

Design Specification

eTimely

v1.3

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Revision History

Date	Description	Author	Comments
2/26/2022	Version 1	Matthew Korte Caleb Obi Chris Gumieny Samia Chowdhury	First draft sent to GTA for review
3/1/2022	Version 1.1	Matthew Korte Caleb Obi Chris Gumieny Samia Chowdhury	Second draft based on GTA feedback
3/5/2022	Version 1.2	Matthew Korte Caleb Obi Chris Gumieny Samia Chowdhury	Edited based off feedback from presentations
3/6/2022	Version 1.3	Matthew Korte Caleb Obi Chris Gumieny Samia Chowdhury	Edited based off feedback from Darla

Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

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1. Introduction

1.1 Purpose

This document's objective is to explain and track the architecture and design of eTimely application in technical terms. This comprises the architecture of hardware, software, security, and communications. The primary target for this document is the development team who will use it to help guide them through the process of designing and implementing the system. However, certain details such as the user interface, should be shared with the client, users, or any other stakeholder (if applicable) to obtain input or permission.

2. General Overview and Design Guidelines/Approach

2.1 Assumptions & Constraints

2.1.1 Assumptions

1. The application has a stable internet connection. Without it the application would not be able to connect to the server, thus it would not be able to fetch any information from the database. If we were to back up any information to a local machine, changes to the software architecture would need to be made.
2. The project will be using Firestore throughout its life cycle. If the database were to change at some point, much of the software architecture and database design would likely need to be changed as well.

2.1.2 Technical Constraints

1. React v17.0.2 is being used for the frontend along with CSS for styling, limiting the choices for tools and libraries to be used to develop the frontend and user interface.
2. React is not fully compatible with older web browsers like Internet Explorer 10 [1]. This means we cannot guarantee functionality on such web browsers and will instead focus on “modern” browsers such as Google Chrome v90+, Microsoft Edge v91+, Mozilla Firefox v78+, and Apple Safari 14+.
3. The backend is being made with NodeJS v16.13.2 and ExpressJS v4.17.2.
4. This app is using the free version of Firebase, meaning the following constraints will be placed on the database [2].

- a. The amount of data stored will be limited to 1 GB
- b. Limit of 50,000 reads per day
- c. Limit of 20,000 writes per day
- d. Limit of 20,000 deletes per day

3. Architecture Design

3.1 Hardware Architecture

The eTimely application consists of three main components. As shown in the visualization below, there is the user, the devices section that shows the list of compatible devices that the users can use to view the application, and the application server.

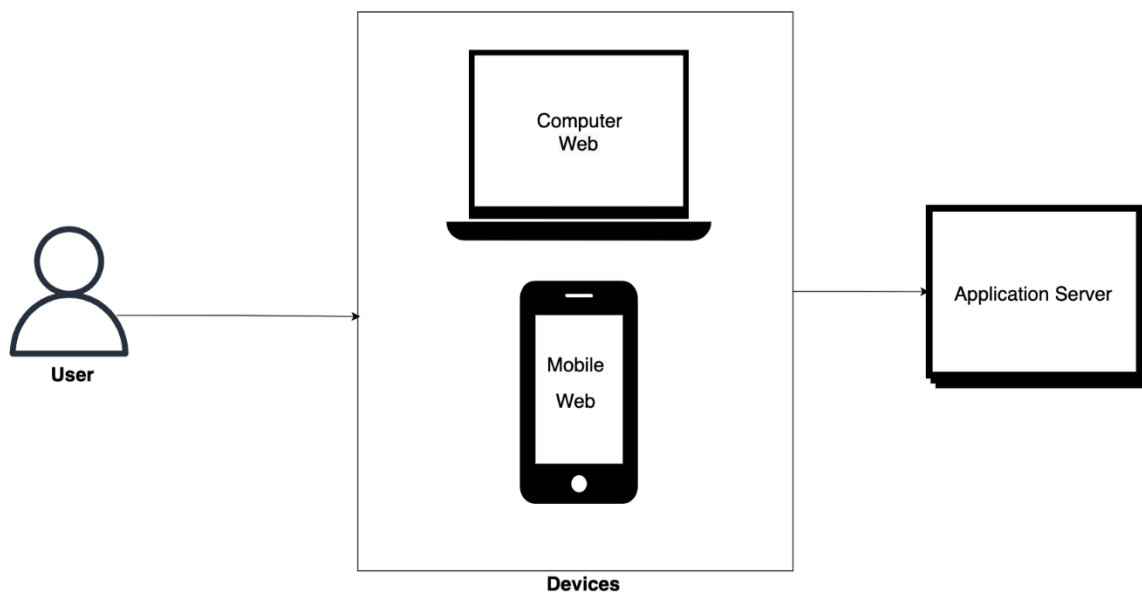


Figure 3.1

Devices

- Mobile device web browser
- Computer web browser

The application user interface will feature a fully responsive design that will allow users to view the application on a mobile device and have the same experience when accessing the application on a laptop web browser. Users can access the application using a web browser on any of the devices listed above. The application server will be responsible for getting and processing requests received from the client devices.

3.2 Software Architecture

The eTimely application's software architecture will utilize the three-tiered architecture paradigm as shown in the image below.

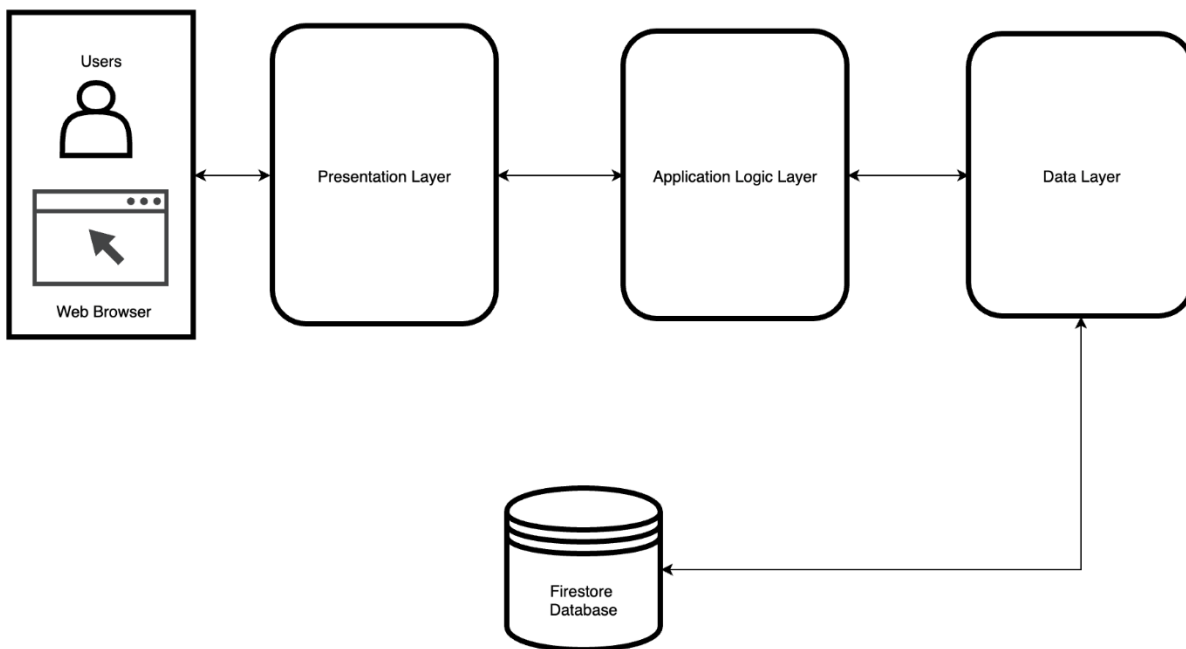


Figure 3.2.1

The **presentation layer**, often known as the client tier, oversees creating a user interface that can be viewed in a browser and with which users may interact. The presentation tier is the user interface and communication layer of the application where the end-user interacts with it. Its primary function is to display information to the user and collect information from them. The eTimely application will utilize ReactJS and Material UI to provide a user interface with which users can interact with.

The **logic layer** is often referred to as the application layer and business layer or middle tier. This layer processes information obtained in the presentation tier, sometimes in conjunction with the data gathered in the data tier. All the Rest APIs (Application Programming Interfaces) that will be used in this application will be housed in this layer. This layer's APIs will oversee connecting with both the presentation layer and the data tier via HTTP requests. To construct all application's logic, the eTimely application will use NodeJS and ExpressJS. Furthermore, the logic layer will arrange all the logic that will be used using the MVC (Model View Controller) design pattern as shown below.

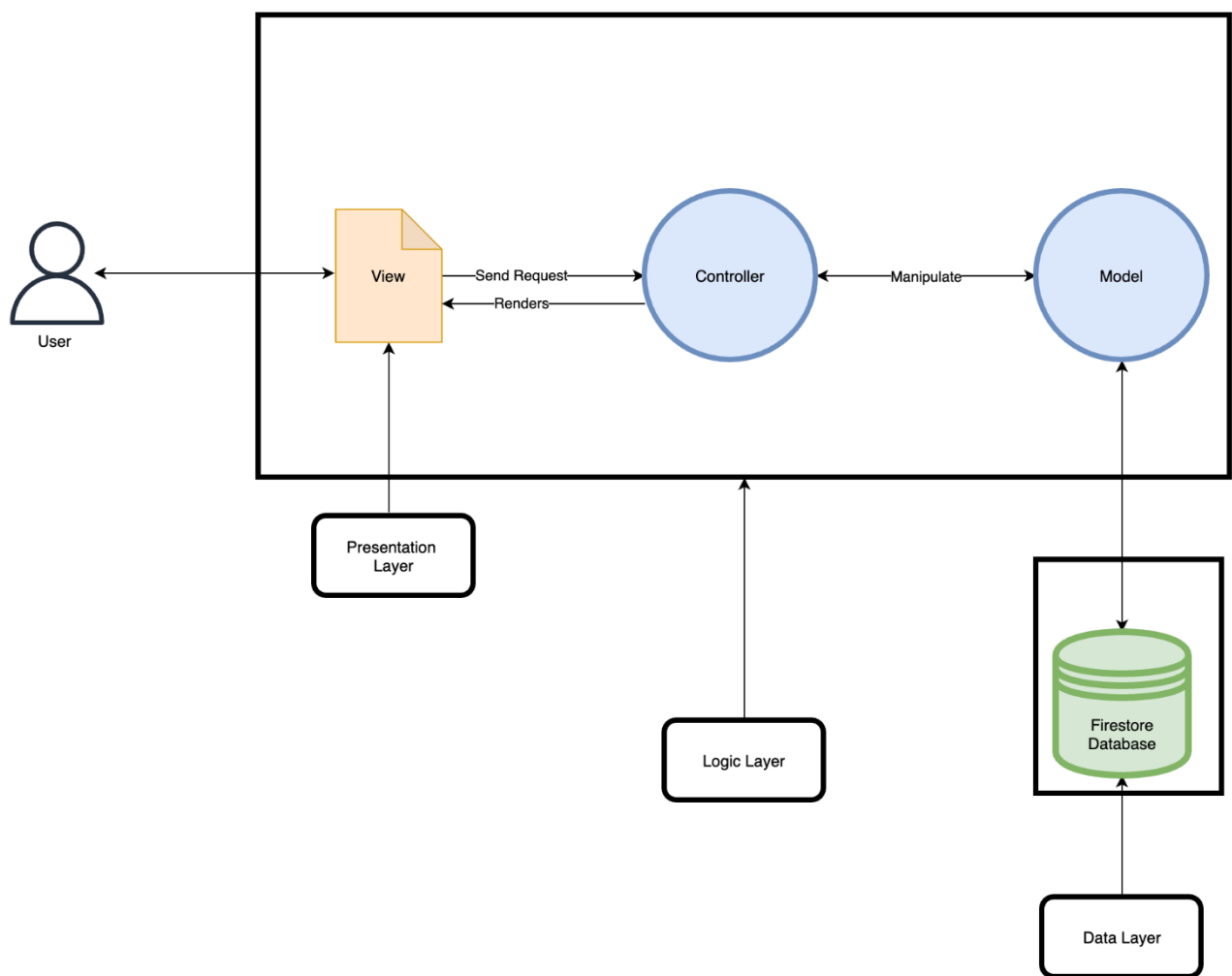


Figure 3.2.2

The model contains the data as well as the code's business logic or service layer logic. It contains all the content's data structures, properties, and attributes that we need to transfer and manipulate entities, domain models, and view models. This might be either the data being transmitted between the view and controller components, or any other data related to business logic.

The view will represent the presentation layer, the user interface handles displaying the logic of code and containing the layout. It facilitates user interaction with the system by receiving input and providing suitable outputs to the user

The controllers serve as a link between the model and view components, processing all business logic and incoming requests, manipulating data using the model, and interacting with views to produce the final output.

The **data tier**, also known as the database tier, data access tier, or back-end, is where the application's data is kept and maintained. The eTimely application will utilize Firebase Firestore to save and maintain all data used in the application.

3.3 Security Architecture Caleb

3.3.1 Web Tokens

The eTimely application will utilize Json Web Tokens to authenticate and authorize users in the application. Once the user is logged in, each subsequent request will include the JWT, allowing the user to access protected pages and services that are permitted with that token.

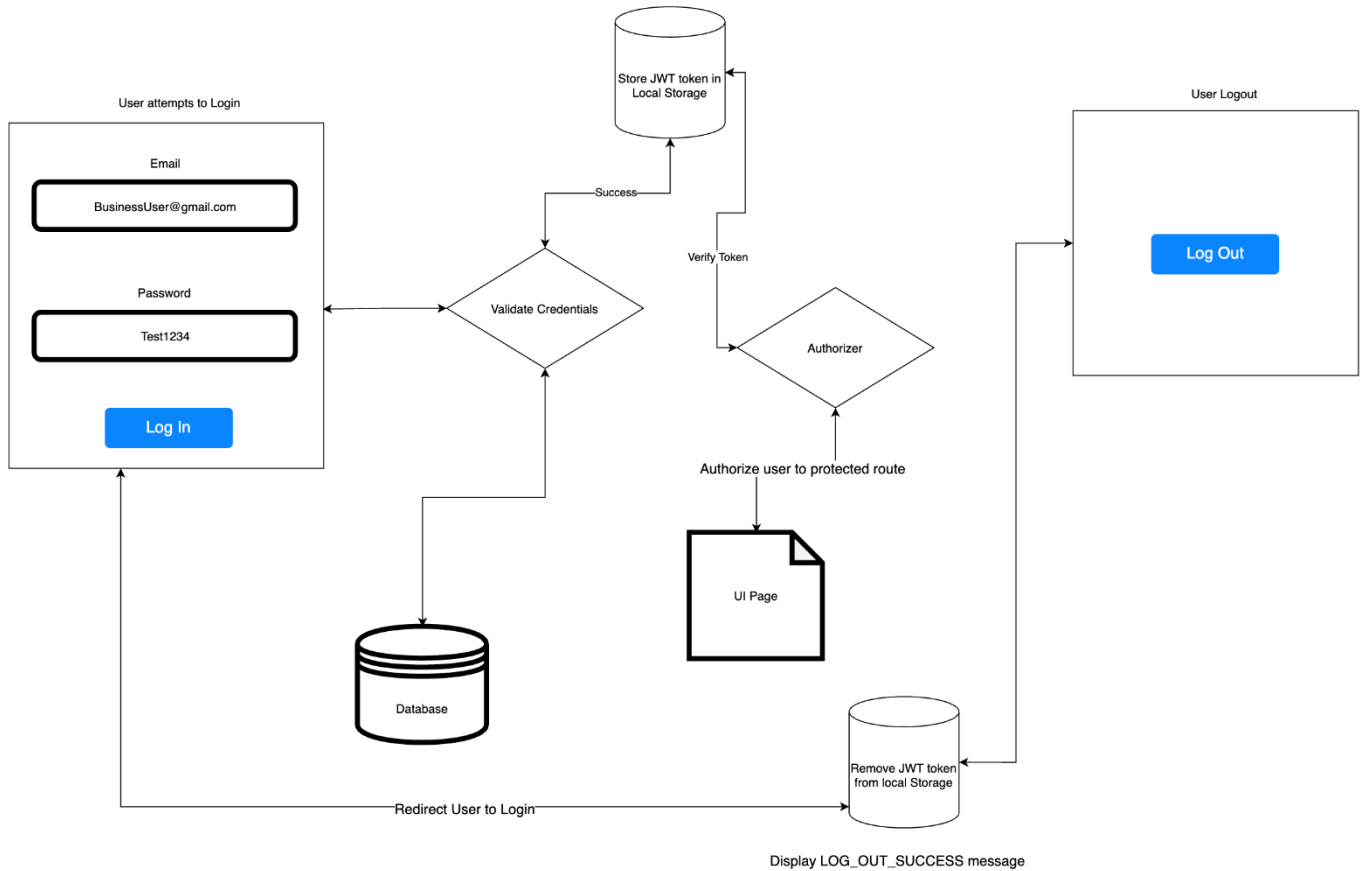


Figure 3.3.1

The diagram above shows a high-level flow diagram illustrating how the eTimely application will use Jason Web Token (JWT) to authenticate and authorize users.

3.3.2 Password Encryption

The eTimely app will never save a user's password in plain text. Password will always be hashed before being saved on the server and database using the bcrypt NodeJS package. In this manner, we can assure that a user's information is kept secure.

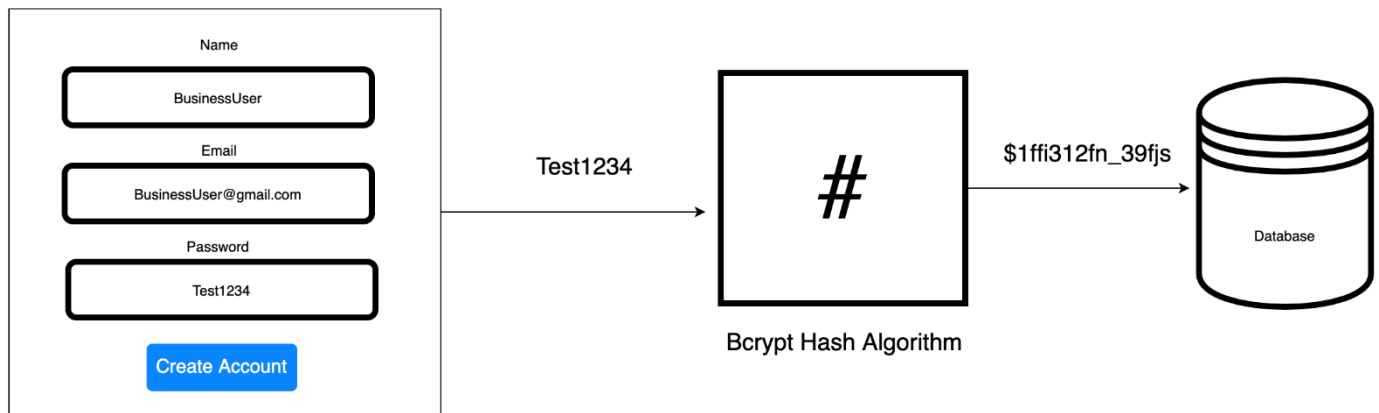


Figure 3.3.2

3.4 Communication Architecture

The etimely application communication will use an HTTP request to communicate with both the client and the server using the REST (Representational State Transfer) API (Application Programming Interfaces). The figure below depicts how the client will interact with the server. The client will send queries to the API to retrieve information or make changes to the application. The server will receive the request from the client, process it, and then return a JSON response to the client.

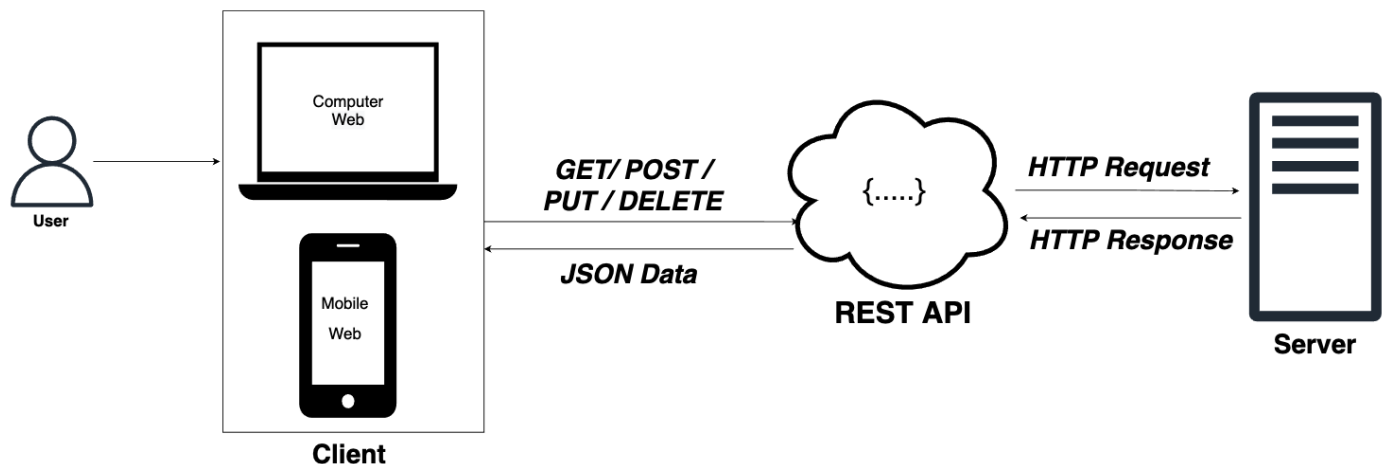


Figure 3.4

4. System Design

4.1 Use-Cases

4.1.1 Business Use Cases

Use Case ID: UC-1		Use Case Name: Business Sign-Up
Created By: Matt Korte		Date Created: 2/24/2022
Last Updated By: Samia Chowdhury		Last Revision Date: 3/3/2022
Actors	New Business Users	
Description	New business user creating a business account	
Trigger	User clicking on the “Create Account” button	
Preconditions	User is on the sign-up page	
Postconditions	User account information added to database Account verification email is sent to the business user email address	
Normal Flow	<div>1. User fills the business name, email, password, and confirm password fields</div> <div>2. User checks the box to agree to terms and conditions</div> <div>3. User clicks the “Sign-Up” button</div> <div>4. Account conformation email is sent to the email the user entered</div> <div>5. User is notified of the confirmation email being sent</div>	
Alternative Flow	N/A	
Exceptions	If the any of the fields are not filled in when the user clicks the “sign-up” button, they are shown an error message below that field telling them it is required.	
Assumptions	User enters an email that is not already in the database.	

Use Case ID: UC-2		Use Case Name: Business Login
Created By: Matt Korte		Date Created: 2/24/2022
Last Updated By: Samia Chowdhury		Last Revision Date: 3/3/2022
Actors	Business Users	
Description	Business user logs into their already existing account	
Trigger	The “Login” button on the sign in page	

Preconditions	User has created a business account
Postconditions	User directed to dashboard
Normal Flow	<ol style="list-style-type: none"> 1. User navigates to the sign in page 2. User enters in login information 3. User clicks “Sign In” 4. User is brought to the business dashboard
Alternative Flow	N/A
Exceptions	If the user enters an email and password which do not match a created account, an error message is shown, and they are not redirected to the dashboard.
Assumptions	User has created and activated an account.

Use Case ID: UC-3		Use Case Name: Business Account Verification	
Created By: Matt Korte		Date Created: 2/25/2022	
Last Updated By: Samia Chowdhury		Last Revision Date: 3/3/2022	
Actors	New Business Users		
Description	New business user creating a business account		
Trigger	Creating a new business account		
Preconditions	UC-1 has occurred		
Postconditions	A user account has been confirmed, and they can now access their account.		
Normal Flow	<div>1. Business users create an account using a business name, email, and password.</div> <div>2. Verification email will be sent to the business user email address.</div> <div>3. Business user clicks the verification link that was sent to their email address</div> <div>4. They are redirected to a page that lets them know that their account is verified successfully.</div>		
Alternative Flow	N/A		
Exceptions	In the case that the user does not open the verification link, it will expire in 24 hours which will require the user to repeat the normal flow.		

Assumptions	Email service used to send verification email is operational
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Use Case ID: UC-4	Use Case Name: Business User Approval
Created By: Matt Korte	Date Created: 2/24/2022
Last Updated By: Matt Korte	Last Revision Date: 3/2/2022
Actors	Business Users
Description	Business user approves a scheduling request for a staff member
Trigger	UC-1
Preconditions	<ol style="list-style-type: none"> 1. User is signed into a business account and is on the business dashboard 2. UC-15 or UC-16 has occurred
Postconditions	Notification is sent back to the staff user that sent the request alerting them of their request is approved. Additionally, the approved availability change/day off is saved in the database.
Normal Flow	<ol style="list-style-type: none"> 1. User clicks the “View” button next to the name of the staff member with a pending request 2. A dialog box opens showing the details of the staff member’s scheduling request 3. User elects to accept the request 4. Notification is sent to staff user that request was expected 5. Availability information is updated for UC-6
Alternative Flow	<ol style="list-style-type: none"> 1. Repeat steps 1 and 2 of the normal flow 2. Business user rejects the request 3. Notification is sent to the staff user that the request was denied
Exceptions	N/A
Assumptions	N/A

Use Case ID: UC-5	Use Case Name: Business User Announcements
Created By: Matt Korte	Date Created: 2/24/2022
Last Updated By: Samia Chowdhury	Last Revision Date: 3/2/2022
Actors	Business Users

Description	Actor makes an announcement post
Trigger	User navigates to announcement (or dashboard for alternative flow) page
Preconditions	User is signed into a business account
Postconditions	Announcement will be visible to all user in the organization on the “announcements” page
Normal Flow	<ol style="list-style-type: none"> 1. User navigates to announcements page from navigation menu 2. User types an announcement into the input text field 3. User then hits the “Publish” button
Alternative Flow	<ol style="list-style-type: none"> 1. Navigates to dashboard 2. Types announcements into input text box 3. Presses “Publish” button
Exceptions	If text field for the announcement is empty, clicking the “publish” button will have no effect.
Assumptions	N/A

Use Case ID: UC-6		Use Case Name: Schedule Creation	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Samia Chowdhury		Last Revision Date: 3/2/2022	
Actors	Business Users		
Description	Business users create the schedule for their staff		
Trigger	The business user navigates to the scheduling screen		
Preconditions	The user is signed into a business account		
Postconditions	The schedule information is saved in the database, to later be called by the staff users to view later.		
Normal Flow	<ol style="list-style-type: none">1. User navigates to the scheduling screen2. User enters the specific date they want to create a schedule on3. Select the specific role type they are scheduling to narrow down list of staff members4. For a specific staff member, click the “Add” button5. Enter shift start and end time6. Click “Accept” button		

	7. Click the “Publish” button
Alternative Flow	N/A
Exceptions	If the user tries to schedule a staff member at a time that they are unavailable, they will be prompted with a warning message which will ask them if they still want to schedule them.
Assumptions	There are staff members in the organization to schedule.

Use Case ID: UC-7		Use Case Name: Staff User Invite Generation	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/2/2022	
Actors	Business Users		
Description	Business user creating an invite link to add a new staff user		
Trigger	Clicking the “Invite Staff” button on the roster management page		
Preconditions	The user is signed into a business account		
Postconditions	An email is sent to a new staff user to create an account linked to the business account, along with a confirmation message showing that the invite was sent.		
Normal Flow	<div>1. Business user navigates to the roster management page</div> <div>2. Clicks the “Invite Staff” button</div> <div>3. Enters new staff member’s email, first name, last name address in the resulting dialog box</div> <div>4. Clicks the “Invite” button</div> <div>5. Invitation email is sent to the entered email address</div>		
Alternative Flow	N/A		
Exceptions	If any of the fields are left empty when pressing the “invite” button, an error message is shown prompting the user to fill them and try again.		
Assumptions	The entered email address is not already associated with an account		

Use Case ID: UC-8		Use Case Name: Business User Profile Update	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/2/2022	

Actors	Business Users
Description	Business user updating account information
Trigger	Clicking on Settings tab on the left navigation
Preconditions	Business account exists and business user is logged into the application
Postconditions	All changes are saved to database
Normal Flow	<ol style="list-style-type: none"> 1. Actor navigates to Settings page and clicks on profile. 2. Actor updates the business name and/or email address. 3. Actor clicks on “Update” button to save new changes
Alternative Flow	N/A
Exceptions	If email address is already in use, give user an error message and prompt them to try a different one
Assumptions	N/A

Use Case ID: UC-9		Use Case Name: Remove staff member from roster
Created By: Matt Korte		Date Created: 2/24/2022
Last Updated By: Matt Korte		Last Revision Date: 2/28/2022
Actors	Business Users	
Description	Business user removing staff user form organization	
Trigger	User navigating to the roster management page	
Preconditions	<div><div>1.</div><div>There is at least one staff user in the organization</div></div> <div><div>2.</div><div>The user is signed into a business account</div></div>	
Postconditions	The staff user’s account is removed from the organization and is deleted	
Normal Flow	<div><div>1.</div><div>Business user navigates to roster management page</div></div> <div><div>2.</div><div>Clicks the “Edit” button</div></div> <div><div>3.</div><div>Clicks the “Remove” button next to a user</div></div> <div><div>4.</div><div>Clicks “Confirm” in the resulting dialog box</div></div> <div><div>5.</div><div>Staff user account is removed from database</div></div> <div><div>6.</div><div>Return to roster management page</div></div>	
Alternative Flow	<div><div>1.</div><div>Follow steps 1-3 of the normal flow</div></div> <div><div>2.</div><div>User clicks the “Cancel” button</div></div>	

	3. Return to roster management page with staff user still listed
Exceptions	If there are no staff users in the organization, there will be no prompt to edit a staff member's information
Assumptions	N/A

Use Case ID: UC-10		Use Case Name: Create New Role Type	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/2/2022	
Actors	Business Users		
Description	Business user creating a new role type to later be applied to staff users		
Trigger	Pressing the “Add Role” button on the settings page		
Preconditions	Business user is signed in		
Postconditions	New role type is saved in database, to be accessed in UC-11		
Normal Flow	1. After pressing the “Add Role” button 2. User types in a role name into the text box 3. Pressing the “Submit” button		
Alternative Flow	N/A		
Exceptions	If the entered role is already in the database, give the user an error message and the role is not added to the database		
Assumptions	N/A		

Use Case ID: UC-11		Use Case Name: Assigning Role Types	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Samia Chowdhury		Last Revision Date: 3/3/2022	
Actors	Business Users		
Description	Business user assigning roles to staff users within the organization		
Trigger	The “Edit” button on the roster page		
Preconditions	Business user is sign in		
Postconditions	The staff member now has a role assigned to them		
Normal Flow	<div>1. Navigate to the roster management page</div> <div>2. Hitting the “Edit” button next to a staff members name</div>		

	<ol style="list-style-type: none"> Click the “Edit Role” button User assigns the staff member a role from the drop-down list and clicks the “Save” button Returns to the default view of the roster page
Alternative Flow	N/A
Exceptions	If no roles have been created, the drop-down list will be empty, and the user will not be able to assign a role to the user
Assumptions	<ul style="list-style-type: none"> There are staff members in the organization The business user has created at least one role

4.1.2 Staff Use Cases

Use Case ID: UC-12		Use Case Name: Staff Sign-Up	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/2/2022	
Actors	Staff Users		
Description	Staff user making an eTimely account		
Trigger	Opening link sent in UC-7		
Preconditions	UC-7 has occurred previously		
Postconditions	User account credentials (name, email, and password) are saved in the database, then they are rerouted to the dashboard		
Normal Flow	<div><div>1.</div><div>User is directed to the staff sign up page</div></div> <div><div>2.</div><div>User fills in the first name, last name, password, and confirm password fields</div></div> <div><div>3.</div><div>Press the “Sign-Up” button</div></div> <div><div>4.</div><div>User is redirected to the staff user dashboard</div></div>		
Alternative Flow	N/A		
Exceptions	In the case that the password and confirm passwords fields do not match, the user is shown an error message alerting them of this and they must try again.		
Assumptions	User has opened the link within 24 hours of it being sent.		

Use Case ID: UC-13		Use Case Name: Staff User Login
Created By: Matt Korte		Date Created: 2/24/2022
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022
Actors	Staff Users	
Description	Staff user logging into their account	
Trigger	Clicking the “Login” button on the login page	
Preconditions	<div><div>1.</div>User has previously made a staff account</div> <div><div>2.</div>User is currently on the login page</div> <div><div>3.</div>User’s account has been activated</div>	
Postconditions	The user is logged in and redirected to the dashboard	
Normal Flow	<div><div>1.</div>User enters their email and password into their respective fields</div> <div><div>2.</div>User clicks the “login button”</div> <div><div>3.</div>User is shown a message to alert them that they have successfully signed</div> <div><div>4.</div>User is redirected to the dashboard page</div>	
Alternative Flow	N/A	
Exceptions	<div><div>•</div>If the email or password fields are left empty when the user presses the sign in button, they will be given an error message and prompted to enter the missing field.</div> <div><div>•</div>If the email and password do not match, an error message will be shown, and the user will be prompted to try again.</div>	
Assumptions	N/A	

Use Case ID: UC-15		Use Case Name: Staff Availability Change
Created By: Matt Korte		Date Created: 2/24/2022
Last Updated By: Matt Korte		Last Revision Date: 3/3/2022
Actors	Staff Users	
Description	Staff user updating the days and times they are available to work	
Trigger	Clicking the “Availability” button on the left navigation	
Preconditions	The user is logged into a staff account	

Postconditions	Staff Availability is updated to reflect the times inputted by the staff user
Normal Flow	<ol style="list-style-type: none"> 1. User navigates to the Availability page 2. User clicks add button 3. User enters new availability 4. User clicks the “Confirm” button
Alternative Flow	N/A
Exceptions	If user enters an end time that is after the start time (for example, start time is 4pm and end time is 11am), an error will be shown prompting the user to reenter the times
Assumptions	N/A

Use Case ID: UC-16		Use Case Name: Staff Request Off
Created By: Matt Korte		Date Created: 2/24/2022
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022
Actors	Staff Users	
Description	Staff user sending in a request for a specific day off	
Trigger	Clicking the “Schedule” button on the left navigation	
Preconditions	The user is logged into a staff account	
Postconditions	Request is sent to manager to approve or deny	
Normal Flow	<div>1. User navigates to the availability page</div> <div>2. Clicks the “Request Day Off” button</div> <div>3. Dialog box that asks for the date they would like open</div> <div>4. User inputs date and hits “Request” button</div> <div>5. Request is sent to the business user</div> <div>6. UC-4</div>	
Alternative Flow	N/A	
Exceptions	If the user enters a date that has already passed, an error message will show.	
Assumptions	N/A	

4.1.3 Both User Type Use Cases

Use Case ID: UC-17		Use Case Name: Announcement Viewing	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022	
Actors	Staff Users, and Business Users		
Description	User navigating any previously made announcements		
Trigger	User clicks on Announcements tab on left navigation menu		
Preconditions	<div>1. At least one announcement was made as described in UC-5</div> <div>2. User is signed into an account</div>		
Postconditions	The user can view announcements		
Normal Flow	<div>1. User navigates to the announcements page from the side navigation</div> <div>2. Sees the most recent announcement posted at the top of the screen</div> <div>3. User scrolls down to view past announcements</div>		
Alternative Flow	N/A		
Exceptions	N/A		
Assumptions	The business user has made at least one announcement post to view		

Use Case ID: UC-18		Use Case Name: Message Board	
Created By: Matt Korte		Date Created: 2/25/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022	
Actors	Staff Users or Business Users		
Description	Making and viewing posts on the message board		
Trigger	User clicks on Messages tab on left navigation		
Preconditions	User is signed into an account		
Postconditions	Message is sent to the message board and viewable for all other members of the organization.		
Normal Flow	<div>1. User navigates to the messages page from the side navigation menu</div> <div>2. User enters a message into the text input box</div> <div>3. User presses the “Send” button</div>		

	4. The message is shown in the message feed, along with the name and profile picture of the user as well as the day and time it was sent
Alternative Flow	N/A
Exceptions	If the text input box is empty, the use will not be able to enter send an empty message.
Assumptions	N/A

Use Case ID: UC-19		Use Case Name: Dashboard Navigation	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022	
Actors	Business Users or Staff Users		
Description	User navigates to the dashboard page		
Trigger	User clicks on the dashboard tab on left navigation		
Preconditions	User is signed into an account		
Postconditions	User directed to dashboard		
Normal Flow	1. User signs in 2. User is navigated to dashboard		
Alternative Flow	User logs in and lands on dashboard. If a user cannot access the dashboard page, an error message will be displayed, and the user will be prompted to log in with their credentials.		

Use Case ID: UC-20		Use Case Name: User Logout	
Created By: Matt Korte		Date Created: 2/24/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022	
Actors	Business Users or Staff Users		
Description	Users logging out of eTimely		
Trigger	Logout button		
Preconditions	User is signed into an account		
Postconditions	User is signed out and redirected to home page		
Normal Flow	1. User navigates to the settings page		

	<ol style="list-style-type: none"> 2. User clicks the “Logout” button 3. User is no longer signed into eTimely and redirected to the home page
Alternative Flow	N/A
Exceptions	N/A
Assumptions	N/A

4.1.4 Default Use Cases

Use Case ID: UC-21		Use Case Name: About Us Navigation	
Created By: Matt Korte		Date Created: 2/25/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022	
Actors	Any user		
Description	User navigates to the about us page		
Trigger	The “About Us” link in the navigation bar		
Preconditions	<div>1. User is not signed into an account.</div> <div>2. The navigation bar is visible on the page the user is currently on</div>		
Postconditions	User is on the About Us page		
Normal Flow	<div>1. User clicks the “About Us” link in the navigation bar</div> <div>2. User is redirected to the “About Us” page</div>		
Alternative Flow	N/A		
Exceptions	If no user signed in and they navigate to the dashboard from the address bar, then they will be shown a screen telling them to sign in as well as a button to redirect them to the sign-up page		
Assumptions	N/A		

Use Case ID: UC-22		Use Case Name: Terms & Conditions Navigation	
Created By: Matt Korte		Date Created: 2/25/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022	
Actors	Any user		
Description	User navigates to the terms and conditions page		

Trigger	The “Terms and Conditions” link in the footer
Preconditions	<ol style="list-style-type: none"> 1. User is not signed into an account 2. The footer is visible on the page the user is currently on
Postconditions	User is on the Terms & Conditions page
Normal Flow	<ol style="list-style-type: none"> 1. User clicks the “Terms & Conditions” link in the footer 2. User is redirected to the Terms & Conditions page
Alternative Flow	N/A
Exceptions	N/A
Assumptions	N/A

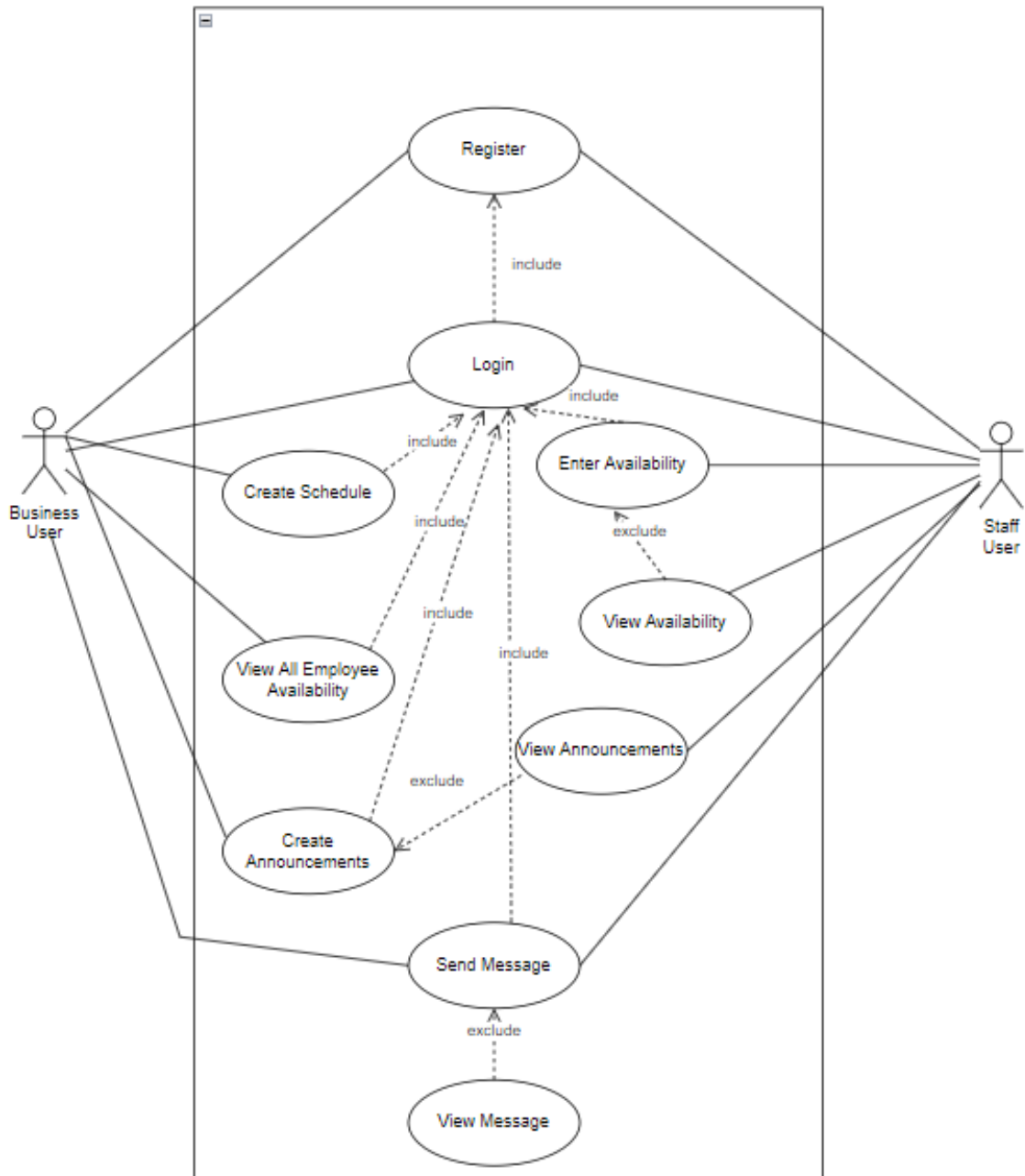
Use Case ID: UC-23		Use Case Name: Home Navigation	
Created By: Matt Korte		Date Created: 2/25/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022	
Actors	Any user		
Description	User navigates to the Home page		
Trigger	The “Home” link in the navigation bar		
Preconditions	1. User is not signed into an account 2. The navigation bar is visible on the page the user is currently on		
Postconditions	User is on the Home page		
Normal Flow	1. User clicks the “Home” link in the navigation bar 2. User is redirected to the Home page		
Alternative Flow	1. User clicks the “Home” link in the footer 2. User is redirected to the Home page		
Exceptions	N/A		
Assumptions	N/A		

Use Case ID: UC-24		Use Case Name: Sign In Navigation	
Created By: Matt Korte		Date Created: 2/25/2022	
Last Updated By: Matt Korte		Last Revision Date: 3/4/2022	
Actors	Any user		
Description	User navigates to the sign in page		

Trigger	The “Sign In” button in the navigation bar
Preconditions	<ol style="list-style-type: none"> 1. User is not signed into an account 2. The navigation bar is visible on the page the user is currently on
Postconditions	User is on the Sign In page
Normal Flow	<ol style="list-style-type: none"> 1. User clicks the “Sign In” button in the navigation bar 2. User is redirected to the Sign In page
Alternative Flow	If the user manual enters the link to any of the pages that require an account to access, they will be shown a screen that has a link to the Sign In page
Exceptions	N/A
Assumptions	N/A

Use Case ID: UC-25		Use Case Name: Sign Up Navigation	
Created By: Matt Korte		Date Created: 2/25/2022	
Last Updated By: Samia Chowdhury		Last Revision Date: 3/1/2022	
Actors	Any user		
Description	User navigates to the sign in page		
Trigger	The “Get Started” button in the navigation bar		
Preconditions	The user is on the home page		
Postconditions	User is on the Sign-Up page		
Normal Flow	1. User clicks the “Get Stared” link on the home page 2. User is redirected to the Sign-Up page 3. UC-1		
Alternative Flow	N/A		

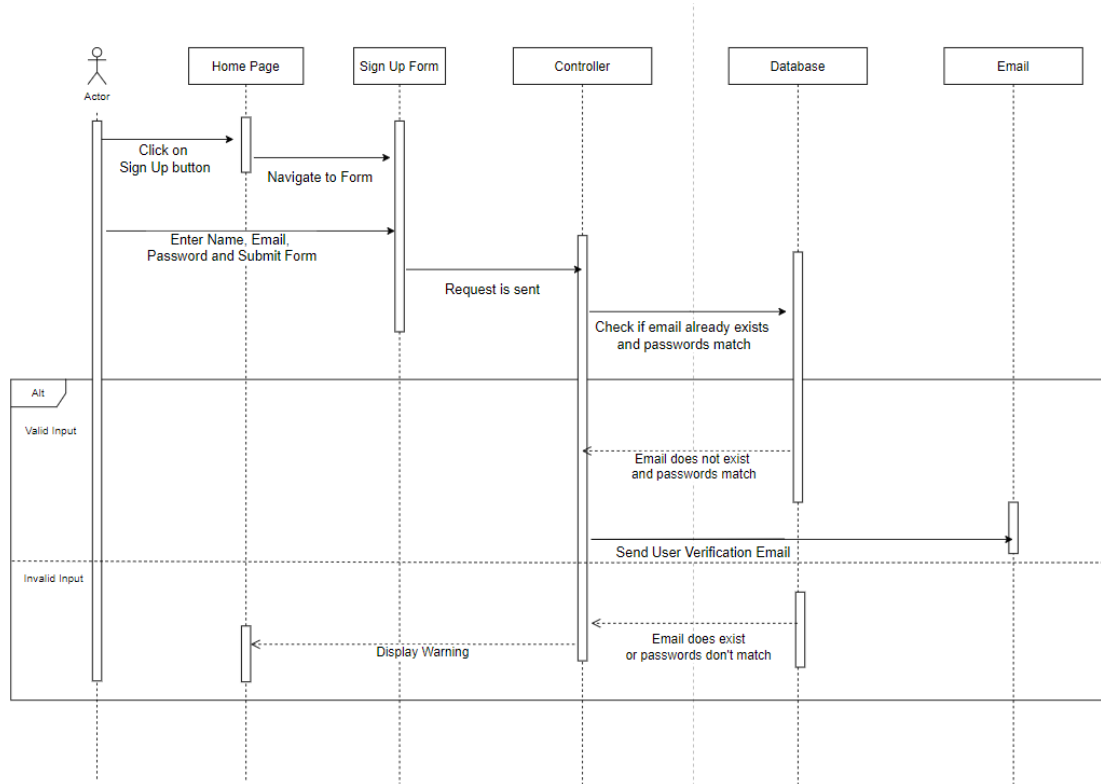
4.2 Use Case Diagram:



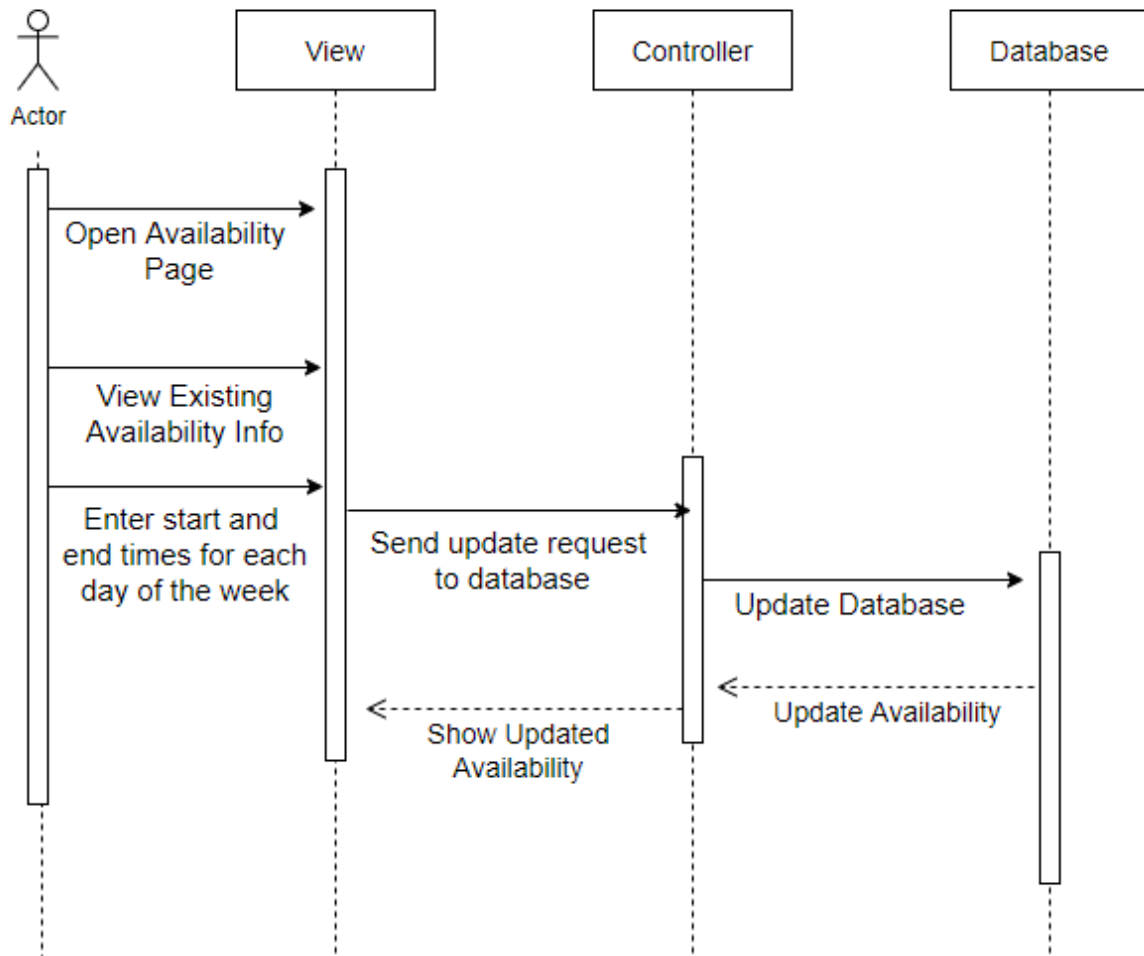
4.3 Sequence Diagram

The following subsections show five different sequence diagrams that will outline the steps taken by the user as well as the system to complete specific use case situations.

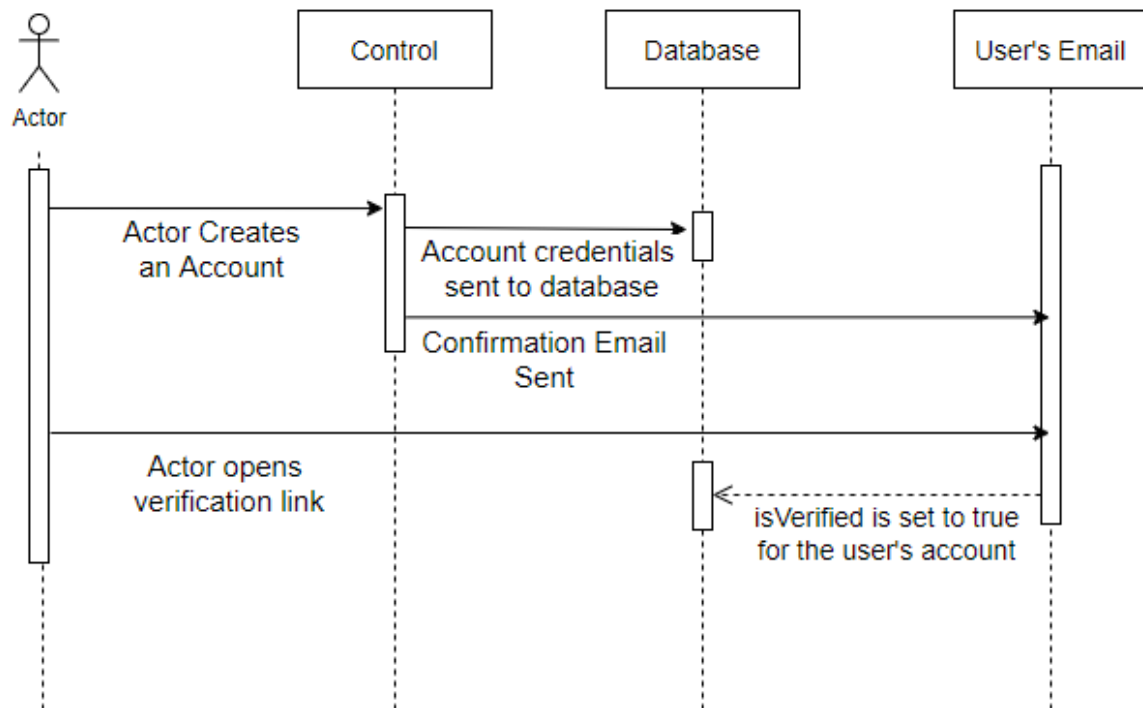
4.3.1 User Sign Up



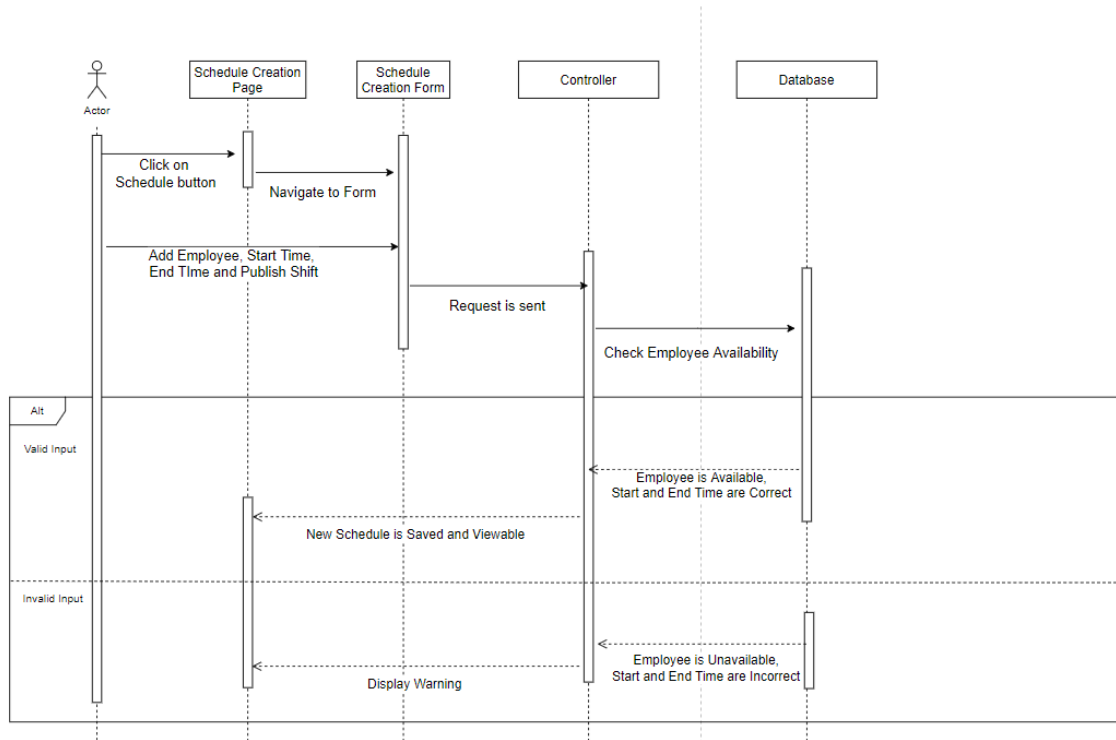
4.3.2 Entering Availability



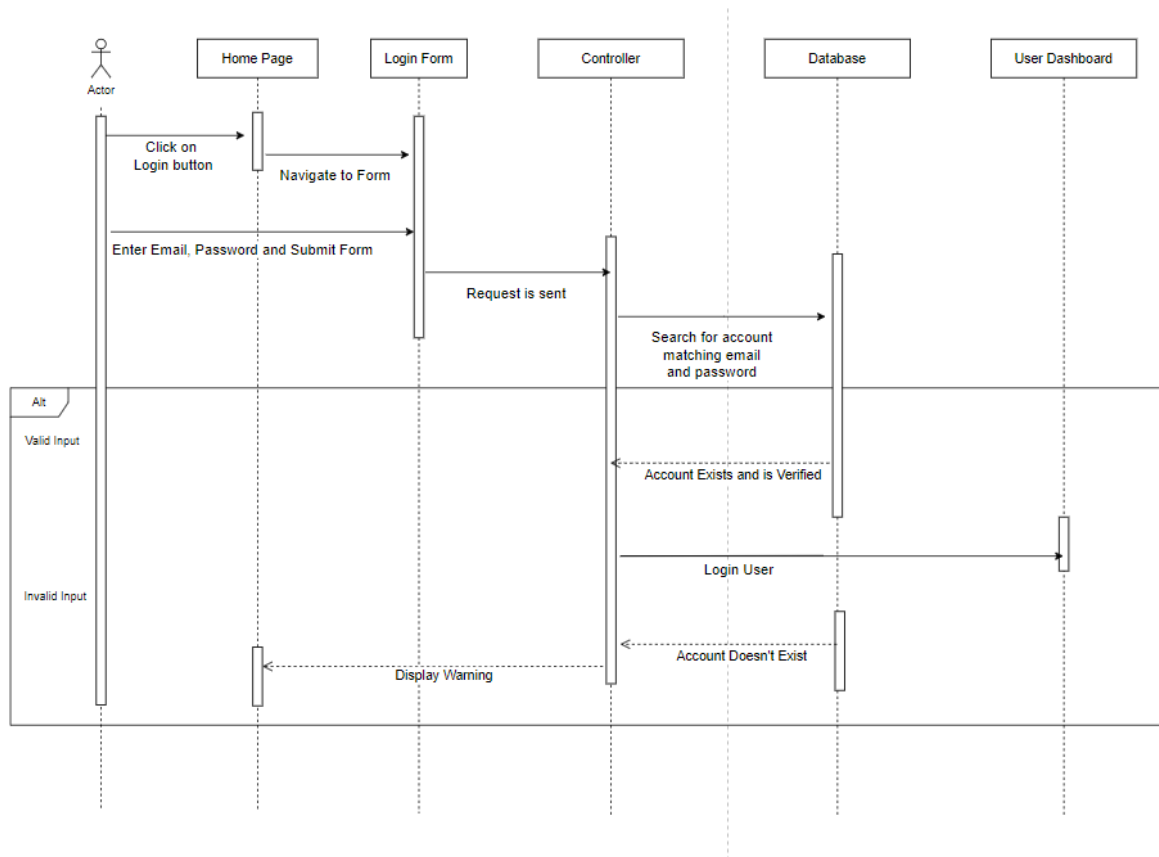
4.3.3 Confirmation Email



4.3.4 Schedule Creation



4.3.5 User Login



4.4 Data Flow Diagrams

4.4.1 Business User Data Flow Diagram

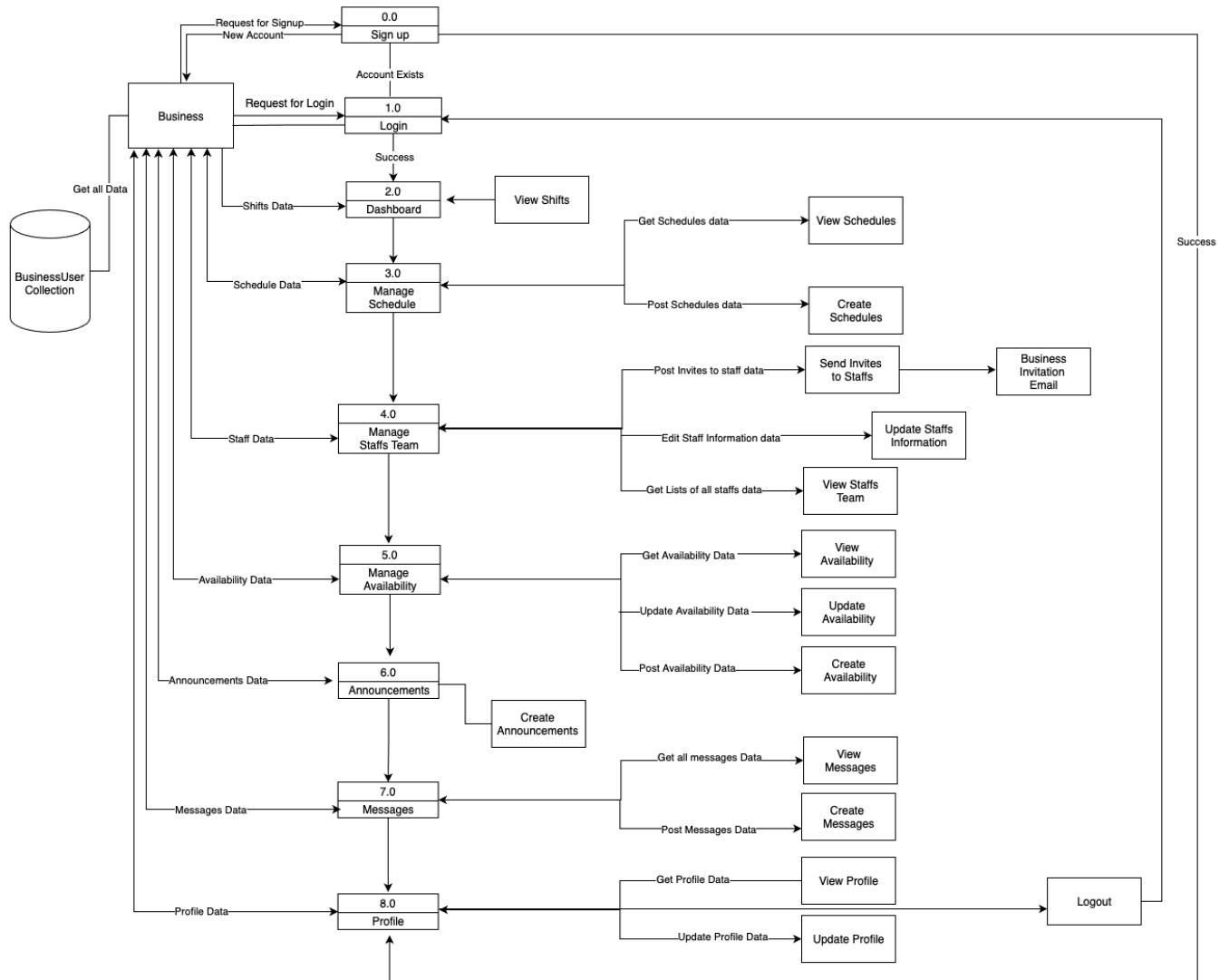


Figure 4.3.1

4.4.2 Staff User Data Flow Diagram

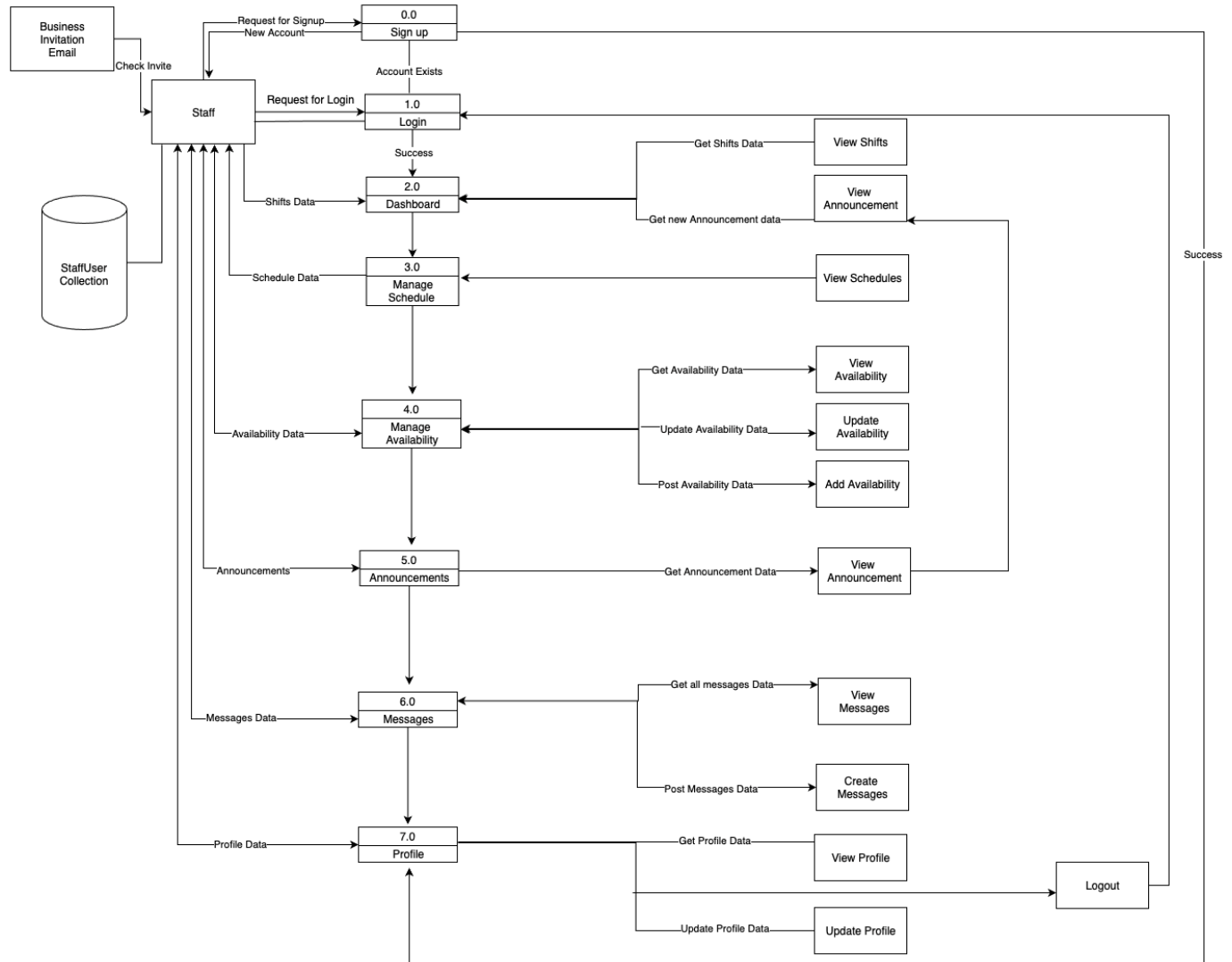


Figure 4.3.2

4.5 Database Design

This application is going to make use of the Firebase Firestore database in order to store all data that is used throughout the system. The diagram below shows the design behind the database and how data collections are going to be related. The Staff User, Business User, Availability and Schedules collections are going to be root collections in the database. The Roles and Announcements collections will be subcollections of the Business User root collection, while the Messages collection will be a subcollection of the Staff User root collection.

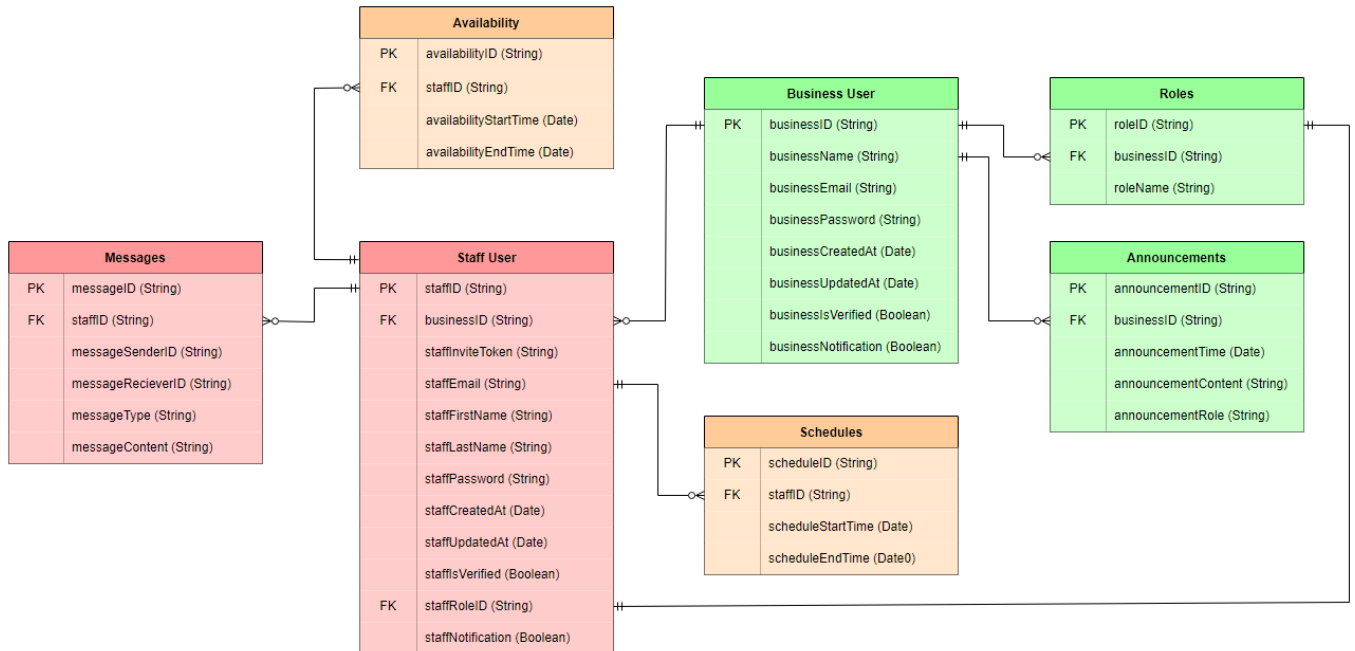


Figure 4.4

4.6 Application Program Interfaces

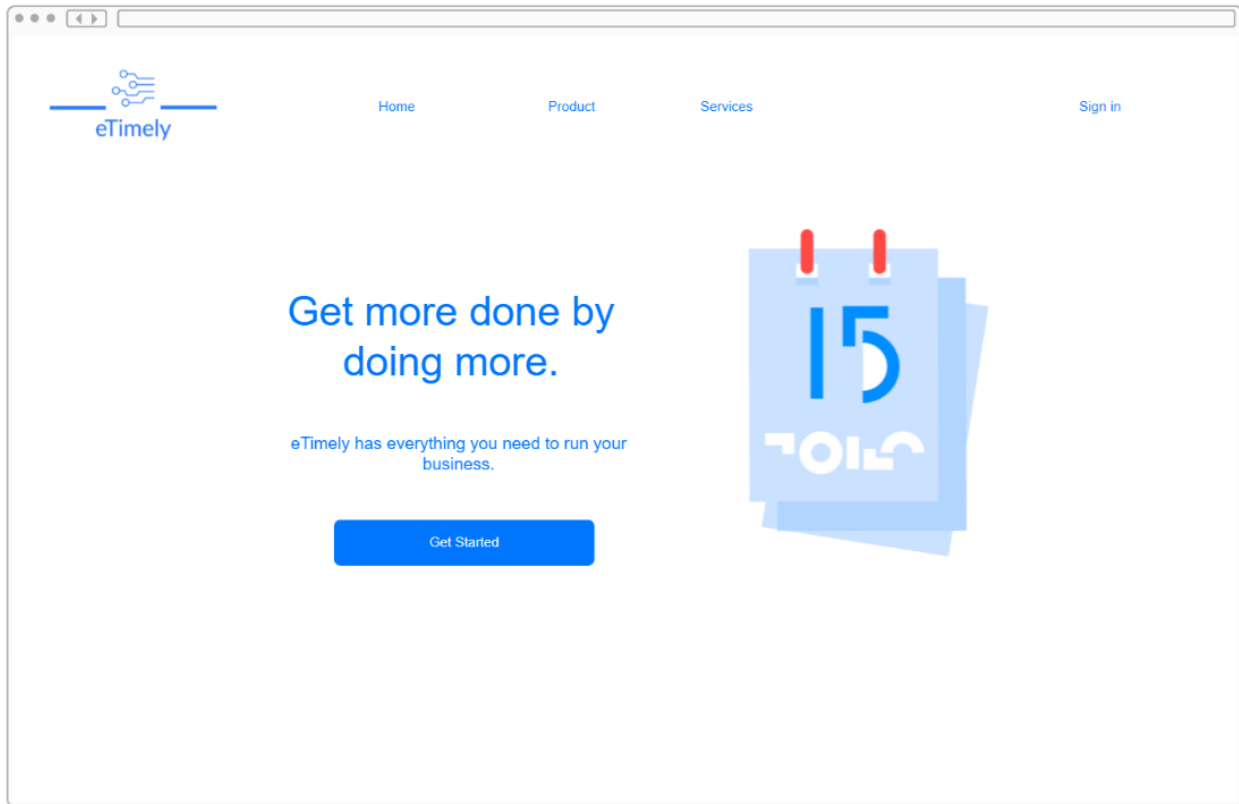
This application does not rely on any external API calls to gather or fetch information.

4.7 User Interface Design

This application is going to have three distinct groups of user interfaces. The group of user interfaces that will be shown depends on whether the user is logged in. A user that is not logged in will only be able to navigate through the application's Default View. If a user is logged in, the group of user interfaces presented to the user will depend on which type of account the user is logged in to. This is where the user will be able to take advantage of the functionalities of the application. These functionalities are highlighted by employees inputting availability and requesting schedule changes as well as the business user creating and publishing schedules and making decisions on schedule change requests.

4.7.1 Default View

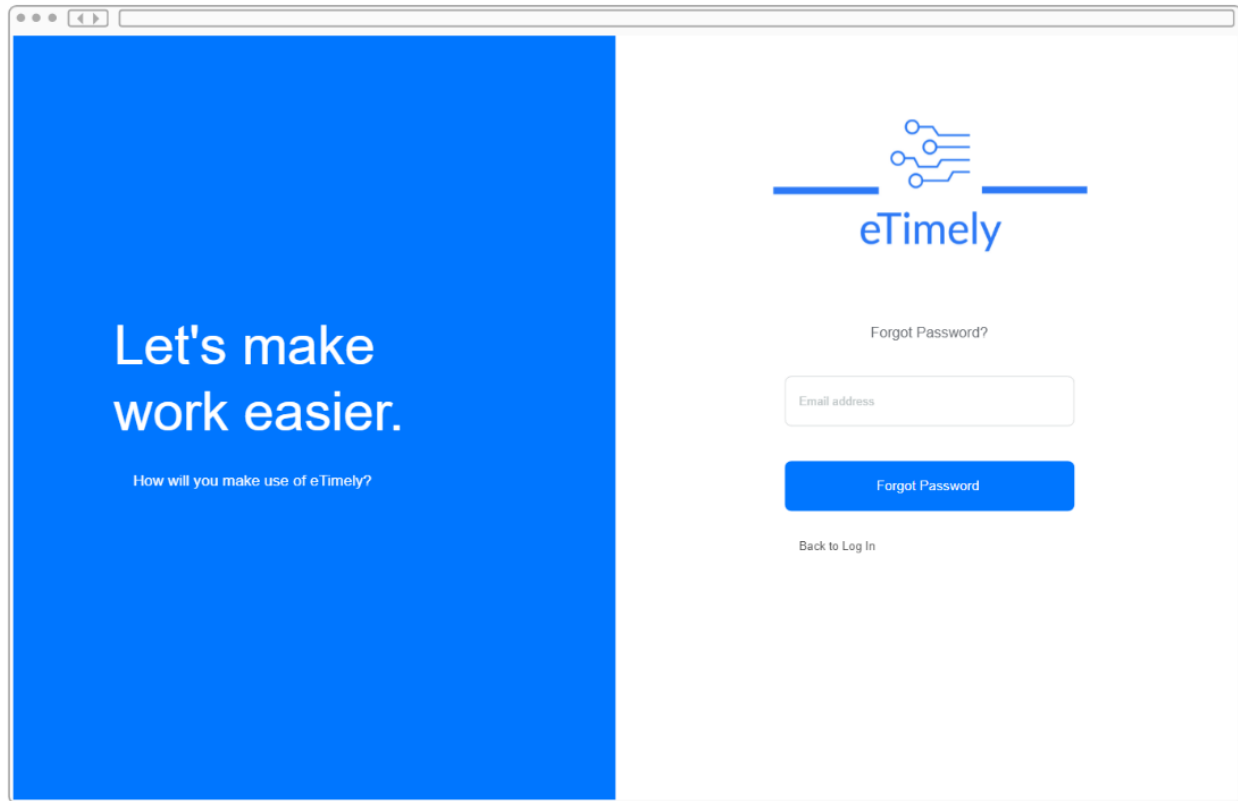
4.7.1.1 Home Page



4.7.1.2 Login Page

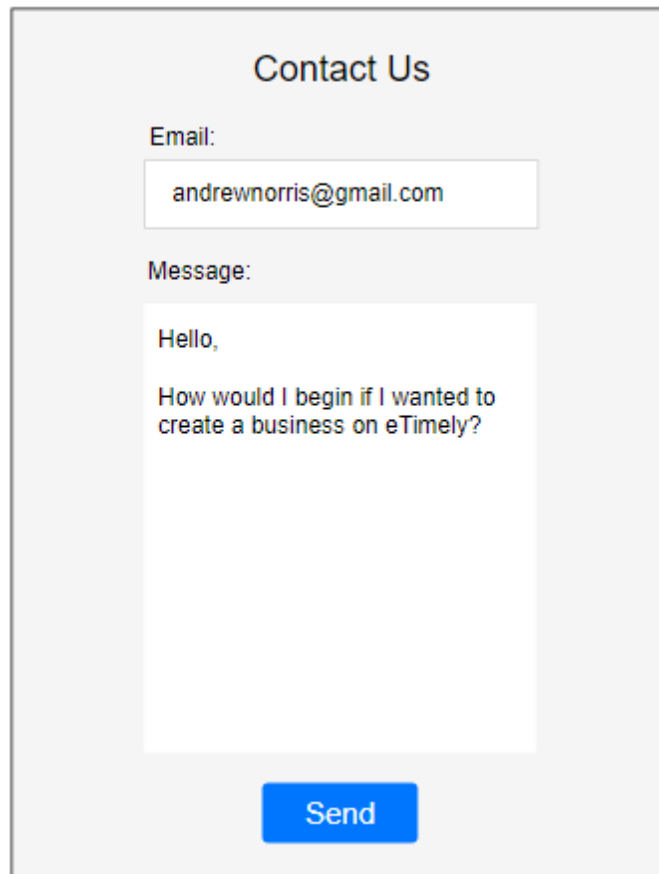
The screenshot displays the eTimely login interface within a browser window. The page has a clean, minimalist design with a light gray background. In the top left corner, the eTimely logo is displayed, consisting of a stylized blue icon above the text 'eTimely'. The main heading 'Welcome Back.' is centered in a bold blue font. Below this, the text 'Sign In' is centered in a smaller, gray font. The login form consists of two white input fields with thin gray borders: the first is labeled 'Email' and the second is labeled 'Password'. Below these fields is a prominent blue button with the text 'Sign In' in white. At the bottom of the form area, there are two links: 'New to eTimely? Get Started' and 'Forgot Password?', both in a small gray font. The eTimely logo is also present in the bottom left corner of the page.

4.7.1.3 Password Recovery Page



The screenshot shows a web browser window displaying the eTimely Password Recovery Page. The page is split into two main sections. The left section has a solid blue background with the text "Let's make work easier." in white, followed by the smaller text "How will you make use of eTimely?". The right section has a white background. At the top right of this section is the eTimely logo, which consists of a stylized circuit icon above the word "eTimely". Below the logo is the text "Forgot Password?". Underneath this is a text input field with the placeholder "Email address". Below the input field is a blue button with the text "Forgot Password". At the bottom of the right section is a link that says "Back to Log In".

4.7.1.4 Contact Us Window



A mockup of a 'Contact Us' window. The window has a light gray background. At the top, the title 'Contact Us' is centered in a dark blue font. Below the title, there is a label 'Email:' followed by a text input field containing the email address 'andrewnorris@gmail.com'. Below the email field, there is a label 'Message:' followed by a larger text area. The text area contains the message: 'Hello, How would I begin if I wanted to create a business on eTimely?'. At the bottom center of the window is a blue button with the text 'Send' in white.

Contact Us

Email:

andrewnorris@gmail.com

Message:

Hello,

How would I begin if I wanted to create a business on eTimely?

Send

4.7.2 Staff View

4.7.2.1 Create Staff Account Page

The screenshot shows a web browser window displaying the 'Sign up to eTimely' page. The page has a clean, modern design with a light gray background. In the top left corner, there is the eTimely logo, which consists of a blue icon of three horizontal lines with circles at the ends, followed by the text 'eTimely'. In the top right corner, there is a language selector showing 'English' with a downward arrow. The main heading is 'Sign up to eTimely' in a bold, blue font, with the subtitle 'Create a staff account' in a smaller, gray font below it. The form contains four input fields: 'Email*', 'Mobile Number*', 'Password*', and 'Confirm Password*', each with a light gray border and a small asterisk indicating a required field. Below the input fields, there is a line of text: 'By signing up you agree to the Terms of Service'. At the bottom of the form is a prominent blue button with the text 'Create Account' in white. Below the button, there is a link that says 'Already have an account? Sign In'.

Sign up to eTimely

Create a staff account

Email*

Mobile Number*

Password*

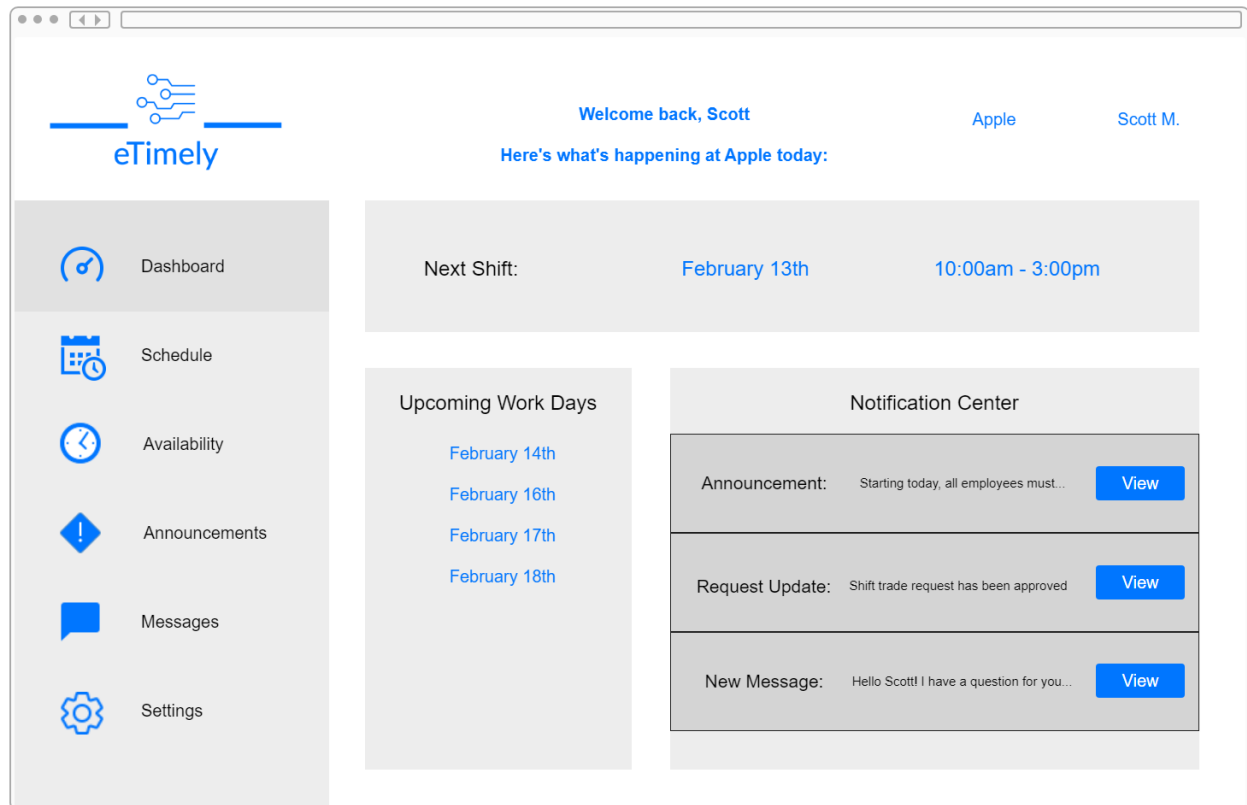
Confirm Password*

By signing up you agree to the Terms of Service

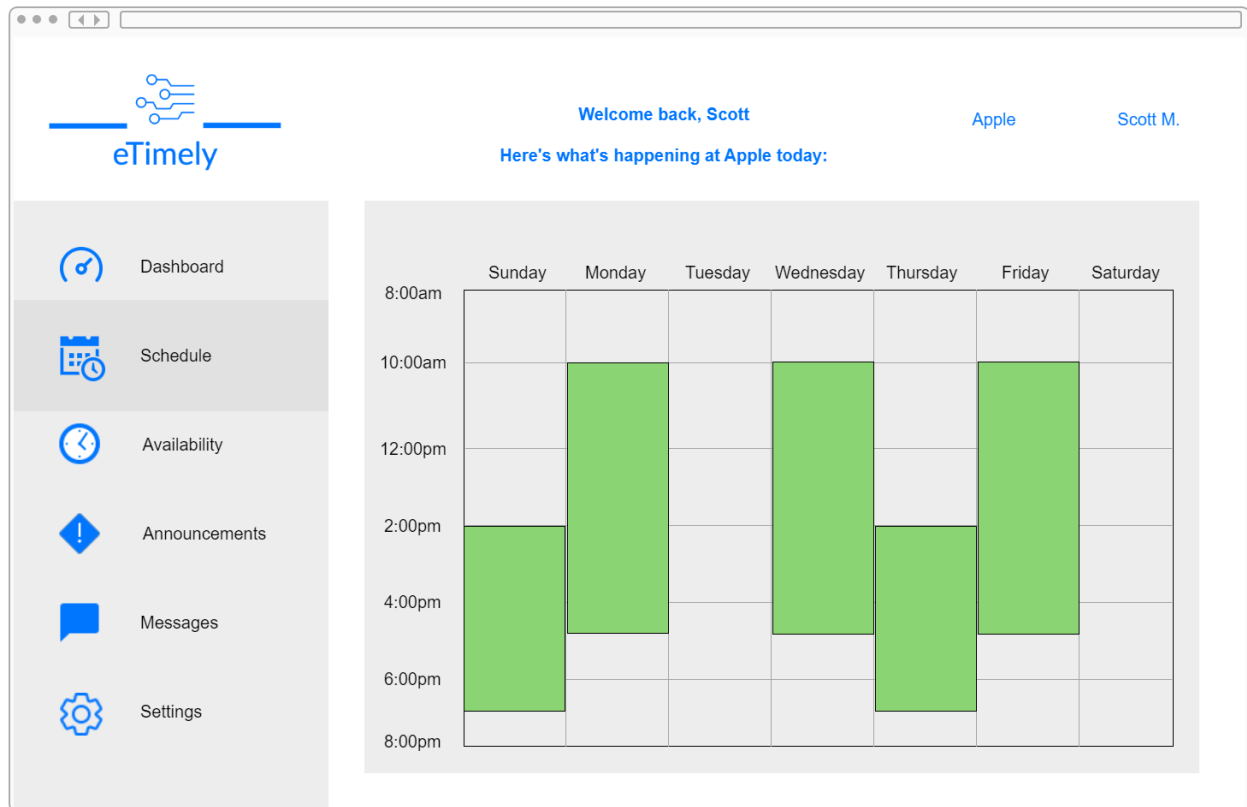
Create Account

Already have an account? Sign In

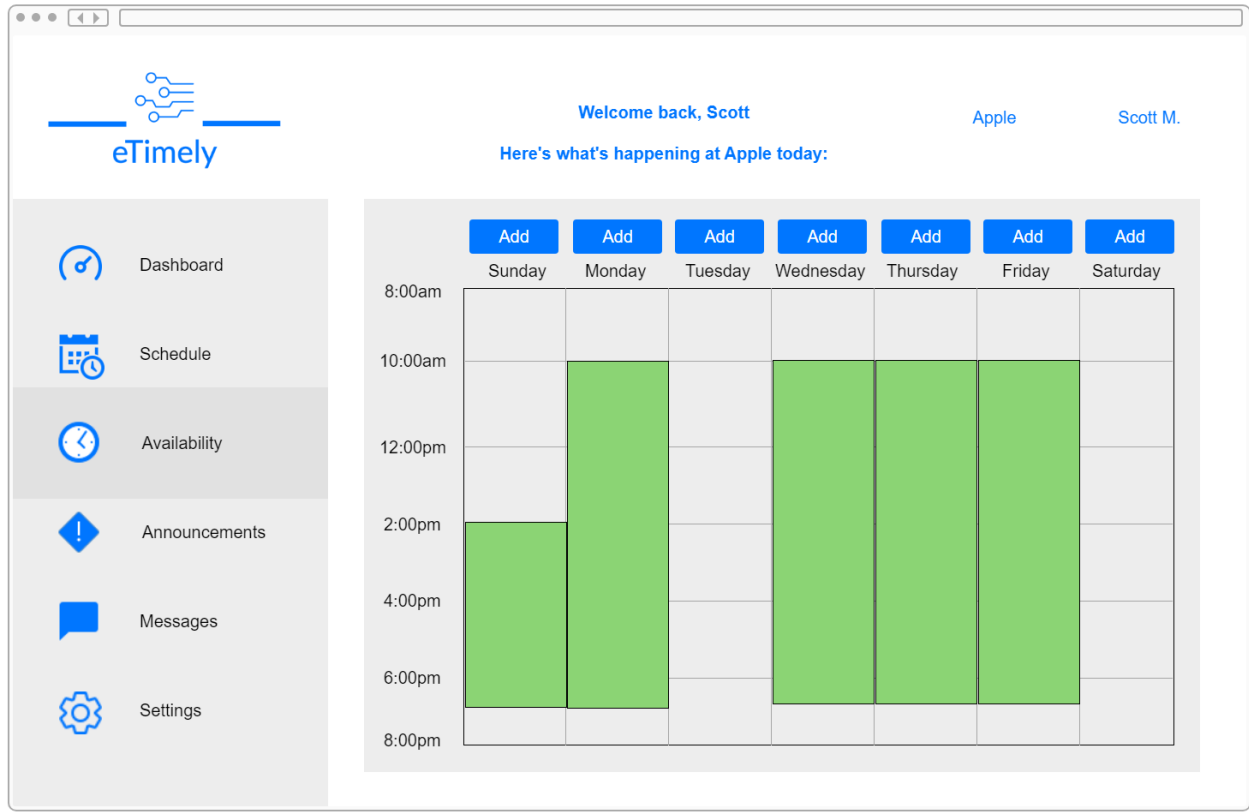
4.7.2.2 Staff Dashboard View



4.7.2.3 Staff Schedule Tab



4.7.2.4 Staff Availability Tab



4.7.2.5 Staff Availability Window

The screenshot displays the eTimely web application interface. On the left is a sidebar with navigation links: Dashboard, Schedule, Availability (highlighted), Announcements, Messages, and Settings. The main content area shows a welcome message for 'Scott' and a link to view today's events. Below this is a calendar grid for the week of Sunday to Saturday. The grid shows availability status for each day and time slot (8:00am to 8:00pm). A modal window titled 'Saturday Availability' is open, allowing the user to set their availability for Saturday. The modal includes fields for 'Available' (N/A), 'Unavailable' (8:00am to 8:00pm), and a 'Confirm' button.

Welcome back, Scott

Apple Scott M.

Here's what's happening at Apple today:

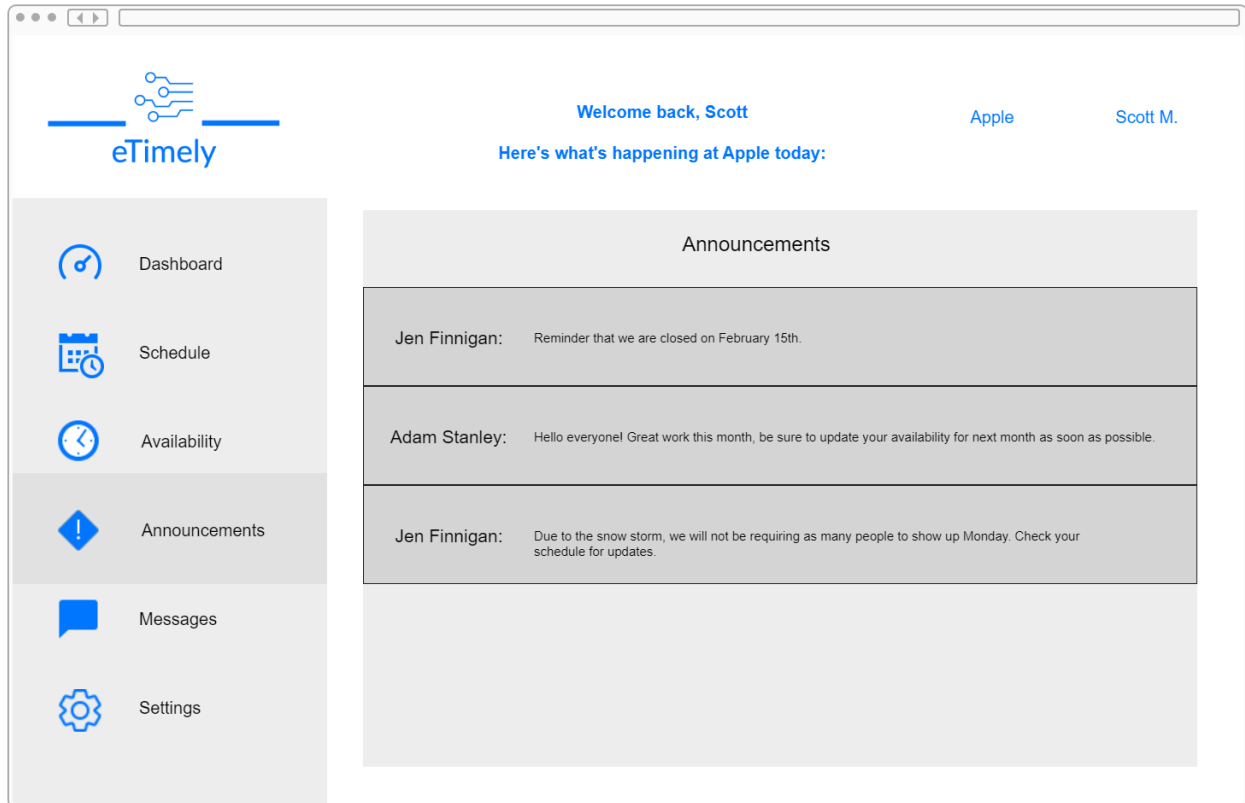
Availability Window

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8:00am							
10:00am							
12:00pm							
2:00pm							
4:00pm							
6:00pm							
8:00pm							

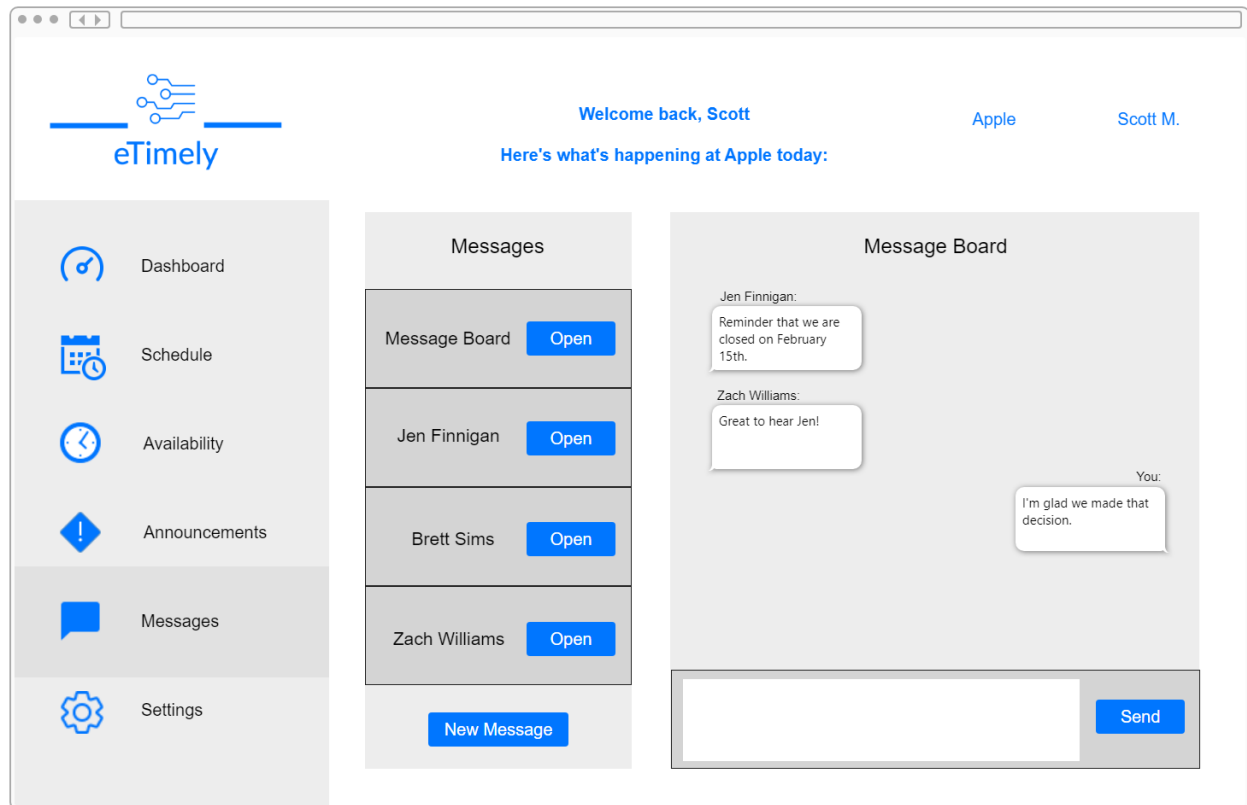
Saturday Availability

Available	N/A	N/A
Unavailable	8:00am	8:00pm
	10:00a	4:00pm
	Available	Confirm

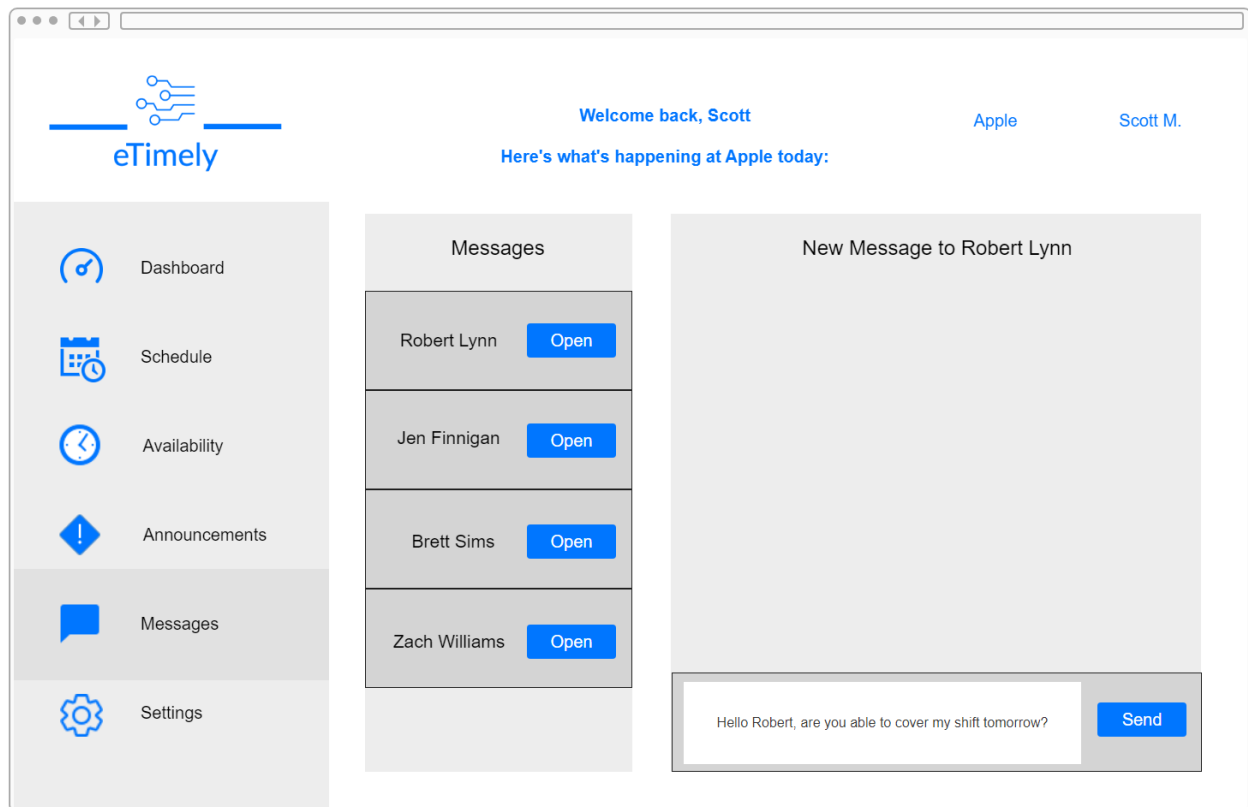
4.7.2.6 Staff Announcements Tab



4.7.2.7 Staff Messages Tab



4.7.2.8 New Message Window



4.7.2.9 Staff Settings Tab

The screenshot displays the eTimely web application interface. At the top left is the eTimely logo. The top navigation bar includes a welcome message "Welcome back, Scott", a link to "Apple", and the user's name "Scott M.". Below the navigation bar, a sidebar on the left contains icons and labels for "Dashboard", "Schedule", "Availability", "Announcements", "Messages", and "Settings". The "Settings" option is highlighted. The main content area is titled "Settings" and features a circular profile picture placeholder with the text "Edit Profile Picture" below it. To the left of the profile picture are input fields for "First Name" (containing "Scott"), "Last Name" (containing "Michaels"), and "Email" (containing "scottmichaels@gmail.com"). Below these fields is a blue "Update Password" button. To the right of the profile picture is a section titled "Email Notifications:" containing three checkboxes: "Messages" (unchecked), "Announcements" (checked), and "Schedule Change" (checked). Below this section is a blue "Log Out" button.

Settings

First Name: Scott

Last Name: Michaels

Email: scottmichaels@gmail.com

Update Password

Email Notifications:

- ☐ Messages
- ☒ Announcements
- ☒ Schedule Change

Log Out

4.7.3 Business View

4.7.3.1 Create Business Account Page

The screenshot shows a web browser window displaying the 'Sign up to eTimely' page. On the left side, there is a logo consisting of a stylized circuit board with the text 'eTimely' below it, and the tagline 'Help business work efficiently' further down. The right side of the page contains a form titled 'Sign up to eTimely' with the subtitle 'Create a business account'. The form includes five input fields: 'Company Name*', 'Company Zip Code*', 'Email*', 'Password*', and 'Confirm Password*'. Below these fields, there is a line of text: 'By signing up you agree to the Terms of Service'. A prominent blue button labeled 'Create Account' is positioned below the text. At the bottom of the form, there is a link that says 'Already have an account? Sign In'.

Sign up to eTimely

Create a business account

Company Name*

Company Zip Code*

Email*

Password*

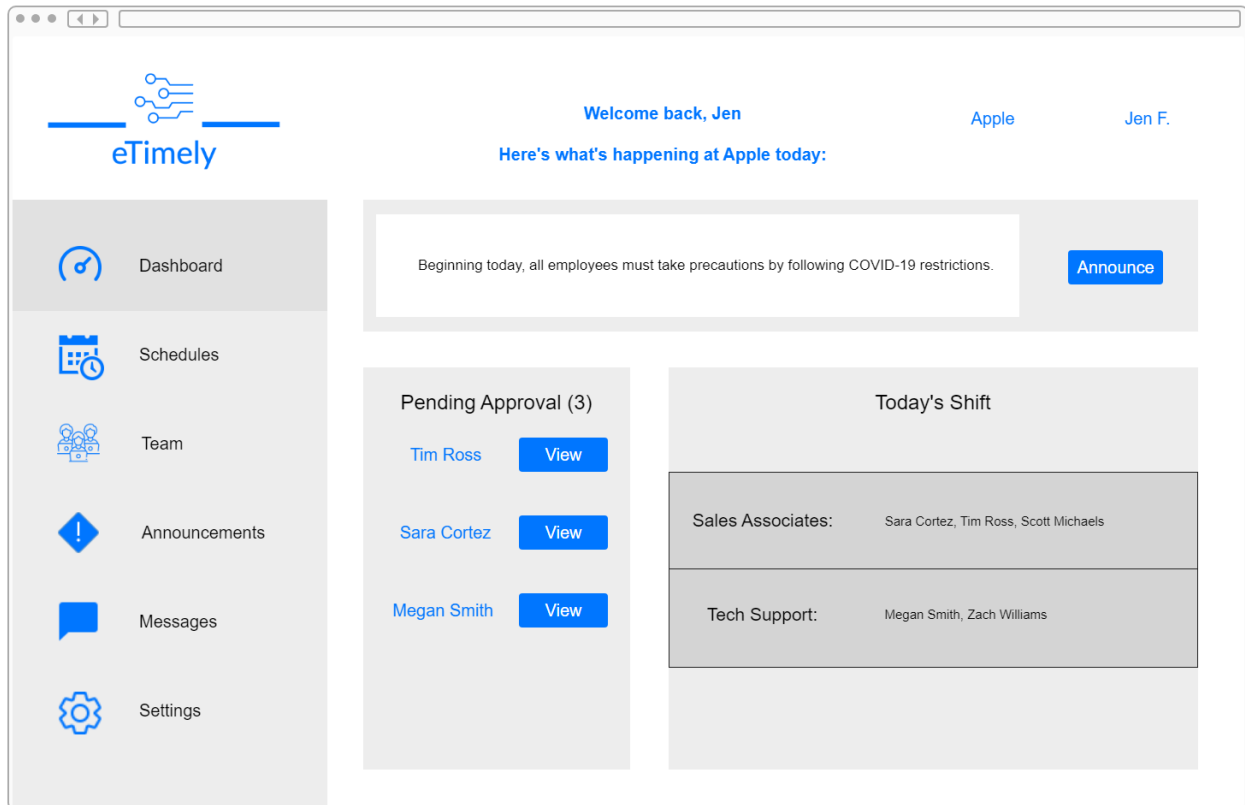
Confirm Password*

By signing up you agree to the Terms of Service

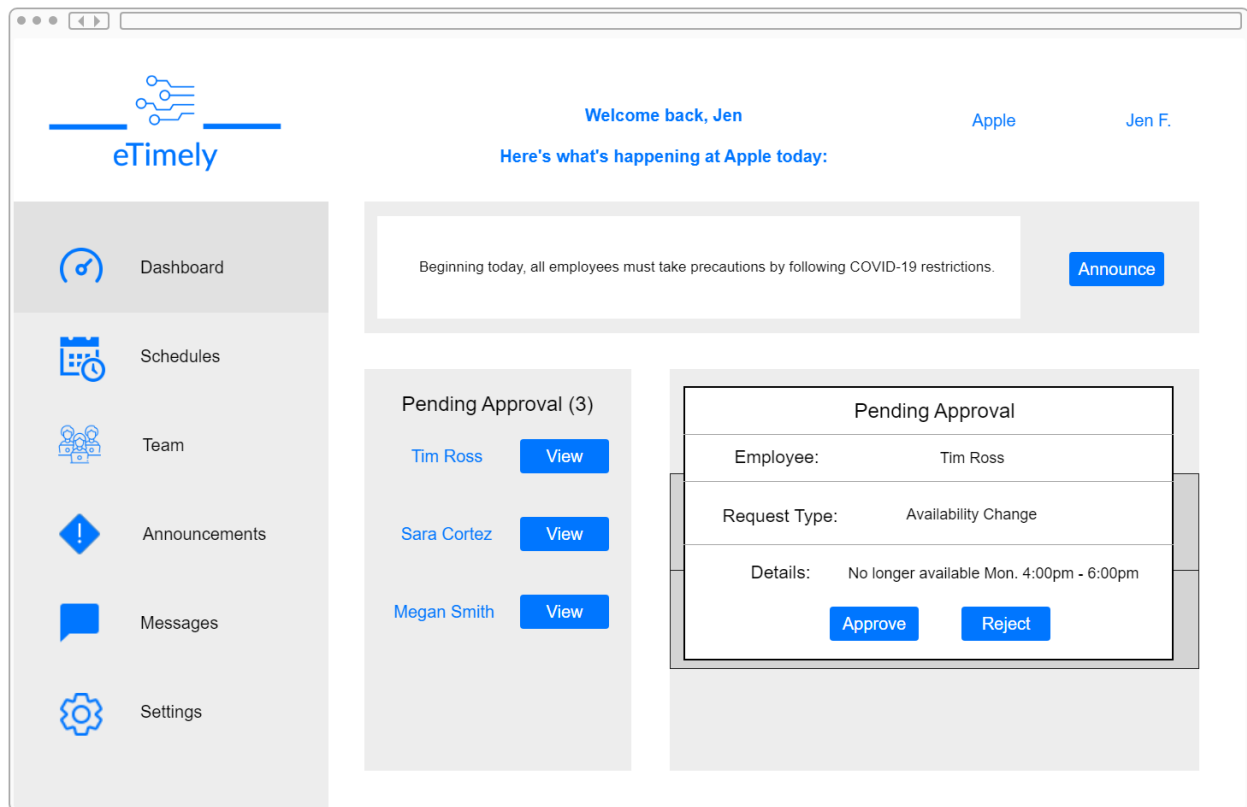
Create Account

Already have an account? Sign In

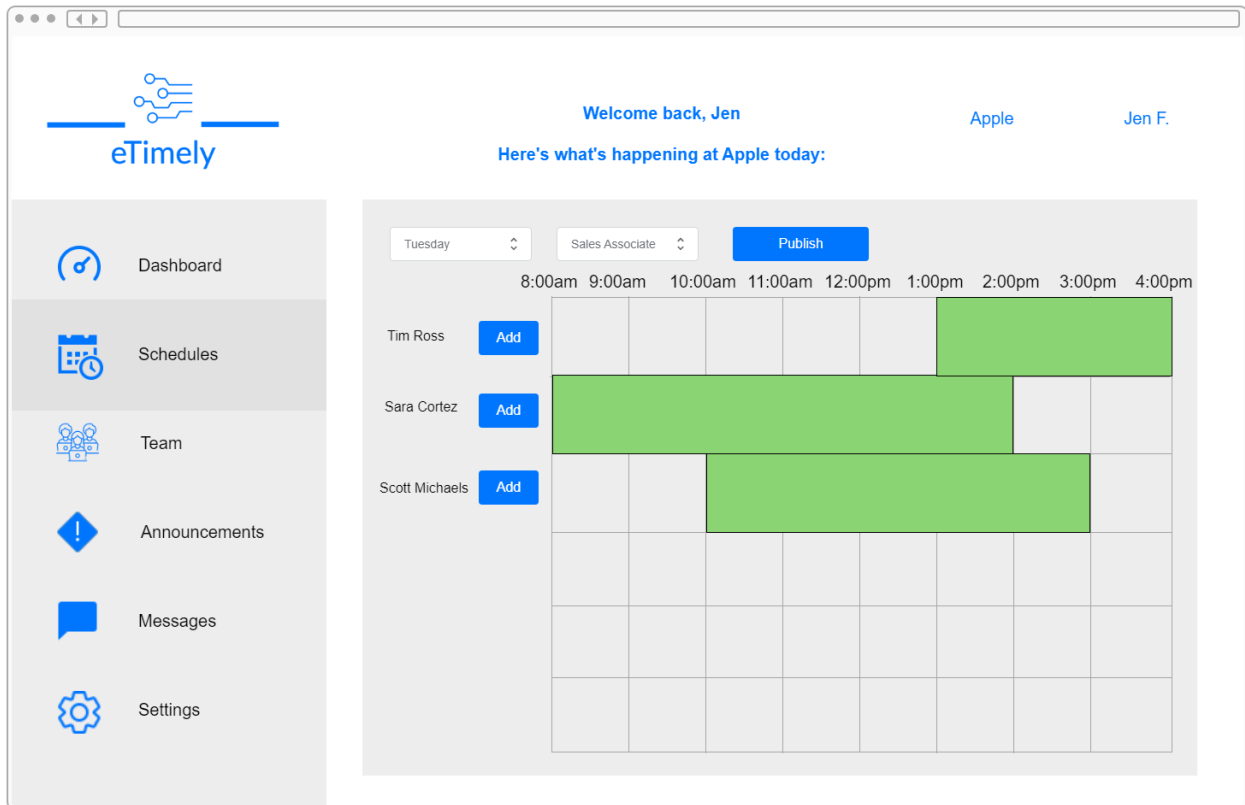
4.7.3.2 Business Dashboard View



4.7.3.3 Business Approval Window



4.7.3.4 Business Schedules Tab



4.7.3.5 Business Team Tab

Welcome back, Jen

Apple Jen F.

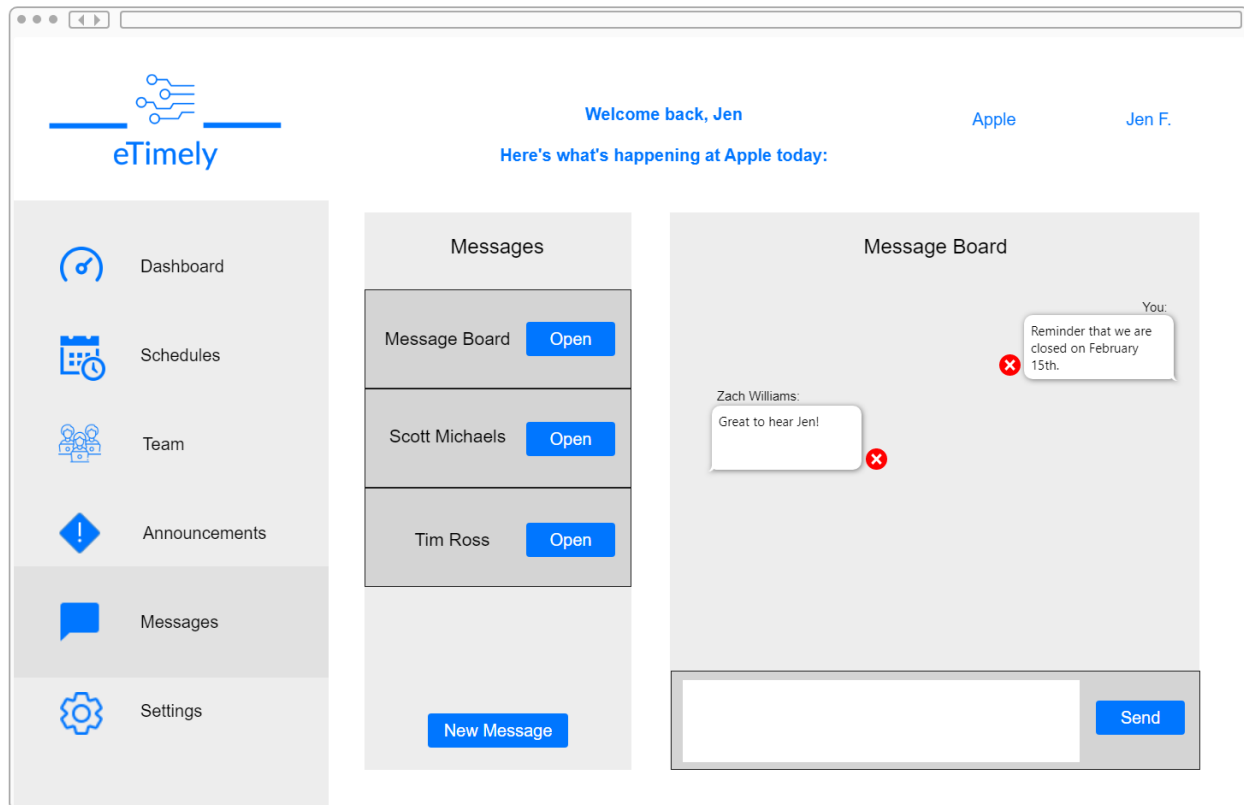
Here's what's happening at Apple today:

Apple

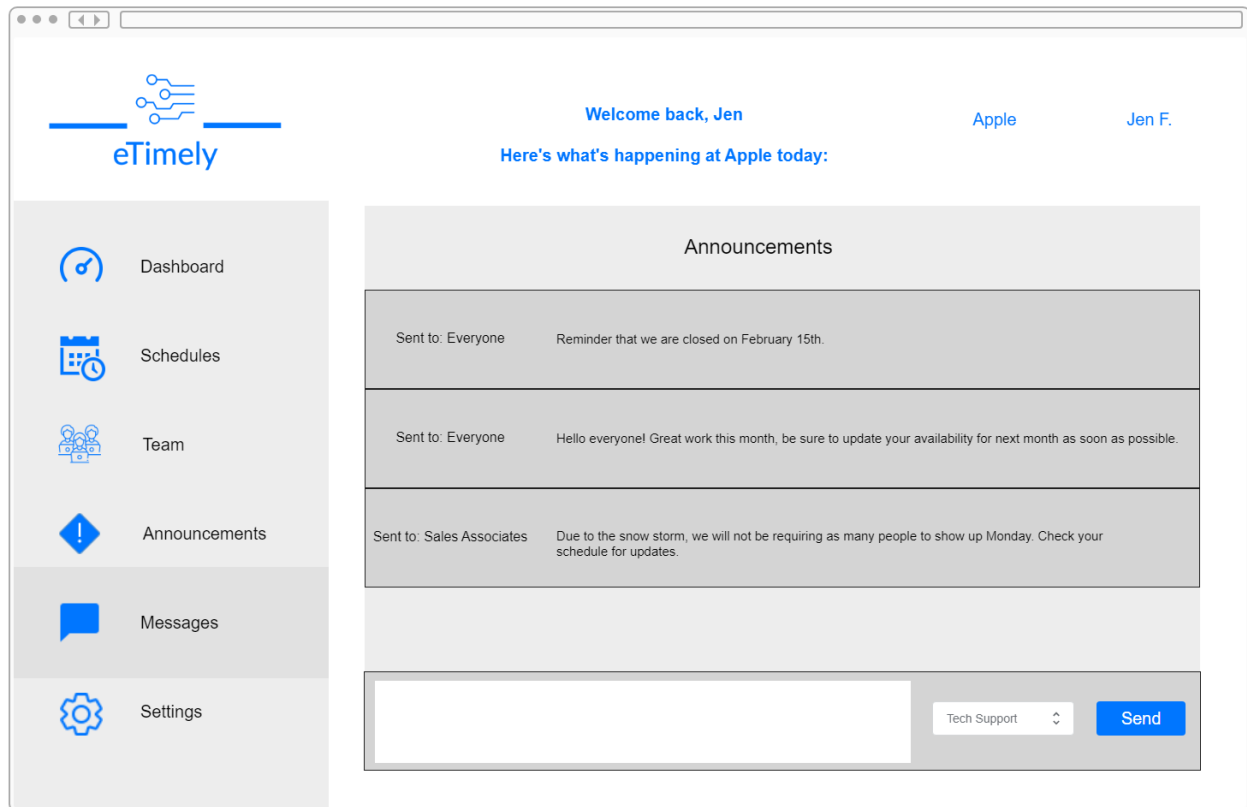
Q Search Role Invite an Employee

First Name	Last Name	Email	Role	
Tim	Ross	timross@gmail.com	Sales Associate	Edit Delete
Megan	Smith	msmith20@yahoo.com	Tech Support	Edit Delete
Sara	Cortez	cortez@gmail.com	Sales Associate	Edit Delete
Zach	Williams	zwilliams@gmail.com	Tech Support	Edit Delete
Scott	Michaels	smichaels@gmail.com	Sales Associate	Edit Delete

4.7.3.6 Business Messages Tab



4.7.3.7 Business Announcements Tab



4.7.3.8 Business Settings Tab

The screenshot shows the eTimely web application interface. At the top, there's a navigation bar with the eTimely logo on the left, a welcome message "Welcome back, Jen" and "Here's what's happening at Apple today:" in the center, and "Apple" and "Jen F." on the right. Below the navigation bar is a sidebar with icons and labels for "Dashboard", "Schedules", "Team", "Announcements", "Messages", and "Settings" (which is highlighted). The main content area is titled "Settings" and contains a profile picture placeholder with the text "Edit Profile Picture". Below this are input fields for "First Name" (Jen), "Last Name" (Finnigan), and "Email" (jen_f@gmail.com). To the right of these fields are "Email Notifications" checkboxes for "Messages" (unchecked), "Announcements" (checked), and "Schedule Request" (checked). At the bottom of the settings section are three buttons: "Update Password", "Log Out", and "Add Role". On the far right, there's a "Roles" section with a list of roles: "Sales Associate" and "Tech Support", each with a blue "x" button next to it. At the bottom of the roles section is an "Add Role" button.

Appendix A: References

The following table summarizes the documents referenced in this document.

Reference Number	Document Name	Description	Location
1	React Documentation	Basic documentation of React. Refers to the compatible web browsers	https://reactjs.org/docs/react-dom.html
2	Firestore Quotas and Limits	Documentation outlining the limitations of Firestore.	https://cloud.google.com/firestore/quotas
3	JSON Web Token (JWT) Documentation	Documentation outlining how Json web tokens work.	https://jwt.io/introduction

Appendix B: Key Terms

The following table provides definitions for terms relevant to this document.

Term	Definition
Actors	The people or external systems acting on eTimely
Availability	The specified times and days of the week an employee is willing to be scheduled.
Business	A company that has signed up for and who is using eTimely.
Employee	A singular person who works at the business who is using eTimely.
Organization	A business account and all associated staff accounts.
Role	Specific job title assigned by a business to a staff user.
Staff	All employees of a business.
User	Any person using the application, generally someone using a business or staff account

