successful data request
 - Timestamp

Frontend

1. After clicking the option to request for access to PII data, user will be prompted to enter the required inputs
2. After credentials are successfully checked, user will be prompted with a request successfully submitted message within 3 seconds
3. Within 3 minutes of submission, user should receive an email with a .txt file they can download to view their data
 - Email will contain a message letting the user know that they requested their PII information (with a timestamp of request) as well as the .txt file
4. For CPRA 02: user will receive a pop up letting them know that if they delete their PII data, their account will also be deleted
 - Clicking cancel on the popup will close the pop up and the operation will not go through
 - Clicking ok will allow the operation to go through
5. For CPRA 02: user will receive a message on the screen within 5 seconds letting them know their data has been deleted
 - Message will be displayed on screen, not as a popup
 - User will be redirected to the homepage as an unregistered and logged out user within 5 seconds of deletion
 - Users will not be able to log back in using their deleted credentials without having registered with those credentials again
 - Users can register a new account using credentials that have previously been deleted
6. For CPRA 02: user will also receive an email confirmation that their PII data has been deleted as well as their account as a result
 - Email will contain a message letting the user know their PII data has been deleted, their account has also been deleted, and a timestamp of when everything was deleted

Failure Outcome(s)

Backend

- Submission button does not work and a request for access does not go through

- Error is logged with timestamp
- .txt from the email contains incorrect information or no information at all
 - User can resubmit request
- Email is sent to the wrong recipient
- For CPRA 02: information is not deleted from the database within 5 seconds
 - User's account is not deleted from the database
 - User can resubmit request to delete information
 - Error is logged with timestamp
- Operation is not logged:
 - No record of successful data request or timestamp

Frontend

- Input Error:
 - This whole stepped is skipped and users can continue without authorization through entering correct credentials
 - Users enter the wrong credentials and are still able to continue
 - Users enter the correct credentials and cannot continue
 - Error message "Invalid User Inputs" will be displayed
 - User must resubmit inputs
 - Error is logged with timestamp
- After clicking the option to request for access to PII data, user is not prompted with success message within 3 seconds
 - Success message is incorrect or blank
- User does not receive an email with their downloadable .txt file containing their PII data within 3 min of submitting a request
 - Downloadable .txt file cannot be downloaded

Success Outcome(s) - CPRA 02

Backend

- Information will be deleted from the data store within 5 seconds
 - User's account will be deleted from the data store
- Operation is logged
 - Record of successful information deletion is logged with timestamp

Frontend

1. User will receive a pop up letting them know that if they delete their PII data, their account will also be deleted
 - Clicking cancel on the popup will close the pop up and the operation will not go through
 - Clicking ok will allow the operation to go through
2. User will receive a message on the screen within 5 seconds letting them know their data has been deleted

- Message will be displayed on screen, not as a popup
 - User will be redirected to the homepage as an unregistered and logged out user within 5 seconds of deletion
 - Users will not be able to log back in using their deleted credentials without having registered with those credentials again
 - Users can register a new account using credentials that have previously been deleted
3. User will also receive an email confirmation that their PII data has been deleted as well as their account as a result
- Email will contain a message letting the user know their PII data has been deleted, their account has also been deleted, and a timestamp of when everything was deleted

Failure Outcome(s)

Backend

- Information is not deleted from the database within 5 seconds
 - User's account is not deleted from the database
- Operation is not logged:
 - No record of successful data deletion request or timestamp

Frontend

- User is not prompted with a message confirming that they understand their account will also be deleted if they request to delete all PII data
 - Clicking cancel doesn't close the prompt
 - Clicking cancel continues with the operation
 - Clicking ok doesn't close the prompt
 - Clicking ok doesn't continue with the operation
- User does not receive a message on the screen within 5 seconds letting them know their data has been deleted
 - Error is logged with timestamp
- User does not receive email confirmation of the operation
 - Email contains incorrect information or no information at all
 - Email is sent to the wrong recipient
- User is not redirected to the homepage as an unregistered and logged out user within 5 seconds of deletion
 - User is redirected to the wrong page
 - User is still logged in after being redirected
- Users are able to log back in using their deleted credentials (without having registered with those credentials again)
 - Error is logged with timestamp
- Users cannot register a new account using credentials that have previously been deleted
 - Error is logged with timestamp

Account Management Center

Registration

1. **Reg - 01 (Effort points: 25)**

As an unregistered general user, I want to be able to register for an account on the platform, so that I can use registered, general-user features.

2. **Reg - 02 (Effort points: 30)**

As an unregistered company manager, I want to be able to register an admin account on the platform, so that I can use registered company manager features, employee features, and general user features.

3. **Reg - 03 (Effort points: 30)**

As an unregistered public facility manager, I want to be able to register an admin account on the platform, so that I can use registered facility manager features and general user features.

Required Input(s)

User inputs are required in order to collect essential information, which facilitates the creation of a unique user profile. This data aids in account identification, communication, and secure authentication processes.

- First name
 - Min: 1 character
 - Max: 50 characters
 - a -z
 - A - Z
 - No special symbol characters
 - No numerical numbers
- Last name
 - Min: 1 character
 - Max: 50 characters
 - Valid lowercase letters: a - z
 - Valid uppercase letters: A - Z
 - No special symbol characters
 - No numerical numbers
- Username
 - Must be unique
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ .
 - cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith)
 - Min: 5 characters
 - Max: 20 characters
- Email

- Must be unique
- Local part:
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ . -
 - cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith@gmail.com)
- Domain part:
 - domain name:
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ .
 - cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith@gmail.com)
 - TLD:
 - string specific
 - “.com”, “.net”, “.gov”, “.org”, etc.
- @ symbol must divide the local and domain parts
- Password
 - Must be unique
 - Min: 8 characters
 - Max: 20 characters
 - All special characters valid
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
- For Reg-02 and Reg-03, Managers will also need:
 - Company/Facility name
 - Must be unique
 - Min: 3 characters
 - Max: 20 characters
 - All special characters valid
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Company/Facility location
 - Must be unique
 - Must be formatted: building number street name, city, state
 - Must be in Irvine, California
 - Indication of private company or facility
 - Checkbox that manager is registering a private company or public facility

Data Source

- Origin = External
- Type = API
- Details: External API will be used to valid that company/facility being registered is in Irvine, California
- AuthN: TBD

App Permissions

- Permission: Register
- Scope: New Account

Target Audience

- Users with an interest in using the SpaceSurfer who have not yet created an account

Pre-conditions

1. Able to access SpaceSurfer site
2. Not yet be registered with login data the user wants to use

Success Outcome(s)

Backend

- User account is created
 - All inputted information is uploaded to the data store
 - Operation is logged
 - Inputs are added into their respective columns in the User Account table in the data store
 - Timestamp of the account creation will also be added to the table.
- User type is assigned to allow for features to only be applicable and useable to user types that are authorized to have those features available

Frontend

1. Users can click on the initial register button, which will direct them to the registration page within 3 seconds
2. On the registration page, users can input data into the required input fields
3. After inputting valid information into the required inputs on the registration page, user can click register (the register button on the registration page to submit registration)
4. After clicking register, user is prompted within 3 seconds (on screen, not in pop-up) that an email confirmation has been sent to their email and that they must click on the link provided in the email to complete registration
 - Email will contain a message letting the user know that they have registered and that they must click on the link provided in the email to finish registration by logging in
 - The link will redirect the user to the login page within 5 seconds
 - Receiving an email verifies that the user used a valid email address (one that they

can access and one that exists).

5. After being redirected to the login page upon clicking the link in their email, user is able to login and is redirected to their respective user type homepage within 3 seconds
6. User has access to all features available to their user type upon logging in

Failure Outcome(s)

- User cannot click the button to register
- Clicking the register button doesn't direct them to the registration page within 3 seconds
 - Error is logged with timestamp
- Registration page is invalid
 - Page is blank or has incorrect format/information
 - User is directed to a different page
- Required data inputted by the user is not valid
 - System display error message, "Invalid User Inputs"
 - User must resubmit until valid inputs are entered
 - Error is logged with timestamp
 - Users do not stay on the registration page
- Form submission does not go through and data is not saved to the database in their respective tables and columns
- After clicking register, user is not prompted within 3 seconds that an email confirmation has been sent to their email
 - Email does not contain a message letting the user know that they have registered and that they must click on the link provided in the email to finish registration by logging in
 - Link is not provided in the email
 - Link is not correct
 - The link does not redirect the user to the login page within 5 seconds
 - Email is sent to the wrong recipient
 - User can resubmit registration form
- User account is created, but login does not work
- Operation is not logged correctly or at all
 - User inputs from the required inputs section is inserted into the wrong table
 - Inputs are inserted into the wrong columns within the correct table
 - No inputs are inserted into the database at all
- The wrong user type is assigned and the user is able to access features not applicable to them

Profile Personalization

1. PP - 01 (Effort points: 20)

As a logged in user, I want to be able to update and view my account information on the platform, so that I can keep my information accurate and up-to-date.

2. PP - 02 (Effort points: 5)

As a logged in company manager, I want to also be able to update and view my company's location as it appears on my profile, so that I can ensure that the company's location is accurately represented.

3. **PP - 03 (Effort points: 5)**

As a logged in public facility manager, I want to also be able to update and view the location of my public facility as displayed on my profile, so that visitors and users of the facility can easily find us.

Optional Input(s)

User inputs in this section are optional. They're here to offer flexibility and personalization within the app if users decide to use them.

- First name
 - Min: 1 character
 - Max: 50 characters
 - No special symbol characters
 - No numerical numbers
- Last name
 - Min: 1 character
 - Max: 50 characters
 - No special symbol characters
 - No numerical numbers
- Password
 - Must be unique
 - Min: 8 characters
 - Max: 20 characters
 - All special characters valid
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
- For PP-02 and PP-03, Managers will also have access to update:
 - Company/Facility location
 - Must be unique
 - Must be formatted: building number street name, city, state
 - Must be in Irvine, California

Data Source

- Origin = External
- Type = API
- Details: External API will be used to valid that company/facility being registered is in Irvine, California
- AuthN: TBD

App Permissions

- Update, view
- Scope: Profile

Target Audience

- All registered users who wish to add/update information on their profile.

Pre-conditions

- Users must be registered and logged in
- Users must access profile page

Success Outcome(s)

Backend

- Changes are updated on the database upon save
 - Fields that have been updated will have their changes be reflected in the correct table and column
- Operation is logged
 - Record of successful information update
 - Timestamp

Frontend

- Correct information is displayed on profile page upon loading onto the Profile Personalization page
- Users can click the “Edit” button and have access to edit the optional inputs (respective to their user type)
 - Users stay on the same page, but the input fields can now be changed
- If changes are submitted and valid, new information will be reflected on profile within 3 seconds of submission
- After clicking the submit button, the user stays on the same page and is not redirected anywhere else

Failure Outcome(s)

Backend

- Changes are not updated on the database upon save
 - Fields that have been updated are inserted/updated into the incorrect table or column in the database

Frontend

- Incorrect data is displayed upon loading the Profile Personalization page
- Users are unable to click the “Edit” button
- Clicking the “Edit” button redirects the user to some other page
- Clicking the “Edit” button does not give the user access to edit the optional inputs
- User enters invalid data
 - Error message “User inputs are invalid” will be displayed
 - User must resubmit entry until it is valid
- User is redirected to a different page upon clicking the submit button either with valid or invalid inputs
- Changes are not reflected on the website within 3 seconds of submission

- Error is logged with timestamp
- Operation is not logged
 - No record of successful information update or timestamp

Account Deletion

1. AD - 01 (Effort points: 30)

As a logged in user, I want to have the option to delete my account and all associated data, so that I can have control over my personal information, ensuring my privacy and data security are maintained.

2. AD - 02 (Effort points: 5)

As a logged in company manager, when I delete my account, I want all accounts of my employees to also be deleted, so that I can protect corporate information.

3. AD - 03 (Effort points: 5)

As a facility manager, I want my facility information to be deleted and made unviewable to other users upon the deletion of my account, so that I can manage the visibility and accessibility of my facility's information, safeguarding against unauthorized use from the public.

Required Input(s)

User input is required in order to verify that the user does intend to proceed with the account deletion process. This is crucial for preventing accidental or unauthorized deletion requests, safeguarding users' data and accounts from inadvertent loss.

- Password
 - Must be unique
 - Min: 8 characters
 - Max: 20 characters
 - All special characters valid
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9

App Permissions

- Permission: delete
- Scope: user account

Target Audience

- All registered users who wish to delete their account (permanently) and have their data removed.

Pre-conditions

1. Users must be registered and logged in
2. User indicates request to delete account
3. Users must enter a password to confirm deletion is authorized

Success Outcome(s)

Backend

1. User's password entry will be cross-checked within the database
2. User's account will be removed from the database along with all the information pertaining to it
3. Operation is logged
 - Record of successful request and timestamp

Frontend

1. Upon clicking the "Delete Account" button, user is prompted to enter their password in a pop-up
 - Clicking cancel will exit the pop-up and the user will remain on the same page
 - After inputting the correct password and clicking ok, the pop-up will exit and the user will remain on the same page
 - Inputting an incorrect password prompts the user with an error message
 - Error message tells the user the password is incorrect
 - The pop-up remains
 - The password field can still be updated after clicking ok
2. Within 3 seconds of submitting their password, the user will be prompted a message on screen indicating that their account has been successfully deleted and that they will be redirected to the homepage
3. The user will receive an email within 5 seconds of submission confirming that their account has been deleted
 - Email is sent to the correct recipient
 - Email will contain a message letting the user know that their account has been deleted
4. The user is redirected to the SpaceSurfer homepage as a logged out and unregistered user within 3 seconds of submission
5. For AD - 02, all company manager's employee accounts will be deleted as well
6. For AD - 03, facility manager's location will be deleted and no longer viewable for other users
7. Users will no longer be able to login to their deleted accounts without having to register with those credentials again

Failure Outcome(s)

Backend

- Invalid password
 - Error message "Invalid user inputs" will be displayed with timestamp
- The user's account and data is not removed from the database

Frontend

1. The “Delete Account” button does not prompt user to enter password
 - User can refresh page to try again
2. Within 3 seconds of submitting their correct password, the user is not prompted a message on screen indicating that their account has been successfully deleted and that they will be redirected to the homepage
 - Error is logged with timestamp
3. The user does not receive an email within 5 seconds of submission confirming that their account has been deleted
 - Email is sent to the wrong recipient or no recipient at all
 - Email does not contain a message letting the user know that their account has been deleted
 - Error is logged with timestamp
4. The user is not redirected to the SpaceSurfer homepage as a logged out and unregistered user within 3 seconds of submission
5. For AD - 02, all company manager’s employee accounts are not deleted as well
6. For AD - 03, facility manager’s location are not deleted and are still viewable for other users
7. Users can still login to their deleted accounts without having to register with those credentials again

Account Recovery

1. AR 1 (Effort points: 30)

As a user, I want to be able to securely recover my password, so that I can regain access to my account without compromising the security of my personal information.

Required User Inputs

User inputs are required in order to verify the identity of the individual attempting to recover the account and ensure the security of the account recovery process.

1. Click “Forgot Password” in login page
2. Email
3. Click recovery link sent through email
4. Input new password
 - Min: 8 characters
 - Max: 20 characters
 - Valid characters:
 - a - z
 - A - Z
 - 0 -9
 - All special characters
5. Confirm password
 - Password must match first input

App Permissions

- Permission: Recover
- Scope: Account

Target Audience

- All registered users who have forgotten their password and wish to recover it securely.

Pre-conditions

- User must be registered
- User must know the email used to register account
- User must be on login screen

Success Outcome(s)

Backend:

- Password is updated in data store within 10 seconds of submission
 - old password is replaced by new password
- Operation is logged
 - Successful updated password
 - Timestamp

Frontend:

- User receives an email with the recovery link within 1 minute.
- Link redirects user to page where they are prompted to make a new password
 - 'Confirm new password' input will also be included
- User is able to login with new password

Failure Outcome(s)

Backend:

- Password is not updated in data store
 - Old password remains in field
 - Error will be logged with timestamp
- Operation is not logged
 - No record of successful updated password
 - No record of timestamp of updated password

Frontend:

- Email is not sent within 1 minute
 - User can request to have recovery email resent
 - Error will be logged with timestamp
- Link sent does not redirect user to the correct page
- New password is invalid
 - Error message "New password is invalid" will be displayed and password will not be updated
 - User can resubmit request to recover password
 - Error is logged with timestamp
- Password is not updated and user cannot login with new password

- User can resubmit request to recover password
- Error is logged with timestamp

Employee Account Setup

1. AMS - 01 (Effort points: 30)

As a registered Company Manager, I want the ability to create accounts for my employees using their respective company email addresses, so that I can ensure that all employees have access to necessary resources and platforms promptly and securely.

2. AMS - 02 (Effort points: 12)

As an unregistered employee of a company, I want to be able to verify and complete registration through the link sent to my company email address, so that I can confirm my identity and finalize my account setup efficiently, enabling me to start using the platform's services.

Required User Input(s)

Company Manager inputs are required in order to set up and give access to their new employees. Employee inputs are required in order to validate accounts and set up a password.

1. For AMS-01, Company Manager must Input:

- Employee first name
 - Valid Characters:
 - Min: 1 character
 - Max: 50 characters
 - a - z
 - A - Z
 - Invalid Characters:
 - Special symbol characters
 - Numerical values
- Employee last name
 - Valid Characters:
 - Min: 1 character
 - Max: 50 characters
 - a - z
 - A - Z
 - Invalid Characters:
 - Special symbol characters
 - Numerical values
- Employee email
 - Must be unique
 - local part:
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ . -

- cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith@gmail.com)
 - domain part:
 - domain name:
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ .
 - cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith@gmail.com)
 - TLD:
 - string specific
 - “.com”, “.net”, “.gov”, “.org”, etc.
 - @ symbol must divide the local and domain parts
 - Employee username
 - Must be unique
 - Valid Characters:
 - Min: 5 characters
 - Max: 20 characters
 - a - z
 - A - Z
 - 0 - 9
 - _ .
 - Invalid Characters:
 - All other special symbol characters
2. For AMS-02, Employee must:
- Click verification link sent to company email address
 - Set up password
 - Min: 8 characters
 - Max: 20 characters
 - Valid characters:
 - a - z
 - A - Z
 - All special characters

App Permissions

- Permission: Register
- Scope: Employee Account

Target Audience

- Company managers and their employees

Pre-conditions

1. The Company Manager must be logged in to their account.
2. Company Manager must be on add account page
3. Employees must have a company email address associated with the business.

Success Outcome(s)

Backend:

- Information inputted by company manager is added to the data store
 - Employee username
 - Employee first and last name
 - Employee email
 - User type: Employee
- Employee password is added to the data store
- Operation is logged
 - Successful employee account creation and timestamp
 - Successful employee password creation and timestamp

Frontend:

- Employee receives email within 3 minutes of employer submission
 - Link in email redirects employee to page to input password
- Employee is able to login within 5 seconds of creating password
- Employee has access to employee user type functionalities

Failure Outcome(s)

Backend:

- Information inputted by company manager is not added to the data store
 - No information is added
 - Employee account is not created
 - Error is logged with timestamp
- Employee password is not updated in database
 - Registration is not complete, because password was not saved
 - Error is logged with timestamp
- Operation is not logged
 - No record of account creation and timestamp
 - No record of employee password setup and timestamp
 - Error is logged with timestamp

Frontend:

- Employee does not receive an email within 3 minutes of employer submission
 - Company Manager must re register an employee account
 - Error is logged with timestamp
- Link in email does not redirect employee to the correct page
 - Employee can re click the link
- Employee enters an invalid password
 - Error message "New password is invalid" will be displayed
 - Employee must resubmit password until valid
 - Error is logged with timestamp
- Employee is unable to login within 5 seconds of successfully creating password

- Error is logged with timestamp

User Security

Authentication:

1. **Authen-01 (Effort Points: 15)**

As an unauthenticated anonymous user, I want to authenticate my identity when accessing my registered account to ensure a secure experience on the platform.

2. **Authen-02 (Effort Points: 15)**

As a registered user, I want to authenticate my identity when logging into my account to ensure a secure experience on the platform.

3. **Authen-03 (Effort Points: 10)**

As an authenticated user, I can log out of my account via the Account Center, or the system will automatically log me out after one hour of an inactive session in order to ensure a secure experience on the platform.

Required Input(s)

User inputs are required to verify the user's identity.

- Username
 - Must be unique
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ .
 - cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith)
 - Min: 5 characters
 - Max: 20 characters
- Password
 - Must be unique
 - Min: 8 characters
 - Max: 20 characters
 - All special characters valid
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
- For Authen-01: Unauthenticated Anonymous user will require:
 - Email
 - Must be unique
 - local part:
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ . -

- cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith@gmail.com)
- domain part:
 - domain name:
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ .
 - cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith@gmail.com)
 - TLD:
 - string specific
 - “.com”, “.net”, “.gov”, “.org”, etc.
- @ symbol must divide the local and domain parts

Data Source

- Origin = Internal
- Type = Web API
- Details =
 - As a user becomes registered to the application, the data will be read and determine what role is given for that specific user.
 - The user can be given two roles that will guide their access through the use of the application:
 - Public: Access given to the majority of the users that will allow them to use the application like any other user would
 - Private: Access given to employees and developers/admins that will allow them access to information and data that public users would not be able to access normally
- AuthN = TBD

App Permissions:

- Authorization
 - Scope: user role based access and permissions to features
- Login
 - Scope: access to registered account
- Logout
 - Scope: sign out of registered account and close access

Target Audience:

- Authorized registered users

Pre-conditions:

- Registered an account

- User provided a unique valid user name
- User provided a unique valid email address
- User provided unique, strong password correlated to registered account

Success Outcome(s):

- Login
 - Successful log is logged with timestamp
 - Role is assigned
 - Permissions and access granted based on role given
 - User should be automatically granted permissions access on their account within 5 seconds
- Logout
 - User will be redirected to login page after successful logout within 3 seconds
 - User will be automatically logged out after 1 hour of an inactive session
 - Successful logout message will appear within 3 seconds
 - Successful logout is logged

Failure Outcome(s):

- User is not registered
- User inputted incorrect or invalid information
 - Error message, “Invalid user inputs” will be displayed
 - Error is logged with timestamp
- Account is locked after 5 failed attempts of logging in
- User must reset password if unable to log in using “Forgot Password” feature

Authorization:

1. ***Autho-01: (Effort Points: 10)***
As a Super Admin, I want to ensure the users navigating this site are authorized to be granted the correct user role access.
2. ***Autho-02: (Effort Points: 10)***
As a Company Manager, I want to ensure the users navigating this site are authorized to be granted the correct user role access.
3. ***Autho-03: (Effort Points: 10)***
As a Public Facility Manager, I want to ensure the users navigating this site are authorized to be granted the correct user role access.

Required User Input(s)

User inputs are required to identify user account roles.

- Email
 - Must be unique
 - local part:
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ . -

- cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith@gmail.com)
- domain part:
 - domain name:
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ .
 - cannot start with a valid special character nor have consecutive special characters (e.g., John..Smith@gmail.com)
 - TLD:
 - string specific
 - “.com”, “.net”, “.gov”, “.org”, etc.
 - @ symbol must divide the local and domain parts
- Role Selection
 - Valid Inputs: General User, Employee, Public Facility Manager, Company Manager, Super Admin
- For Autho-01, Super Admin will require: User Permissions
 - Must give RBAC and associated permissions per user role
- For Autho-02, Company Manager will require: Employee Type
 - Valid Inputs: Company Manager, Employee

App Permissions:

- Permission: View, Edit
 - Facility spaces
- Permission: Reserve
 - Scope: Spaces / Inventory
- For Autho-01: Company Accounts, Inventory
 - Company Accounts: Allow associated User Permissions for corresponding company accounts
 - Inventory: Access to view and edit list of inventory items
- For Autho-02: Employee Accounts, Inventory
 - Employee: Identify account type for each employee user
 - Inventory: Access to view and edit list of inventory items

Target Audience:

- Registered users given RBAC and associated permissions with their user role

Pre-conditions:

1. Registered an account
2. Authenticated user account identity
3. Logged into user account

Success Outcome(s):

- User granted to assigned role
- User given role-based access to features
- Web page must be automatically refreshed within 3 seconds in order for the user to have permission access
- Operation of successful authorization is logged with timestamp

Failure Outcome(s):

- User does not gain required access
- User granted incorrect role
- User was given unrestricted access
- User is unauthorized or unauthenticated
- Restricted access error message will appear within 3 seconds after attempt

Space Manager

Reservable Space Creator:

1. RSC - 01 (Effort Points: 80)

As Company Manager, I want to have the capability to upload images of my offices' floor plans to the platform, so that I can provide clear spatial layouts to employees, enhancing their ability to navigate through the office spaces.

2. RSC - 02 (Effort Points: 10)

As Public Facility Manager, I want to be able to upload an image of my facility's floor plan, so that users can have accessible visual guides, which assist in easy navigation.

Required Inputs

User input is required in order to provide a visual representation of the space layout. This aids in better understanding, navigation, and utilization of the space by employees, visitors, or users of the facility.

- Floor plan image
 - Valid Image Type: JPEG or PNG
 - Max size: 0.5 MB
 - One image can be uploaded at a time
 - Image must be labeled with space ID on each individual available space
 - Space ID must be unique to floor plan
- Image name
 - Must be unique within the company
 - For example, a company cannot have two floor plans in building with the same name
 - Valid Input:
 - Min : 2 characters
 - Max: 50 characters

- a - z
- A - Z
- 0 - 9
- Invalid Characters:
 - Special characters
 - Spaces

App Permissions

- Permission: Upload image
- Scope: Space Management

Target Audience

- Company Manager or Public Facility Manager responsible for managing office spaces and resources.

Pre-conditions

- Managers must be logged into SpaceSurfer
- Managers must be on Space Manager page

Success Outcome(s)

Backend:

- Image name is added to data store
- Operation is logged
 - Successful image uploaded to server
 - Time stamp

Frontend:

- Image and image name is uploaded onto company/facility page within 5 seconds of submission

Failure Outcome(s)

Backend

- Image is not uploaded to the server
 - Managers can reupload image
- Operation is not logged
 - No record of successful image upload

Frontend

- Image name or image file is invalid
 - Error message will popup "Invalid user inputs"
 - Manager must resubmit with valid inputs
 - Error is logged with timestamp
- Image and image name is not displayed properly on company/facility page within 5 seconds of submission

List of Reservable Spaces:

1. LRS -01 (Effort Points: 50)

As a Company Manager or Public Facility Manager, I want to be able to create a list of reservable spaces that will be located below the floor plan image, so that users can easily identify, select, and reserve available spaces efficiently.

2. LRS - 02 (Effort Points: 10)

As a Company Manager or Public Facility Manager, I want to be able to specify the time limit for each space I add, so that users are aware of the duration for which they can reserve a space and spaces are utilized in an orderly manner.

Required Inputs

User input is required to generate a list that accurately represents the available reservable spaces. This information ensures that the listed spaces are easily recognizable to users.

- Space ID
 - Valid Input:
 - Min: 2 characters
 - Max: 10 characters
 - a - z
 - A - Z
 - 0 - 9
 - Invalid Input:
 - Spaces
 - Cannot upload more than 50 spaces per floor plan
 - Space ID must match Space ID in floor plan image
- Time limit
 - Minimum: 1 hour
 - Maximum : 12 hours
 - Valid Characters:
 - 0 - 9
 - Invalid Characters:
 - a - z
 - A - Z
 - All special character symbols
 - System assumes all numbers entered represent hours

App Permissions

- Permission: List
- Scope: Reservable Spaces

Target Audience

- Company or Facility Manager who wants to curate a list of available spaces for users to reserve

Pre-conditions

- Manager must be logged in
- Manager must have already uploaded floor plan image

Success Outcome(s):

Backend

- Space ID and corresponding time limit is added to the data store
- Operation is logged
 - Record of successful data upload
 - Timestamp

Frontend

- List of spaces is displayed underneath the corresponding floor plan image within 5 seconds of submission
- Each space ID is unique
- List of spaces are shown in alphabetical order
- Each spot within the list has a unique ID and time limit displayed to the right of ID

Failure Outcome(s):

Backend

- Space ID is not properly added to the data store
 - Manager can resubmit Space ID
- Operation is not logged
 - No record of successful upload of list of reservable space

Front end

- Invalid space ID or time limit input
 - Error message will popup “Invalid user inputs”, and spaces added will not be submitted
 - Error is logged with timestamp
- List of spaces is not displayed within 5 seconds of submission
 - Error is logged with timestamp
- List of spaces is not shown in alphabetical order
- Time limit is not displayed to the right of the Space ID
 - User can edit the Space and re input the time limit
- Space IDs do not correspond with space IDs displayed in floor plan image

Modify Reservable Spaces:

1. MRS -01 (Effort Points: 50)

As a Company Manager or Public Facility Manager, I want to be able to modify the list of reservable spaces that will be located below the floor plan image, so that I can

ensure the list remains accurate and up-to-date, reflecting any changes in the availability or characteristics of spaces.

2. MRS - 02 (Effort Points: 10)

As a Company Manager or Public Facility Manager, I want to be able to specify the time limit for each space I add, so that users are informed of the maximum duration they can reserve a space for, fostering efficient scheduling and usage of spaces.

Required Inputs

User input is required to modify the reservable space that accurately represents the available reservable spaces. This information allows for adaptive space management, accommodating for alterations in the physical layout or reservation policies of the spaces over time.

- Delete Space ID
 - Must be no ongoing reservation for space manager requests to delete
- Modify time limit
 - Must be no ongoing reservation for space manager requests to delete
 - Minimum: 1 hour
 - Maximum : 12 hours
 - Valid Characters:
 - 0 - 9
 - Invalid Characters:
 - a - z
 - A - Z
 - All special character symbols
 - System assumes all numbers entered represent hours
- Replace image floor plan
 - Must be no ongoing reservation for space manager requests to delete
 - Floor plan image
 - Valid Image Type: JPEG or PNG
 - Max size: 0.5 MB
 - One image can be uploaded at a time
 - Image must be labeled with space ID on each individual available space
 - Space ID must be unique to floor plan
 - Image name
 - Must be unique within the company
 - For example, a company cannot have two floor plans in building with the same name
 - Valid Input:

- Min : 2 characters
- Max: 50 characters
- a - z
- A - Z
- 0 - 9
- Invalid Characters:
- Special characters
- Spaces
- Delete image floor plan
 - Must be no ongoing reservation for space manager requests to delete
 - This will also delete corresponding list of reservable spaces

App Permissions

- Permission: Modify, Delete
- Scope: Reservable spaces, Floor plan image

Target Audience

- Company or Facility Manager who wants to modify or delete the available spaces for users to reserve

Pre-conditions

- Manager must be logged in
- Manager must have already uploaded floor plan image and list of reservable spaces
- There must be no ongoing reservations for space in facility at the time of modification/deletion

Success Outcome(s):

Backend

- Space ID and corresponding time limit is updated to the data store
- Image is updated to server
- Image is deleted from server
 - List of reservable spaces are deleted from the data store
- Operation is logged
 - Record of successful updated data upload
 - Timestamp

Frontend

- Updated information is displayed underneath the corresponding floor plan image within 5 seconds of submission
- Deletion of image floor plan also deletes list of reservable spaces

Failure Outcome(s):

Backend

- New Space ID and corresponding time limit is not properly added to the data store
 - Manager can resubmit information

- Operation is not logged
 - No record of successful modification or deletion reservable space/image floor plan

Front end

- Invalid modification inputs
 - Error message will popup “Invalid user inputs”, and spaces added will not be submitted
 - Error is logged with timestamp
- Image floor plan and corresponding list is not deleted upon request
 - Manager can resubmit request for deletion
 - Error is logged with timestamp
- Reservable space that manager requests to modify/delete is reserved
 - Error message “User has reserved a space under this floor plan” will be displayed
 - Manager will either have to wait until reservation is complete or contact user to cancel reservation
- Changes are not displayed within 5 seconds of submission
 - Error is logged with timestamp

Inventory Catalog

Inventory Upload:

1. IU - 01 (*Effort Points: 15*)

As a registered and logged in Company Manager, I want to be able to upload a list of utilities or tools with a specified quantity so that my employees have access to reserve them

Required User Input(s)

Company Manager inputs are required in order to set up a clear and organized inventory Catalog that reflects available utilities for users.

- Utility Name
 - Type: String
 - Min: 1 character
 - Max: 100 characters
 - Valid characters:
 - lowercase alphabet a-z
 - Uppercase alphabet A-Z
 - Numbers 0-9
 - Special Characters: hyphens, spaces, parenthesis
 - Invalid Characters:
 - Symbols and punctuation marks (e.g., !, @, #, \$, %, ^, &, *, _, +, =, [,] , { , } , | , , , : , ; , ' , < , > , ? , / , . , ~ , ` , etc.)
 - Non-ASCII characters or any character outside the standard ASCII range

- Quantity Available before any Reservations
 - Type: Integer
 - Valid Range: Greater than 0

App Permissions

- Permission: Add
- Scope: Inventory Items

Target Audience

- Company Managers who plan to rent out utilities for their employees

Pre-conditions:

1. Company Managers must be logged onto their SpaceSurfer account using the Company manager layout
2. Company Managers must be on the Inventory Catalog Page

Success Outcome(s):

Backend:

- Utility Information inputted by company manager is accurately added to the data store
 - Utility Name
 - Utility Quantity
- Operation is logged
 - Successful upload of inventory name and quantity
 - Timestamp

FrontEnd:

- Employees are able to view the uploaded utility in list form:
 - Correct Utility Name
 - Correct Quantity available to the right of display name
- Changes are displayed inventory catalog at most 1 minute after changes are made

Failure Outcome(s):

Backend:

- Utility input is not added into the data store
- Operation is not logged
 - Utility Name
 - Utility Quantity
 - Timestamp

FrontEnd:

- Invalid name and quantity inputs
 - Error message "Invalid user inputs" will be displayed
 - User must resubmit utility item until valid inputs are entered
- Changes in inventory catalog occur more than 1 minutes after upload
 - Error is logged with timestamp
- Message displaying error in american english
 - less than 200 characters

Inventory Modification:

1. IM - 01 (Effort Points: 15)

As a logged in Company Manager, I want to be able to remove and update items on the list of utilities my company offers so that it is consistently up to date and accurately reflects all the resources available

Required User Input(s)

Company Manager inputs are required in order to update the inventory Catalog that reflects available utilities for users.

- Utility selection:
 - Company Manager must check which utility to modify or remove
- Action Selection:
 - Company Manager must choose whether to modify or remove
- Action: Modify
 - Quantity Available
 - Type: Integer
 - Valid Range: Greater than 0
- Action: Remove
 - Manager must confirm the removal of the selected utility by clicking the confirm button

App Permissions

- Permission: Modify, delete
- Scope: Inventory items

Target Audience

- Company Managers who plan to rent out utilities for their employees and want to keep the list up to date.

Pre-conditions:

1. Company managers must be logged onto their SpaceSurfer account as a Company manger
3. The Inventory list must have must have at least one item for it to be modified
4. Company Manager must confirm there are no reservations associated with the utility before removing

Success Outcome(s):

Backend:

- Modified utility Information inputted by company manager is accurately added to the data store
 - Utility Quantity
- Deleted utility is deleted from the data store
- Operation is logged
 - Successful modification/deletion of utility

- Timestamp

FrontEnd:

- Employees and Company Managers are able to view the modified utility list in the inventory catalog at most 20 seconds after submission
- Deleted utility is no longer displayed on the inventory list

Failure Outcome(s):

Backend:

- Utility modification is not added into the data store
- Utility is not deleted from the data store
- Operation is not logged
 - No record of successful modification/deletion or timestamp

FrontEnd:

- Company Manager inputs invalid inputs for modification
 - Error message “Invalid user input” will be displayed
 - Error will be logged with timestamp
- Modifications in inventory catalog take longer than 20 seconds to display updated changes after submission
 - Error will be logged with timestamp

Employee Inventory Reservation:

1. EIR - 01 (Effort Points: 30)

As a logged in Employee, I want the ability to reserve available utilities or tools from the inventory catalog, so that I can efficiently plan my tasks and projects, knowing that the tools I require will be available to me.

Required User Input(s):

Employee inputs are required in order to accurately specify their utility needs, schedule their reservation start, and ensure a utility return date and time.

1. Select desired utility from list
 - Examples: Monitor, HDMI cord, Fan ...
2. Specify time frame
 - Start Date Time format : YYYY-MM-DD HH:mm (military time)
 - End Date Time format : YYYY-MM-DD HH:mm (military time)
 - Time between starting date and return date must be greater than one hour
 - Time between starting date and return date must be less than 30 days
 - Can only reserve up to a week in advance
 - User cannot reserve this utility within already reserved time frame

App Permissions

- Permission: Inventory reservation page under company the user is connected to

- Scope: Employees

Target Audience

- Authorized Employees that need or want to use any utilities available on Inventory Catalog that the company offers

Pre-conditions

- Employee must be Logged in
- Employee must be on Utility reservation page

Success Outcome(s):

Backend:

- Reservation Information inputted by Employee is accurately stored to the data store
 - Chosen Utility
 - string
 - Date and time
 - Start Date Time format : YYYY-MM-DD HH:mm (military time)
 - Return Time format : YYYY-MM-DD HH:mm (military time)
 - Employee username
- The Inventory database updates to reflect the new availability status of the reserved utility
 - Decrements quantity of that available utility for specified time frame
 - Increments quantity when time frame is complete
- Operation is logged
 - Record of successful reservation of utility
 - Employee username
 - Timestamp

FrontEnd:

- The complete and updated list of available inventory is correctly displayed to the employee.
 - utilities accurately represent available date, times and quantities
- Updated inventory quantity should be reflected in less than 30 seconds after employee submission
- Confirmation message of reservation information is shown
 - Chosen Utility
 - Reservation time frame
 - Employee username

Failure Outcome(s):

Backend:

- Invalid user inputs

- User input does not follow required format
- Error message “Invalid user inputs” will be displayed and request will not be submitted
- Error is logged with timestamp
- Any Reservation Information inputted by Employee is inaccurately added to the data store
 - incorrect Chosen Utility
 - incorrect Start Date and time
 - incorrect Return Date and time
 - incorrect Employee username
- The Inventory database takes longer than 30 seconds or does not update to reflect the new availability status of the reserved utility
 - no change in quantity of that available utility for specified reserved time

FrontEnd:

- The complete and updated list of available inventory is not correctly displayed to the employee.
 - utilities do not accurately represent available date, times and quantities
- Updated inventory quantity is not reflected in less than 30 seconds after employee submission
 - Error is logged with timestamp
- Confirmation message of reservation information is inaccurately shown or not shown at all
 - Chosen Utility
 - Pick Up Date and time
 - Return Date and time
 - Employee username

Space Booking Center

Availability Display for Reservable Spaces:

1. **ADRS - 01 (Effort Points: 35)**
 As an authenticated user, I want to see visual indicators on facility spaces that clearly distinguish between available and occupied spaces so that it is easier to find an available space to reserve.
2. **ADRS - 02 (Effort Points: 35)**
 As an authenticated Employee, I want to see visual indicators in company building spaces that clearly distinguish between available and occupied spaces so that it is easier to find an available space to reserve.

App Permissions

- Permission: View
- Scope: Space Availability

Target Audience

- All users that wish to see the availability of spots within a floor plan

Pre-conditions

- User must be in the process of reserving a space

Success Outcome(s):

Backend:

- Accurate availability data and reservation schedules are stored in the data store

FrontEnd:

- Spaces have a visual indicator based on their availability
 - green for available
 - red for occupied.
- Shows real time availability
 - Space schedule reflects accurate available and occupied times
 - Date Time format : YYYY-MM-DD HH:mm AM/PM

Failure Outcome(s):

Backend:

- Inaccurate availability data and reservation schedules are stored in the database

FrontEnd:

- Spaces are not color-coded based on their availability
 - Available spaces are not green
 - Occupied spaces are not red
 - There is no visual indicator
- Does not show real time availability
 - Date Time format : YYYY-MM-DD HH:mm AM/PM

Space Reservation :

1. SR - 01 (Effort Points 30)

As a logged in user, I want the ability to reserve a specific space from the list of available spaces showcased on the facility's page, ensuring I have access to the space when needed.

2. SR - 02 (Effort Points 30)

As a logged in Employee, I want the ability to reserve a specific space from the list of

available spaces showcased on the Company's page, ensuring I have access to the space when needed

Required User Inputs

Employee inputs are required in order to accurately specify their space needs, schedule their space reservation time

1. Space Picker
 - Select desired Space ID from list
2. Reservation time frame
 - Start Date Time format : YYYY-MM-DD HH:mm (military time)
 - End Date Time format : YYYY-MM-DD HH:mm (military time)
 - Time between starting time and end time must be at least one hour but max of 12 hours
 - Can only reserve up to a week in advance

App Permissions

- Permission: Reserve
- Scope: Space

Target Audience

- Users that wish to reserve a spot that is suitable for the

Pre-conditions

- User must be logged in
- User must be on space reservation page

Success Outcome(s):

Backend:

- The system correctly records and updates the reservation details in the database
 - Chosen space
 - Space ID
 - Account username
 - Start Date and Time
 - Date Time format : YYYY-MM-DD HH:mm (military time)
 - End Date and Time
 - Date Time format : YYYY-MM-DD HH:mm (military time)
 - Employee username
- The spaces in datastore updates to reflect the new availability status of the reserved space
 - Marks space as occupied for specified reserved time
 - Another user cannot reserve this space within the time frame
 - User cannot reserve for any other space within already reserved time frame
- Operation is logged
 - Successful submission of space reservation will be logged

- Timestamp

FrontEnd:

- The complete and updated list of available spaces is correctly displayed to the user.
 - Spaces accurately represent available schedule
- Updates are reflected on page when space is occupied
- Reservation will be shown in “Personal Overview” within 20 seconds of submission
- Confirmation message of reservation information is shown
 - Chosen space
 - start date and time
 - end Date and time
 - Employee username

Failure Outcome(s):

Backend:

- Any Reservation Information inputted by Employee is inaccurately added to the data store
 - Incorrect space ID
 - Incorrect Start Date and time
 - Incorrect End Date and time
 - Incorrect Employee username
- The Space database takes longer than 20 seconds or does not update to reflect the new availability status of the reserved space
 - no change in the schedule of that space for specified reserved time

FrontEnd:

- The complete and updated schedule of available spaces is not correctly displayed to the user.
 - spaces do not accurately represent available schedule
- Invalid user inputs
 - Error message will display “Invalid user inputs”
 - Reservation form will not be submitted
 - User must reenter inputs until valid for successful submission
 - Record of invalid inputs will be logged with timestamp
- Reservation takes longer than 20 seconds to be displayed in personal overview page
 - Error will be logged with time stamp
- Confirmation message of reservation information is inaccurately shown or not shown at all

- Incorrect Chosen Space
- Incorrect Pick Up Date and time
- Incorrect Return Date and time
- Incorrect Employee username

Manage Reservations:

1. MR - 01 (Effort points 25)

As a logged in user, I want the ability to cancel or modify my existing space reservations at a facility, ensuring I can adjust my plans based on changing needs.

2. MR - 02 (Effort points 25)

As a logged in Employee, I want the ability to cancel or modify my existing space reservations and orders for utility reservations to ensure I can adjust my plans based on changing needs.

Required User Inputs:

These inputs are required so that it is clear which reservation the user wants to modify and how so that it is flexible with their schedule

- Reservation selection:
 - User must check which reservation to modify or cancel
- Action Selection:
 - User must choose whether to modify or cancel
 - Modify Reservation:
 - User must input the change start Date time and End Date time
 - If the time is available, User must confirm the modification of the selected reservation by clicking the 'confirm' button
 - If the time is not available, User must choose a different Start Date and Time
 - Cancel Reservation:
 - User must confirm the cancellation of the selected reservation by clicking the confirm button
- For MRO - 02, authorized employees are able to choose to modify or cancel space reservations as well as order reservations

App Permissions

Permission: Cancel or Modify

Scope: Reservations

Target Audience

Users that wish to cancel or make changes to existing space reservations

Pre-conditions

- User must be registered

- User must be Logged in
- User must have an existing reservation
- User must access personal overview page

Success Outcome(s):

Backend:

- The system correctly records and updates the modified reservation details in the database or removes reservation if cancelled
 - Modified Start Date and Time
 - Date Time format : YYYY-MM-DD HH:mm (military time)
 - Modified End Date and Time
 - Date Time format : YYYY-MM-DD HH:mm (military time)
 - Username
- The data store updates to reflect the new availability status of the reserved space/order within 1 minute
 1. Marks space/order as available for previous specified reserved time
 2. If Reservation not cancelled, marks space/order as occupied for specified reserved time
- Operation is logged
 - Record of successful modification of reservation
 - Timestamp

FrontEnd:

- The updated list of available spaces is correctly displayed to the user within 20 seconds of the request
 - Space booked is up to date and reflected in schedule
- The updated list of available utilities is correctly displayed to the Employee within 20 seconds
 - utilities accurately represent available schedule
- Confirmation message of modified reservation information is shown in American English
 - Reservation type name (space or order)
 - modified start date and time
 - modified end date and time
 - username

Failure Outcome(s):

Backend:

- Any Reservation Information inputted by user is inaccurately modified in the data

store

- Incorrect Start Date and time
- Incorrect End Date and time
- Incorrect username
- The database takes longer than 20 seconds or does not update to reflect the new availability status of the reserved space/order
 - No updated Start date and time
 - No updated End date and time
- Operation is not logged
 - No record of successful modification or timestamp

FrontEnd:

- The updated schedule of available spaces is not correctly displayed to the user.
 - spaces do not accurately represent available schedule
- Space's schedule takes longer than 20 seconds to update or does not update at all
 - Error is logged with timestamp
- Invalid user inputs
 - User input does not follow required format
 - Error message "Invalid user input" will be displayed and modification will not be submitted
 - Error is logged with timestamp
- Confirmation message of reservation information is inaccurately shown or not shown at all
 - Incorrect Chosen Reservation
 - Incorrect Start/ Pick Up Date and time
 - Incorrect End/Return Date and time
 - Incorrect username

Role-Based Layout Selector

Layout Selector:

1. **RBLs-01:** (Effort Points: 30)

As a logged in Super Admin, I want the capability to switch the layout of the platform, so that it tailors to my needs as someone who manages the application, granting me the choice of choosing Super Admin, Company Manager, Public Facility Manager, or Employee/General User layouts.

2. **RBLs-02:** (Effort Points: 30)

As a logged in Company Manager, I want the capability to switch the layout of the platform, so that it accommodates my specific requirements for managing reservations within my company, allowing me to choose Company Manager,

Employee/General User layouts.

3. **RBLS-03:** (Effort Points: 30)

As a logged in Public Facility Manager, I want the capability to switch the layout of the platform to suit the needs of managing reservations within my public facilities efficiently, allowing me to choose between Public Facility Manager or General User layouts.

Required Input(s):

Selecting the preferred platform layout from the options available.

- Layout Selection
 - RSBL-01 Accessible Layouts:
 - Super Admin
 - Company Manager
 - Public Facility Manager
 - Employee/General User
 - RSBL-02 Accessible Layouts:
 - Company Manager
 - Employee/General User
 - RSBL-03 Accessible Layouts:
 - Public Facility Manager
 - General User
- Confirm Selection

App Permissions:

- Permission: Change Layout
Scope: Screen Layout accessible to Super Admin
- Permission: Change Layout
Scope: Screen Layout accessible to Company Manager
- Permission: Change Layout
Scope: Screen Layout accessible to Public Facility Manager

Target Audience:

- Super Admins
- Company Managers
- Public Facility Managers

Pre-conditions:

1. The registered users must be logged into the platform
2. The registered user must have the appropriate administrative permission to access this feature.

3. Access to the “Layout Selection” from the settings panel.

Success Outcome(s):

Front-End:

- **Permission Restrictions:**
 - Users with restricted permissions are not able to switch between layouts.
- **Navigation:**
 - Administrative users will navigate to their settings.
 - Users locate the “Layout Selection” option.
- **Selection:**
 - Depending on the usertype within the company or organization, users choose the appropriate layout.
 - Users confirm the selection.
- **Platform Layout Change:**
 - The selected layout is applied to the user’s account preference
 - The current platform layout will be changed to the selected layout within 5 seconds of submission

Back-End:

- **Data Storage:**
 - The chosen layout preference will be accurately updated or stored in the data store
- **Operation is logged**
 - Record of successful layout switch
 - Timestamp

Failure Outcome(s):

Front-End:

- **Access with Permission Restrictions:**
 - Users with restricted permissions are able to switch between layouts.
- **Layout is not switched within 5 seconds of submission**
 - Technical errors may arise in the front-end that lead to difficulties in switching between layouts, affecting user experience.
 - User can resubmit request to switch layout
 - Error is logged with timestamp

Back-End:

- **Database Issues:**
 - Problems with the data store, such as connection errors or data corruption, may result in the failure to save or retrieve layout preferences correctly.

- **Inconsistent Data Retrieval:**
 - Errors during data retrieval, such as incomplete or corrupted data, may lead to inconsistencies in the user's layout preference when logging in
 - Error is logged with timestamp
- **Operation is not logged:**
 - No record of successful layout switch with timestamp

Personal Overview Center

Overview of Reservations:

1. **ORSI- 1:** (Effort Points: 80)

As a registered user, I want an overview of all the spaces and items I have currently reserved, so I can view all relevant reservations.

Required Input(s) for ORSI-1:

The registered user is allowed to customize their search and retrieve the required information regarding their reservations based on the following user inputs:

Required:

- Type Format
 - Calendar
 - List
- Confirm Selection

Optional:

- From & To Date
 - Valid Format: MM/DD/YYYY
- Categories
 - All (preset)
 - Spaces
 - Only available for Employees and Company Managers:
 - Utilities

App Permissions:

- Permission: View, Filter
Scope: Reservation Details

Target Audience:

Registered users with a history of reserving spaces or utilities

Pre-conditions:

1. User must be logged in

2. There must be existing reservations with the associated account to display, else there is no data to display.
3. User must be able to access the Personal Overview page
4. The platform provides a choice of format for the user to choose to view their reservations.

Success Outcome(s):

Front-End:

- **Display Selection:**
 - Users select their preferred viewing format (calendar or list).
- **Display Details:**
 - Details of their existing reservations are displayed in the chosen format.
 - Information will be displayed in order from earliest to latest reservation
- **Filtering:**
 - Users have the option to apply filters, including date or category criteria.
- **Confirmation:**
 - Users confirm their search filters.
- **Updated Data:**
 - Updated reservation data is presented to the user according to their chosen filters and viewing format.

Back-End:

- **Data Retrieval:**
 - Data of existing reservations associated with the user's account is successfully retrieved from data store
- **Criteria Matching:**
 - System extracts reservation history data that matches the specified criteria from the data store
- **Operation is logged:**
 - Record of all successful information displayed in personal overview
 - Timestamp

Failure Outcome(s):

Front-End:

- **Data Display Issues:**
 - Problems with displaying accurate/all reservation data
- **Input Validation Error:**
 - Incorrect date formats, fields, or invalid inputs may lead to viewing problems
 - Error message "Invalid inputs" will be displayed
 - User will have to resubmit request to view data
 - Error is logged with timestamp

Back-End:

- **Retrieval Error:**
 - Errors during data retrieval may disrupt the viewing process.
- **Data Inaccuracy:**
 - Incorrect or inconsistent data may be extracted from the data store, leading to inaccuracies in the displayed reservations.
- **Operation is not logged:**
 - No record of successful display of personal overview

Check Reservation and Item History and Rebook:

CHR-1: (Effort Points: 100)

As a registered user, I want the capability to review the booking history and have the opportunity to rebook spaces that I have previously booked in the past, so I can save time from searching it through the platform.

Required Input(s) for CHR-1:

The registered user is allowed to customize their search and retrieve the required information from their reserved space or item based on the following user inputs:

Required:

- Type Format.
 - Calendar
 - List
- Selection of previous reserved space or item
- Enter new date and time, if applicable
- Confirm rebooking, if available

Optional:

- From & To Date
 - Valid Format: MM/DD/YYYY
- Categories
 - All (preset)
 - Spaces
 - Item

App Permissions:

- Permission: View Reservation and Item History
Scope: List, Calendar
- Permission: Rebook Previously Reserved Spaces and Items
Scope: Space, Item

Target Audience:

Registered users who wish to rebook previously reserved spaces on the application

Pre-conditions:

1. The registered user must be logged into their SpaceSurfer account to access this feature.
2. Users must have a history of previous space or item reservations to view and rebook.
3. User must access Booking History page

Success Outcome(s):**Front-End:**

- **Display Selection:**
 - Users select their preferred viewing format (calendar or list).
- **Display Details:**
 - Past reservations are shown in the chosen format.
- **Filtering:**
 - Users have the option to apply filters, including date or category criteria.
- **Confirmation:**
 - Users confirm their search filters.
 - Updated data is displayed to the user according to the filters and the viewing format.
- **Rebooking**
 - Previously reserved space or item's availability is displayed.
 - Successful attempt to reserve a space or item when it is available.

Back-End:

- **Data Retrieval:**
 - Data is retrieved from the corresponding user account.
 - If applicable, based on the filters, data with matching criteria is pulled from the data store
 - If the user initiates a rebooking action, the process of checking availability and updating the new reservation to the database is made.
- **Operation is logged:**
 - Record of all successful information displayed in reservation history
 - Timestamp

Failure Outcome(s):**Front-End**

- **Data Display Issues:**
 - Problems with displaying accurate data may occur.
- **Input Validation Error:**
 - Incorrect date formats, fields, or invalid inputs may lead to viewing problems.
- **No Reservation History:**
 - User attempts to access reservation history when none exists.

- **Conflict Reservations:**

- An attempt to book a space or item already reserved by another registered user will result in a failure.
- User attempts to rebook a space or item that is no longer available.

Back-End

- **Retrieval Error:**

- Errors during data retrieval may disrupt the viewing process.
- Incorrect data is pulled from the database.
- Rebooking an already reserved space or item by another user may occur.

- **Operation is not logged:**

- No record of successful display of reservation history

Reservation Confirmation Email

Confirmation Email:

1. CE - 01 (Effort Points: 50)

As a registered user, I want to receive an email confirmation that includes the receipt and details of my reservation, so I can verify the reservation was placed correctly.

Target Audience:

- Registered users who have successfully submitted a reservation

Pre-conditions:

1. Users must be logged in to the platform beforehand.
2. A reservation must be placed.

Success Outcome(s):

Front-End:

- **Sending Confirmation:**

- Upon submitting a reservation, registered users will receive an email confirmation on the email address linked to the account.
- The email confirmation is received within one minute.

- **Information Displayed:**

- The receipt and reservation details are relayed with the following information:
 - Date, time, location
 - Reservation time frame
 - Confirmation code

Back-End:

- **Data Retrieval:**

- Retrieves data from the data store which includes the user's details and reservation information.

- Database is able to read, delete, and update reservation details given a particular user on subsequent requests.
- **Sending Data:**
 - The email is generated and sent to the user with the relevant information.
 - The email is sent to the email address within one minute of the reservation submission.

Failure Outcome(s):

Front-End:

- User does not receive an email.
- Email contains missing or inaccurate information
- Email is not received within one minute of the reservation submission.
 - Error is logged with timestamp

Back-End:

- Retrieved data from the database resulted in incomplete or inaccurate information.
- Operation is not logged
 - No record of successful email sent with timestamp
- Email generation resulted in interrupted or missing information, including emails that are generated to a different email
- Different users may receive the email instead of the actual user that it is aimed towards causing a breach in security and confidential information on users.

PHASE 2 REQUIREMENTS

Schedule Downloader

1. SD - 01 (Effort Points: 100)

As a registered user, I want to be able to export my reservations, so that I can easily integrate and apply them to my personal or professional calendar. This aids in avoiding scheduling conflicts and ensures that I am adequately prepared for the reservations I have made.

Required Input(s)

- Request to download download schedule
 - Specify time range of schedule
 - Valid Format: MM/DD/YYYY
 - Dates must be in the future
 - Format
 - List
 - Will be downloaded as a txt file
 - Calendar
 - Will be downloaded as an ics file

Data Source

- Origin = External
- Type = Web API
- Details = A download prompt will be added to the platform and when selected, it generates an ics file that contains the date, time, location, links, and description of each reservation.
- AuthN = TBD

App Permissions

- Permission: Download
- Scope: Reservations

Target Audience

- The target audience are for registered users that would want to download a copy of their upcoming reservation as a txt file or ics file in order to add to calendar

Pre-conditions

- User must be logged in
- Must have a scheduled reservation
- User must access the personal overview page

Success Outcome(s)

Front-End

- Export button downloads selected file type
- Downloaded files display correct information
- Ics file is able to be added to personal calendar

Back-End:

- Reservations are retrieved from the data store in order to be downloaded
- Coverts that data into the type specified
 - Ics or txt
- File is successfully downloaded
- Operation is logged
 - Record of successful data export and file download is logged
 - Timestamp

Failure Outcome(s)

Front-End:

- Invalid user inputs
 - Time range of schedule is incorrect format
 - Error message "User inputs are invalid" will be displayed
 - User must resubmit information
 - Error is logged with timestamp
- Export button does not download selected file type
 - no download is initiated
 - wrong file type is downloaded

- user can resubmit request to export information
- Error is logged with timestamp
- Downloaded data is incorrect
 - Downloaded file does not include the correct upcoming reservation information for specified time frame
 - Error is logged with timestamp
- Ics file is not able to be added to calendar
 - User can submit another request to download file

Back-End:

- Retrieval of data from the data store does not process
 - User can submit another request to download file
 - Error is logged with time stamp
- Operations are not logged
 - No record of successful file download and time stamp
 - Error is logged

Data Analytics

1. DA - 01 (Effort points: 100)

As a Public Facility Manager, I want to be able to access data analytics on reservations and spaces in order to interpret and analyze trends and statistics.

2. DA - 02 (Effort points: 100)

As a Super Admin, I want to be able to access data analytics on reservations, spaces, and inventory in order to interpret and analyze trends and statistics.

3. DA - 03 (Effort points: 100)

As a Company Manager, I want to be able to access data analytics on reservations, spaces, and inventory in order to interpret and analyze trends and statistics.

Required Input(s):

User input required to compute accurate and specific data analytics.

- Timeline
 - selecting data from specific:
 - day(MM/DD/YYYY),
 - week(MM/DD/YYYY - MM/DD/YYYY),
 - or month (MM/YYYY)
- For DA-02 and DA-03: select data
 - space reservations or inventory bookings

Optional Input(s):

- Visualizations: Line Graph, Bar Graph, or Table Chart Options

App Permissions

- Ability to see graphs and charts depicting reservations, bookings, and cancellations
 - Scope: Analyze data and trends depicted in graphs and charts

Target Audience

- The target audience are towards any employees that requires data to be analyzed within the application

Pre-conditions:

- User must be logged in
- Must have an admin role as Super Admin, Company Manager, or Public Facility Manager
- At least a day's worth of data needed in order to display analytics

Success Outcome(s):

- Data will be calculated and shown to user within 5 seconds
- Trends will appear for Interpretations and analyzation of data

Failure Outcome(s):

- No data is given
- Not enough data for trends to appear
- Empty chart or graph will appear within 5 seconds

Expense Tracker

1. ET-1 (Effort Points: 200)

As a registered user, I want to see how much spending is made on reservations visually.

Required Inputs(s)

Including different ways to visually see data helps users choose which information graph suits them

- Graphs:
 - Bar graphs
 - Line graphs
- Filters:
 - Daily
 - Monthly
 - Yearly
 - Default
 - All time spending

App Permissions

- Able to see expense tracking page
 - Scope: Expenses will be tracked only on reservations made and will filter between daily, monthly, yearly, and by default the all time spending.

Target Audience

- Any users that want a spending history within the application

Pre-conditions

- Users must be registered
- Have at least one reservation made in the past

Success Outcome(s)

Front-End:

- **Display:**
 - Graphs are shown correctly with axis labeled and correct graph is shown (bar graph or line graph)
- **Filters/Options:**
 - Daily expenses from reservations of each location is shown as will be the same, but will also have the option for monthly and yearly expenses
 - Default will show all time spending

Back-End:

- **Data Retrieval:**
 - Successfully gathers data within a time frame of a user
- **Data processing:**
 - Visual information depending on type specified by user gets processed into that type (bar graph or line graph)
- **Data gathering:**
 - All recorded and registered expenses on reservations are accurate from the specified filter (daily, monthly, yearly, default)
- **Filters:**
 - Does not show any refunds or duplicate orders within the data

Failure Outcome(s)

Front-End:

- **Incorrect Display:**
 - Results in different visuals that may look better or for worse than the correct information
 - No display is shown with either charts and graphs
- **Power:**
 - Loading of many accounts of expenses can result in a slow and unresponsive application
- **Filters:**
 - Options are not working as intended in which daily expenses can be labeled as monthly as well as yearly

Back-End:

- **Data Processing:**
 - Information results in a visual not specified by the user
 - Data is processing expenses that affect the output
 - Duplicates of the same expense

- Refunds made by the user that result in no expense made but is stored as if it was in the database
- **Data Gathering:**
 - Gathered information resulting in another user's expenses information

QR Code Reservations

1. **QRCR - 01 (Effort Points: 30)**

As user, I want to be able to scan a QR code physically placed at a reservable space and be redirected to the login of the Space Surfer page

2. **QRCR - 02 (Effort Points: 30)**

As a registered user, I want to be able to login to my authorized Space Surfer Account and be shown the Facility's available spaces upon signing in.

Required Input(s)

User input is required to be able to access the QR code. This is crucial to allow the connection to the website while also giving exposure to our website.

- Unregistered User Must first create an account (see Registration)
- Registered User must input:
 1. Authorized username
 2. Corresponding password
- Continue with Space Reservation for Users

Data Source

- Origin = Internal
- Type = Web API
- Details = QR code reader will direct to the link associated with that QRcode in that space. From that link users can make a reservation.

App Permissions

- Permissions: Facility Reservation Page
- Scope: Direct link

Target Audience

- Users that wish to make a reservation when they come across a spot or are near a spot that they are currently located at without having to manually find the space on the website

Pre-conditions

- Must have access to a phone camera
- Must authorize permission to open Space Surfer webapp from the QR code
- User must have a registered account

Success Outcome(s)

Front-End:

- Space Surfer Website accessible through QR code
- Space surfer Website loads within 1 minute of scanning QR code

Failure Outcome(s)

Front-End:

- Space surfer Website loads after 1 minute of scanning QR code
- Space surfer Website does not load after scanning QR code
- After scanning QR code a different website it loaded

Task Manager Hub

1. TMH-1 (Effort Points: 230)

As a registered user, I want a task management system that provides functions like creating to-do lists, prioritizing tasks, maintaining a notepad, and tracking progress with notifications, so I can be on top of my work and personal responsibilities.

Required Input(s):

- Create a To-Do List
 - Add tasks to the to-do list
- Task Priorities
 - Assign priority levels to tasks
- Add Project Details
 - Provide project-related information
- Enter Duties
- Set Timelines
 - start and end dates
 - Valid Format: MM/DD/YYYY

App Permissions:

- Permission: Access Task Manager Hub
Scope: Job Management
- Permission: Access Project Tracking
Scope: Project Tracking
- Permission: Access Duty Management
Scope: Duty Management

Target Audience:

- Registered Users that require task management, project tracking, and duty organization without the need to use multiple applications

Pre-conditions:

1. Users must be logged into their account.
2. Users should have tasks, projects, or duties to manage.

Success Outcome(s):

Front-End:

- **Hub displays correctly:**
 - The Task Manager Hub front-end displays all tasks, projects, and duties accurately.
- **Tasks are categorized:**
 - Users can effectively categorize and organize their tasks.
- **Timelines are made:**
 - Timelines for tasks and projects are generated and presented effectively.
- **Notifications:**
 - Users reminders as scheduled
 - Task
 - Project
 - Duty

Back-End:

- **Data retrieval:**
 - The back-end successfully retrieves data for all features, ensuring that information is available.
 - Data for notifications is accurately retrieved from the database.
- **Data processing:**
 - Data processing of various features is executed accurately.
 - Ensures that notifications are delivered.
- **Loading of the data:**
 - Data is loaded in the correct format.
- **Data Transfer:**
 - Data is transferred from the back-end to the front-end without errors.
- **Notification Delivery:**
 - Notifications are sent to users through their preferred channels
 - Platform Alert
 - Email
- **Notifications Accuracy:**
 - Data for notifications is accurately retrieved from the database.
- **Operation is logged:**
 - Record of all successful information displayed in Task Management Hub
 - The system logs all successful notifications
 - Timestamp

Failure Outcome(s):

Front-End:

- **Functional Errors:**
 - One or more features fail to work as expected.
- **Incorrect Information Display:**

- One or more features not working simultaneously
- **Simultaneous Feature Failures:**
 - Simultaneous failure of one or more features disrupts categorization and usability.
- **Clutter of Information:**
 - Information may become cluttered or indistinguishable due to categorization errors.
- **Unreceived Notifications:**
 - Users do not receive related reminders
- **Notifications Inaccuracy:**
 - Notifications are inaccurate, missing, or delayed.

Back-End:

- **Data Retrieval Failures:**
 - Data retrieval of one or more features is unable to process and store the information
- **Data Formatting Errors:**
 - Data given to send back to application is incorrectly formatted and processed
- **Operation is not logged:**
 - No record of successful display of reservation history
 - The system does not log all the notifications
 - Error is logged

Waitlist

1. **WL - 01 (Effort points: 100)**

As a registered user, I want to be able to add myself to a waitlist for a space that has already been reserved at a time I also want to reserve that spot for as well as be able to remove myself from a waitlist.

2. **WL - 02 (Effort points: 60)**

As a registered user who has joined a waitlist and have been moved to the first spot, I want to be notified that I became first in line for the reservation and have my reservation be automatically submitted.

Required Input(s)

Username is required so the name can be added to the waitlist.

- Username
 - Must be unique
 - Valid lowercase letters: a-z
 - Valid uppercase letters: A-Z
 - Valid Numbers: 0-9
 - Valid special characters: _ .
 - cannot start with a valid special character nor have consecutive special

characters (e.g., John..Smith)

- Min: 5 characters
- Max: 20 characters

App Permissions

- Have the ability to join a waitlist if a waitlist is applicable to that reservation (space is already reserved by another user at that time)
- Scope: Reservations page and waitlist page

Target Audience

- All registered users who wish join a queue for a spot that has already been reserved for that time and date by another user

Pre-conditions

1. Users must be registered and logged in
2. Space that user wants to join the waitlist for must already be reserved by another user for that time/date in order for the waitlist feature to be available

Success Outcome(s)

Backend

- User's spot in the waitlist is added or updated in the waitlist table for that space in the database
- Waitlists are removed from the database after the time and date for that reservation has passed and that reservation has been fulfilled

Frontend

1. If a space is already reserved for the time and date the user chooses, the waitlist option will appear
2. Within 3 seconds of clicking the button to join the waitlist, the user will be shown the list of the current waitlist for that space at the time/date
 - The list will be prompted in a pop-up on that page
 - User will be prompted with a message on that pop-up that confirms the user has been added to the waitlist
 - Clicking 'x' on the pop-up will close it and the user will remain on the same reservation page
3. After joining a waitlist, the waitlist for that space can be viewed from the user's reservation history page
 - The page will have a tab for waitlists, which will be empty if the user is not currently in a waitlist
 - The waitlist page will only be populated with current and still valid reservations
 - Users will be able to remove themselves from a waitlist on this screen.
 - Clicking the option to remove themselves from a waitlist will allow the user to check/indicate which waitlist(s) they want to leave
 - They will remain on the same page for this, however, check boxes next to each waitlist and a submission button will appear
 - Upon submission of removal, users will be prompted with a pop-up asking them to confirm

- Clicking yes will exit the popup and removal from waitlist will continue
- Clicking no will exit the popup and removal is not continued. The user will remain on the waitlist page with the check boxes and submission button
- Upon clicking yes to confirm removal from the waitlist(s), users will be taken off from the waitlist within 3 seconds
 - This change will be reflected on the waitlist page as the waitlists will no longer appear
- 4. For WL 02: Users will be emailed a notice letting them know they have been moved to the first spot and that their reservation has been automatically been submitted
 - The email will contain a message letting them know the above and a link to the reservation in order to view its details or to cancel the reservation
 - Opening the link will redirect them to the reservation's page within 5 seconds
 - The email is sent to the correct recipient

Failure Outcome(s)

Backend

- User's spot in the waitlist is not added or updated in the correct table and columns in the database
- Waitlists are not removed from the database after the time and date for that reservation has passed and that reservation has been fulfilled

Frontend

1. The waitlist option appears even though the space is not reserved for that time and date
2. If a space is already reserved for the time and date the user chooses, the waitlist option does not appear
3. Within 3 seconds of clicking the button to join the waitlist, the user is not shown the list of the current waitlist for that space at the time/date
 - The list is prompted in a pop-up on that page
 - User is not prompted with a message on that pop-up that confirms the user has been added to the waitlist
 - Clicking 'x' on the pop-up doesn't close it
 - Clicking 'x' on the pop-up closes it, but the user does not remain on the reservation page
4. After joining a waitlist, the waitlist for that space cannot be viewed from the user's reservation history page
 - The waitlist page is empty despite the user joining a waitlist
 - The waitlist page contains waitlists that have either surpassed its date or have been fulfilled
 - Users are not able to remove themselves from a waitlist
 - Clicking the option to remove themselves from a waitlist does not allow the user to check/indicate which waitlist(s) they want to leave
 - Upon submission of removal, users are not prompted with a pop-up asking them to confirm
 - Clicking yes does not exit the popup
 - Removal from waitlist doesn't continue despite clicking yes

- Removal from waitlist continues despite clicking no
 - Clicking no does not exit the popup
 - After clicking yes and the pop-up exits, the user does not remain on the waitlist page
 - The check boxes and submission button are still visible after clicking yes
 - Upon clicking yes to confirm removal from the waitlist(s), users are not taken off from the waitlist within 3 seconds
 - This change are not reflected on the waitlist page as the waitlists will no longer appear
5. For WL 02: Users are not emailed a notice letting them know they have been moved to the first spot and that their reservation has been automatically been submitted
- The email does contain a message letting them know the above
 - The email is empty
 - The link to the reservation in order to view its details or to cancel the reservation is not visible or is invalid
 - Opening the link does not redirect the user to the reservation's page within 5 seconds
 - The email is sent to the incorrect recipient or no recipient at all

Service Provider Integration

1. **SPI - 01 (Effort Points: 125)**

As a registered user with a scheduled reservation, I want to be able to hire services to do some sort of work that I won't be able to do while at my reserved spot to help me be more productive.

2. **SPI - 02 (Effort Points: 125)**

As a company manager, I want to be able to provide services to the users that make reservations to boost productivity.

Required Input(s)

User input is required to be able to hire services. This is crucial as our company serves as the middleman between the users and the service provider

- First name
 - Min: 1 character
 - Max: 50 characters
 - No special symbol characters
 - No numerical numbers
- Last name
 - Min: 1 character
 - Max: 50 characters
 - No special symbol characters
 - No numerical numbers
- Payment if necessary
 - Payment will be discussed between the service provider and the user
 - Payment methods can include cash, money transfer, zelle, etc.

- Transactions will not be through SpaceSurfer

App Permissions

- General users are able to contact and hire services that are wanted. Company managers are able to edit the services provided such as adding or removing.
- Scope: Service provider page

Target Audience

- Users that wish to hire services to increase their productivity levels while reserving a space.

Pre-conditions

- User must have a scheduled reservation
- Must be able to contact services through a communication device

Success Outcome(s) - SPI - 01

Front-End:

1. Upon entering the service provider page, users will be able to see the reservations they have made.
2. An option will appear on each reservation on that page to allow users to hire a service
 - Upon clicking the option and within 3 seconds, a pop-up will show a list of services available for that time period
 - Clicking on a service will bring up the contact information of the service provider (can include name, rate, address, website link, email, phone number)
 - Clicking 'x' on the pop-up will close it and the user will remain on the same page
3. NOTE: Service reservations will be made and transacted between the user and the service provider. SpaceSurfer will only provide a list of available services during the time of a user's reservation and provide information regarding that service.

Back-End:

- Reservation information, such as time and space, is pulled from the database and shown on the service provider page so that users can see the reservations they have made
- List of services available at the time of a reservation is pulled from the database to be shown on the list pop-up when users choose to hire a service

Failure Outcome(s) - SPI - 01

Front-End:

- Users cannot enter the service provider page (link doesn't work or clicking on the tab doesn't work)
- Upon entering the service provider page, users are not able to see the reservations they have made.
- Wrong reservations show up
- Old reservations show up
- No reservation shows up despite some being made

- An option does not appear on each reservation on that page to allow users to hire a service
 - Upon clicking the option, a pop-up doesn't show a list of services available for that time period
 - The list does not pop-up within 3 seconds
 - The list provides inaccurate information or none at all
 - Clicking on a service does not bring up the contact information of the service provider or brings up the wrong information for that provider
 - Clicking 'x' on the pop-up does not close it
 - The user is redirected to a different page

Back-End:

- Reservation information, such as time and space, is incorrectly or not pulled from the database
 - Data from different tables or incorrect columns are shown on the page instead
- List of services available at the time of a reservation is incorrectly or not pulled from the database
 - Data from different tables or incorrect columns are shown on the page instead

Success Outcome(s) - SPI - 02

Front-End:

- As a manager, entering the service provider page shows a list of services provided by that facility/company
- Managers will have the option to add services to that list
 - Clicking the add button prompts a pop-up that has a form for the manager to fill out information regarding the service (name, rate, address, email, phone number, etc.)
 - Clicking submit closes the pop-up within 3 seconds and returns the user back to the service provider page
 - The newly added service will appear on the list (alphabetical order by service name)
- Managers will have the option to remove services from that list
 - Clicking remove adds a check/indication box next to each service on that page within 3 seconds
 - After checking zero or more boxes on that list and clicking submit, the user will stay on the same page with no more boxes visible and the changes will be reflected within 3 seconds
 - Clicking cancel will remove the boxes and the user will stay on the same page

Back-End:

- List of services available at the time of a reservation is pulled from the database to be shown on the list pop-up when users choose to hire a service

Failure Outcome(s) - SPI - 02

Front-End:

- User cannot enter the service provider page
- As a manager, entering the service provider page does not show a list of services provided by that facility/company
- The list of services is empty when it's not supposed to be or is inaccurate
- Managers don't have the option to add services to that list
 - Clicking the add button doesn't prompt a pop-up
 - The pop-up doesn't have a form for the manager to fill out information regarding the service
 - Clicking submit does not closes the pop-up within 3 seconds and return the user back to the service provider page
 - Clicking submit closes the pop-up, but the user is redirected to another page
 - The newly added service does not appear on the list
 - The list is not in alphabetical order by service name
- Managers don't have the option to remove services from that list
 - Clicking remove doesn't add a check/indication box next to each service on that page within 3 seconds or at all
 - After checking zero or more boxes on that list and clicking submit, the user does not stay on the same page
 - Boxes are still visible after submitting and the changes are not reflected within 3 seconds
 - Submit button doesn't work
 - Clicking cancel does not remove the boxes
 - The user is redirected to another page after cancelling

Back-End:

- List of services available at the time of a reservation is incorrectly or not pulled from the database
 - Data from different tables or incorrect columns are shown on the page instead