An-Najah National University
Faculty of Computer Engineering

Organize

A Web/Mobile Application to Organize Tasks Among Projects

Authors
Taher Anaya
Mohammad Badawi

Supervisor
Dr.Ashraf Armoush

December 21, 2021

Acknowledgements

"First and foremost, We'd want to express my gratitude to Dr. Ashraf Armoush, who assisted us in completing these tasks. He gave us great guidance and supported us during difficult times. His enthusiasm and assistance made a significant contribution to the project's success. Furthermore, we would like to express our gratitude to all of the professors who assisted us by offering advice. We'd also want to express my gratitude to our families and friends for their support. We would not have been able to finish this project without your their help. Last but not least, we'd want to express our gratitude to everyone who assisted and encouraged us to work on this project."

Disclaimer

This report was written by students (Taher Anaya and Mohammad Badawi) at the Computer Engineering Department, Faculty of Engineering, An-Najah National University. Therefore, has not been amended or modified as a consequence of assessment, with the exception of editorial adjustments, and it may include grammatical and content problems. The opinions stated, as well as any conclusions or suggestions, are purely those of the students. An-Najah National University accepts no responsibility or liability for the effects of this report being used for something other than what it was intended for.

Contents

List of Figures

Chapter 1

Abstract

We all know that teamwork is important because it enables your team to share ideas and responsibilities, which helps reduce stress on everyone, allowing them to be meticulous and thorough when completing tasks. The apps are evolving that trying to improve teamwork efficiency. Organize app is an application that attempts to organize, divide and arrange tasks between teams within the project. Also, it organizes tasks between people within each team separately. It also provides seamless features for communication between members through chat messages, real time video chats, and screen sharing between them to facilitate work sharing and understanding between them. It also provides group rooms for discussion between them. All of this is contained within one app. Organize is built with ReactJS library for web and React Native for mobile that's based on JavaScript programming language. Furthermore, it includes application programming interface (API) made with NodeJS to support the main application features and manage the database. It uses 2 types of databases, a NoSQL database (MongoDB) is used for storing the main data of the application (users, projects, posts, links) while real-time features like the chat messages is implemented using firebase messaging service. For notifications firebase's firestore was used. Finally, WebRTC is used to implement Video streaming and screen sharing.

Chapter 2

Introduction

2.1 Background

Employees can exchange information and perform more efficiently and effectively when they work in groups. Each team member is a resource or tool that team members may use to make better and more informed decisions. Furthermore, working as a team fosters positive employee connections.

2.2 Problem Statement

Every employee whether he is member or manager, faces 3 main problems:

1. Employees Communication: Employee's communication can be one of the most annoying aspects of their jobs, as one employee may use certain method while the others consider it ineffective or unofficial.
2. Team's Progress: If you're a manager, keeping track of the development of each team on the project, as well as allocating priority and significance among them, will be quite challenging.
3. Tasks Dependencies: One of the most inconvenient duties for any manager is keeping track of the relationships between tasks and how they connect to one another.

2.3 Significance

Collaboration within a group can aid in the resolution of challenging issues. Brainstorming is an excellent technique for the team to share ideas and come up with innovative solutions. Teams can find the most effective solutions by working together. This program is designed to make it simpler for employees to communicate and collaborate on jobs.

2.4 Objectives and Scope

This app isn't a social networking platform; it's an organizational system that doesn't support relationships or add friends. The goal of this program is to assist employees in communicating and distributing duties among themselves, as well as to facilitate conferencing meetings for the purpose of addressing or facilitating the difficulties listed above.

1. Chat Messages Feature: This feature helps provide a unified way for everyone to communicate with each other by exchanging messages, and supports one-to-one messages.
2. Video Conferencing Feature: That's helps provide a unified way for video conferencing between employees and support screen sharing feature between them.
3. Progress Tracking Feature: This feature allows the manager to keep track of the progress of each team.
4. Reporting Team Feature: This feature allows manager to save report about each team's performance and efficiency.

Chapter 3

Constraints and Earlier Coursework

3.1 Constraints Limitations

3.1.1 Lack of suitable resources of some application programming interface.

While it may be simple to find video conferencing and screen sharing implementation resources for other languages, the options for react and NodeJS are deemed limited. While the NodeJS libraries are large, the quantity of resources available for this functionality is far less than adequate, and it is almost impossible to find. Web Real-Time Communication (WebRTC) using auxiliary APIs like socket.io was one solution for this problem.

3.1.2 Time Limit.

It took a long time to construct the entire program, which included learning technologies, searching for a topic, creating the user interface, and implementing it on both sides. A time wasn't enough to perform search of best libraries to handle some features. All of the features agreed upon with the project's teacher were completed, and additional features will be introduced in the future.

3.2 Earlier Coursework

- Object-Oriented Programming (JAVA):
  Although the principles of synchronization were first established in the Java programming language, which is not utilized in this project, NodeJS also employed them, and the ideas learned were very valuable in developing many of the app's features.

- Database Design Management:
  The database for this app was built completely using NoSQL (No Structured Query Language). This course also presented database design principles and important concepts including dependencies, keys, and indexes

- Web Development:
  HTML, CSS and JavaScript were used as part of the front-end, while JavaScript

Library called NodeJS were used as part of the back-end. This course taught me all of these languages. This course, on the other hand, covered (APIs) and how and why they're constructed.

- Software Engineering:
  All of the concepts, including as software requirements, architecture, user acceptability, and version control, were thoroughly addressed and proved to be highly helpful in the development of this application.
- Critical Thinking Scientific Research:
  It took a lot of study across websites to prepare for constructing this application, which was practiced in this course. On the other hand, it was the first place where the talent of utilizing latex and producing scientific papers was presented.

Chapter 4

Literature Review

Organize aims to create a user-friendly and comfortable management experience for both the team manager and the team member. However, it is not the first application that was created to achieve the same purpose, there are some other different applications that are already live. Some of these applications are presented below:

4.1 Trello

According to Trello's website, Trello is a collaborative work management app designed to track team projects, highlight tasks underway, show who they are assigned to, and detail progress towards completion. Trello is mainly constructed of cards, where each card represents a task, and all of the cards are presented on a huge board that serves the purpose of displaying all the available tasks and their details.

Advantages

1. You can immediately understand when a deadline is near in Trello. The color of the cards changes according to the progress of the task. For example, if the task deadline is near, then the card color turns yellow, and when you are past the task deadline, the card color turns red.

2. Trello supports file sharing among team members, which is important as some tasks require exchanging files to proceed with the workflow.

3. Trello is mobile friendly. The user interface is responsive and it can be viewed well on different screen views.

4. Boards are scalable and modifiable, which means that you can easily modify cards, add new cards and delete existing cards.

Disadvantages

1. It is not easy to handle big projects on Trello. The user interface becomes very overwhelming and it becomes hard to manage cards and monitor the project progress.

2. Trello serves no method for video and screen-share communication. For that reason, arranging meetings inside Trello is not possible.

3. Even though you can upload files on Trello, there's a 10MB limit on uploaded files.
4. Trello is not 100% free, it contains business plans that lock a lot of features behind them.

4.2 ClickUp

ClickUp is a cloud-based collaboration and project management tool suitable for businesses of all sizes and industries. Features include communication and collaboration tools, task assignments and statuses, alerts and a task toolbar.

Advantages

1. Scheduling and managing tasks is easy.
2. The application offers a hierarchy for tasks in the project, which is needed for most projects.

Disadvantages

1. The user interface is overwhelming which makes it hard to get people to use the application.
2. There are a lot of bugs and issues that are constantly being reported by the users.

4.3 How is Organize Better?

Organize was built with what other applications offer and what they don't offer in mind. Organize was built to make the user interface as simple as possible and as easy as possible to get into. Additionally, it contains most of the important features that other applications offer and what they don't offer. Finally, we tried our best to eliminate any issues that appeared with other applications.

Chapter 5

Methodology

5.1 Architecture & Technologies Utilized

5.1.1 ReactJS

React is considered a flexible free open-source front-end JavaScript library that is used to develop fast and interactive web applications[1]. The library was made by Meta (Facebook formerly) and has a vast community and a very large collection of libraries and reusable components.

We decided to use React for many different reasons:

1. React offers a clean and easy to understand and utilize syntax that's called JSX syntax. It is very similar to HTML but the main idea is that it allows the developer to inject JavaScript code inside the front-end design, which allows for more freedom over controlling the component.

2. Reusable components is one of React's strongest features. You don't need to recreate a layout you have made earlier, instead, you only need to create it once and import it everywhere else where it is needed.

3. A vast collection of strictly free libraries. This one other important feature of React that allows the developers to use the fruits of other experienced developers by utilizing their libraries. This doesn't necessarily mean it is a good thing, but it serves the purpose of building projects in the fastest interval.

5.1.2 Material UI

Material-UI is simply a React library that allows the developers to import and use different pre-built components to create a clean user interface in React applications [2]. Material UI saves a significant amount of time since the developers no longer need to rewrite every component from scratch.

We decide to use Material UI for many different reasons:

1. The library is well documented, which means that every component has many different examples on how to use and how to customize.

2. Material UI is constantly updated with many different new components and bug fixes. The new features that are not yet introduced in the core library can still be accessible with Material UI Lab [3].
3. Consistent appearance and a room for creativity is one of the most important features for Material UI.

5.1.3 Redux

Redux is an open-source JavaScript library for managing and centralizing application state. It is most commonly used with libraries such as React or Angular for building user interfaces.

When using Redux with React, states will no longer need to be lifted up. This makes it easier for the developers to trace which action causes any change, which is the priamry reason why we used Redux.

5.1.4 ExpressJS

Express is considered a minimal and flexible NodeJS web server/application framework. It provides a robust set of features for web and mobile applications and it allows the developers to design and build a web application quickly and easily. [4]

We used ExpressJS in our project for many different reasons:

1. Express allows the development of NodeJS web applications to be simple and quick.
2. It is easy and fast to establish connections with databases like MongoDB, MySQL.
3. It allows the developers to build a scalable server with the REST API quickly.

5.1.5 Mongoose

Mongoose, according to their website, provides a straight-forward, schema-based solution to model application data. It includes built-in type casting, validation, query building, business logic hooks and many more. [5]

We used Mongoose for many different purposes:

1. MongoDB is a denormalized NoSQL database, which makes it inherently schemaless as documents have varying sets of fields with different data types. Mongoose defines a schema for data models so documents follow a specific structure with predefined data types. This makes it a lot easier to work with data for developers who came from SQL databases like MySQL.
2. Mongoose has built in validation for schema definitions, which saves a lot of time.
3. Mongoose makes returning updated documents or query results significantly easier.

5.1.6 MongoDB Atlas

MongoDB Atlas, according to their website, is an integrated suite of cloud database and data services to accelerate and simplify how you build with data. [6] MongoDB Atlas allows the developers to create and manage a NoSQL database on the cloud.

We used MongoDB Atlas for many different reasons, including:

1. The need for a NoSQL database with high performance and low latency.
2. MongoDB Atlas databases are highly scalable and offer multiple levels of security.

5.1.7 Firebase

Firebase, according to their website, is a platform developed by Google for creating mobile and web applications. It was originally an independent company. [7] Firebase is a platform that allows developers to create apps for iOS, Android, and the web, as well as tools for tracking analytics, reporting, and correcting app errors, as well as marketing and product experimentation.

We used Firebase for many different reasons, including:

1. manages all data real-time in the database. As a result, data is easily and quickly transferred to and from the database. As a result, it's what we're using to create chat messaging.
2. With only a few lines of code, you can give any social networking login.

5.1.8 Others

There are multiple other technologies used, including:

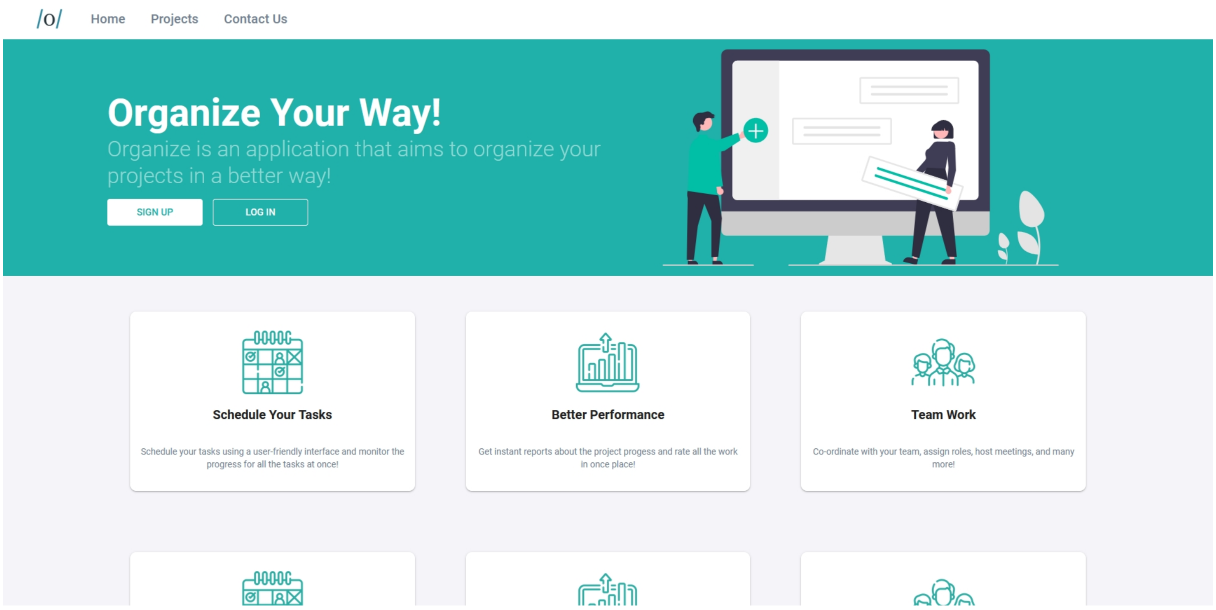
1. **React Router** which is used to build a single-page web application with navigation. [8]
2. **JWT** (JSON Web Token) which is primarily used for user login authentication. [9]
3. **bcrypt** which is used to hash user passwords. [10]
4. **axios** which is used to do API calls from the client side. [11]
5. **adobe photoshop** which is used to design project logo and design project UI. [12]

5.2 Features & Implementation

The application provides many features and a lot to talk about. This section will focus on the application features and the role of each library in the implementation.

5.2.1 Home Page

When accessing the website for the first time, the user will be able to view the main home page for the website. The main homepage provides a small introduction about the website and its main features. It also contains a header that will allow the user to navigate through the website pages and log in and sign up buttons to allow the user to create their own account and use the website



Organize Your Way!

Organize is an application that aims to organize your projects in a better way!

Schedule Your Tasks

Schedule your tasks using a user-friendly interface and monitor the progress for all the tasks at once!

Better Performance

Get instant reports about the project progess and rate all the work in once place!

Team Work

Co-ordinate with your team, assign roles, host meetings, and many more!

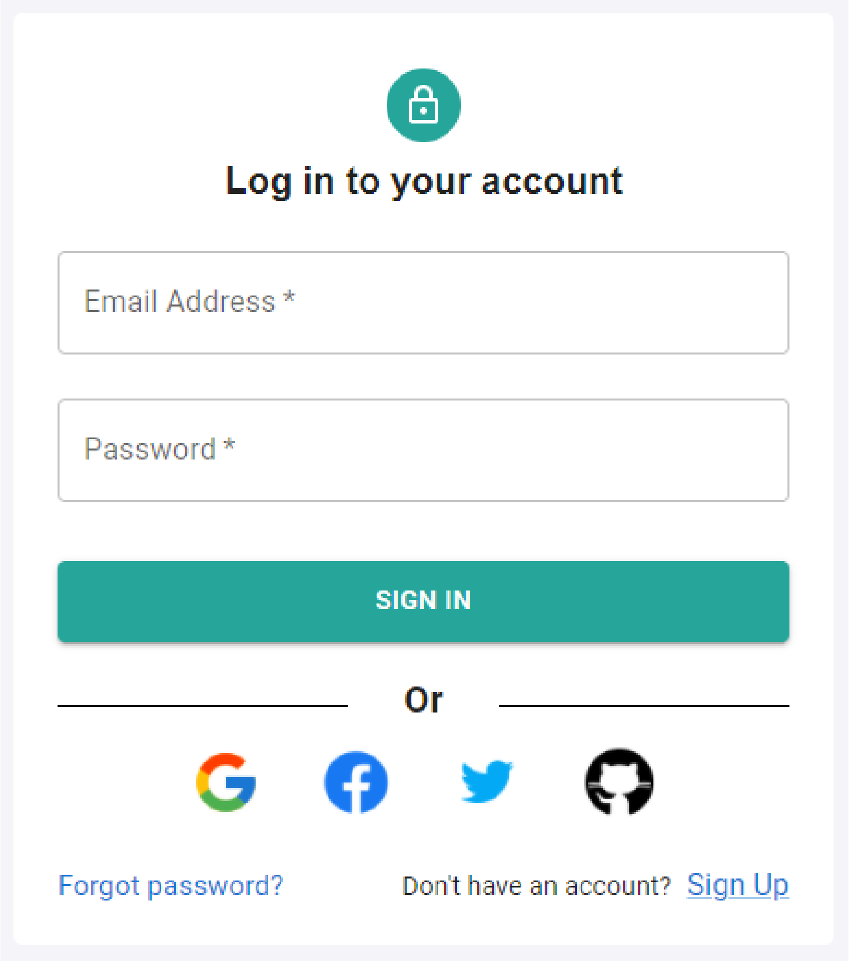
Figure 5.1: Organize Website Homepage

5.2.2 User Account

Sign Up / Login Pages

Since our site is an application that attempts to organize, divide and arrange tasks between teams within the project and provides seamless features for communication between members, the registration process is very essential to identify every user in our site, so any user can not use our site services unless he is not registered on the site. Any unregistered user who tries to access the users' pages will be redirected to the login page.

On the login page, there are two input fields that were designed with all of the stylistic requirements in mind. We also included two links at the bottom, one to take the user to the sign up page if it is the first time he visits the website, and another to take the user to the forgot password page if he forgot his password to reset it.



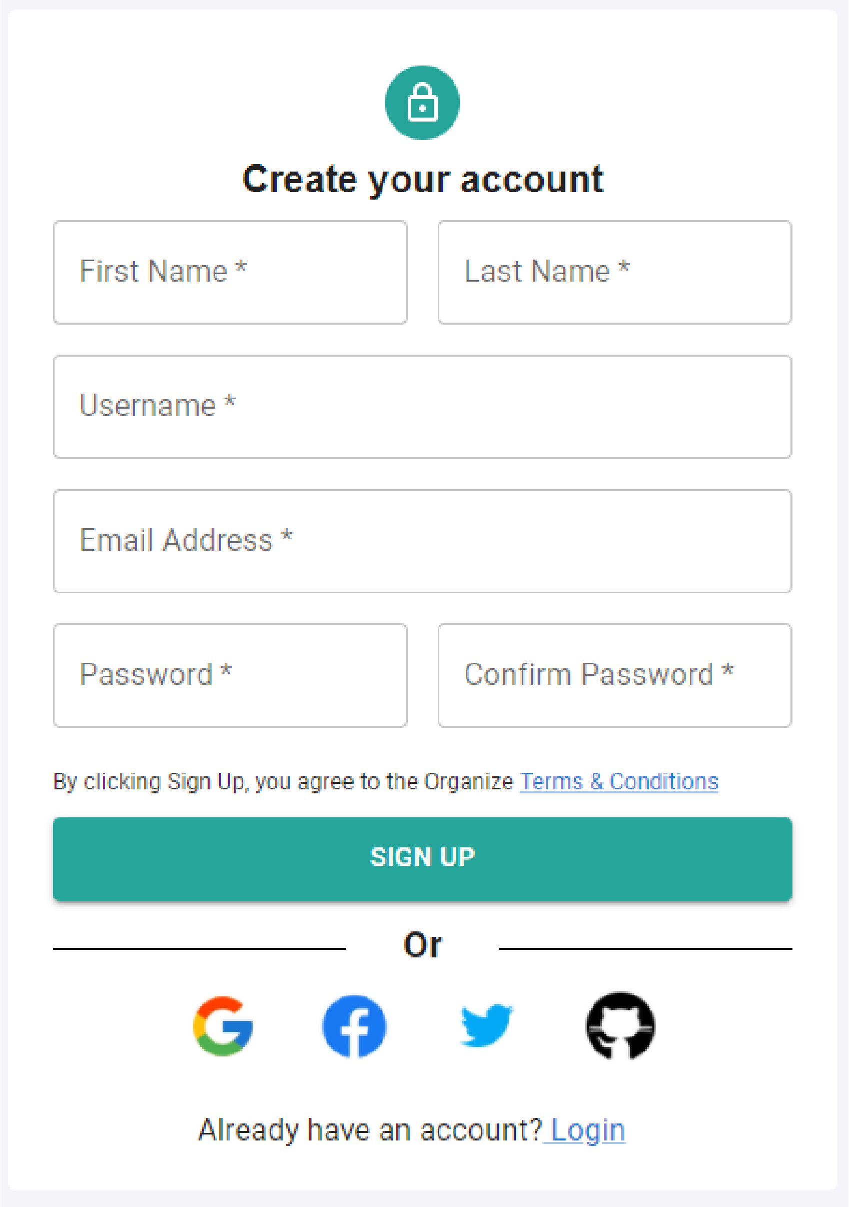
Log in to your account

Email Address *

Password *

Figure 5.2: Login Form

On the sign up page, there are 6 input fields that were designed with all of the stylistic requirements in mind. We also included one link at the bottom, to take the user to the Login page if it is already registered in our website.



Create your account

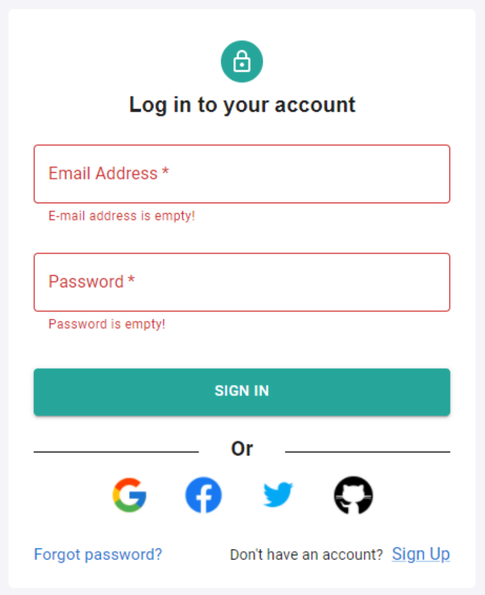
By clicking Sign Up, you agree to the Organize Terms & Conditions

Already have an account? Login

Figure 5.3: Sign Up Form

These two pages also feature two types of verification. The first is fronted validation, which can indicate incorrect user input and block the input button. This is handy for providing rapid feedback to the user as they enter data into the form. Second, back-end verification to check that this isn't a fraudulent attempt and that the user of the original email is attempting to access an account.

Let's talk a little bit about the importance of front-end validation, it is essential to validate that fields enters as required, else the user can not click to enter button,it is also used to make sure that the password field match confirm field.



Log in to your account

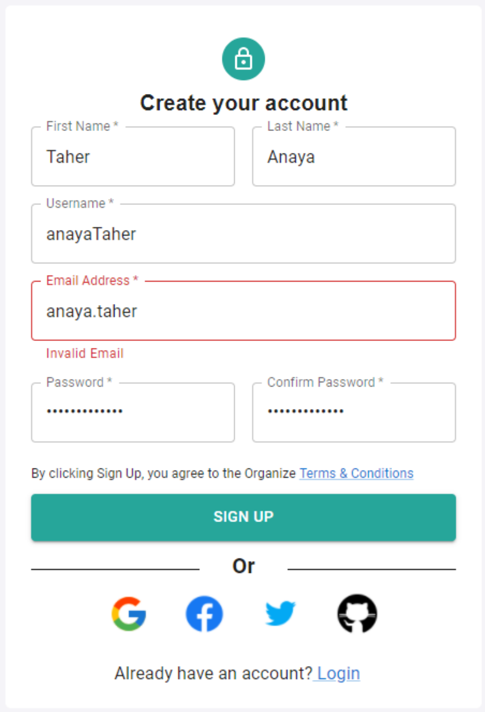
Email Address *

E-mail address is empty!

Password *

Password is empty!

Figure 5.4: Login Front-end Validation Example



Create your account

First Name *: Taher

Last Name *: Anaya

Username *: anayaTaher

Email Address *: anaya.taher

Invalid Email

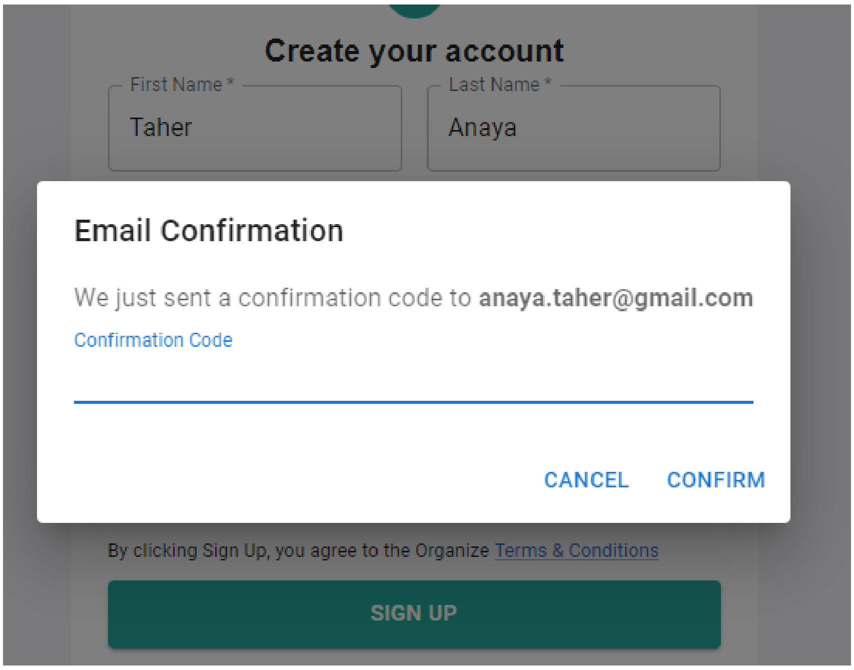
Password *: •••••••••••••

Confirm Password *: •••••••••••••

By clicking Sign Up, you agree to the Organize Terms & Conditions

Figure 5.5: Sign up Front-end Validation Example

Let's talk a little more how things will look from back-end's point of view, when register new user in the site, we validate that email is not already registered in our site and, after that we send confirm code to the email to confirm registration. If the user enters the correct code, the registration process is completed and the user is successfully registered, otherwise the registration process will not take place until the correct code is entered.



Create your account

First Name * Taher

Last Name * Anaya

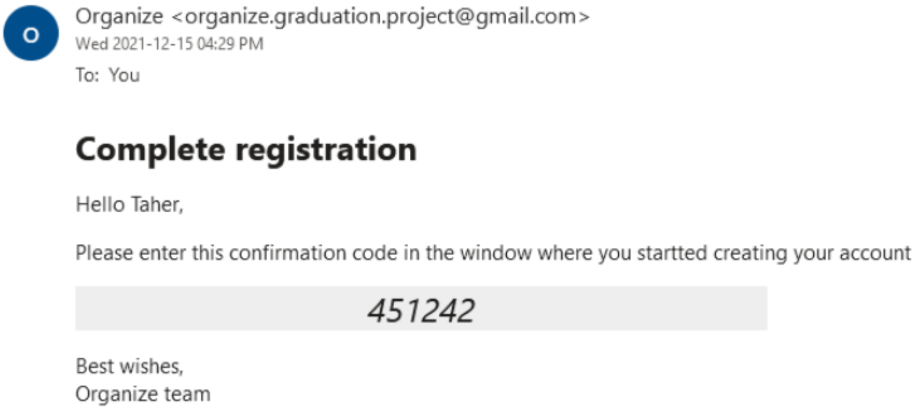
Email Confirmation

We just sent a confirmation code to **anaya.taher@gmail.com**

Confirmation Code

By clicking Sign Up, you agree to the Organize Terms & Conditions

Figure 5.6: Email Confirmation



Organize <organize.graduation.project@gmail.com>
Wed 2021-12-15 04:29 PM
To: You

Complete registration

Hello Taher,

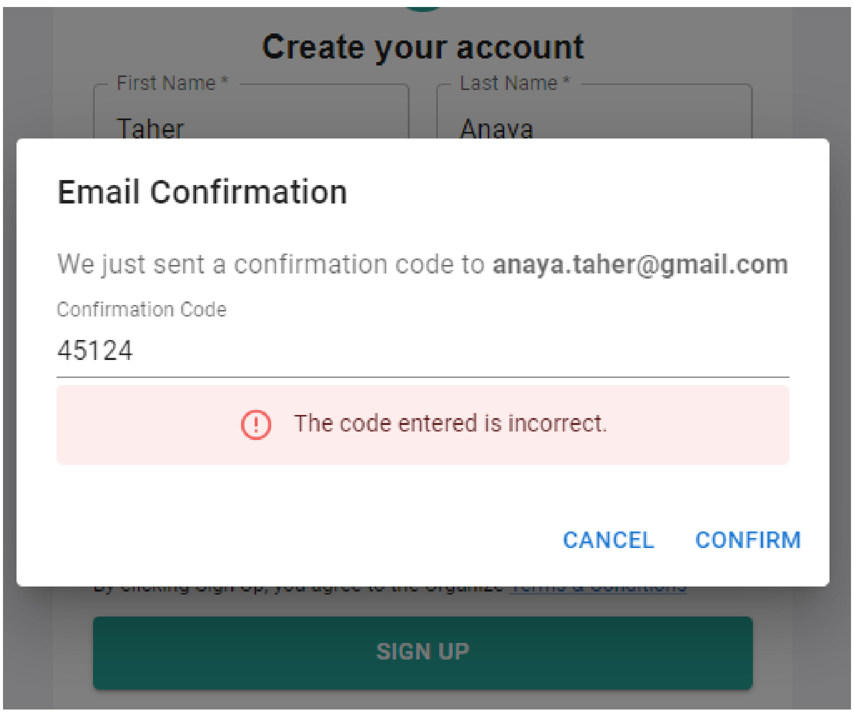
Please enter this confirmation code in the window where you startted creating your account

451242

Best wishes,
Organize team

Figure 5.7: Confirmation Code

If the user try to enter incorrect code, error message will show and the field wait user to enter correct code, otherwise the registration process will not take place until the correct code is entered.



Create your account

First Name *

Taher

Last Name *

Anaya

Email Confirmation

We just sent a confirmation code to **anaya.taher@gmail.com**

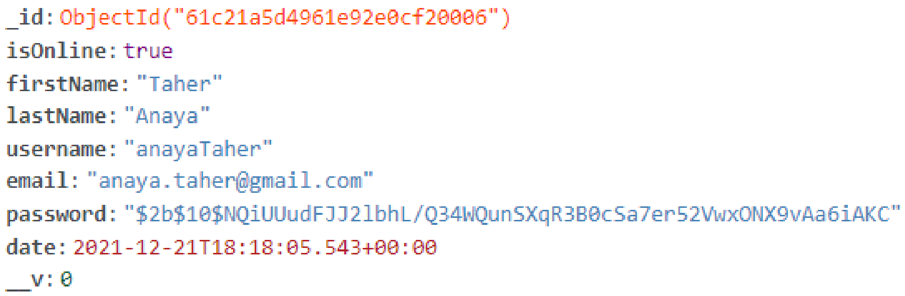
Confirmation Code

45124

ⓘ The code entered is incorrect.

Figure 5.8: Incorrect Confirmation Code

When user enter the correct code, the registration process is completed and the user is successfully registered.



```
_id: ObjectId("61c21a5d4961e92e0cf20006")
isOnline: true
firstName: "Taher"
lastName: "Anaya"
username: "anayaTaher"
email: "anaya.taher@gmail.com"
password: "$2b$10$NQiUUudFJJ2lbhL/Q34WQunSXqR3B0cSa7er52VwxONX9vAa6iAKC"
date: 2021-12-21T18:18:05.543+00:00
__v: 0
```

Figure 5.9: Registered User

Now, let's talk a little about forgot password feature. If a registered user forgot his account password, he can reset it password by email. First, the user enter the forgot password page and enter his account email that want to reset password. Then, the system check if there is already registered email in database, if not, an error message will show, else a reset password link will sent on the email to reset his password.

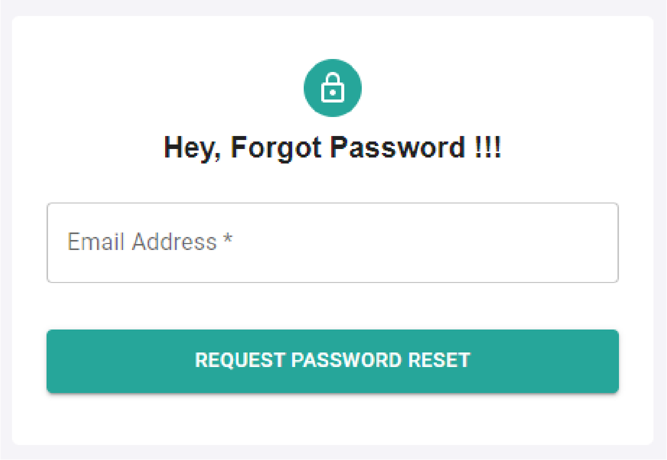
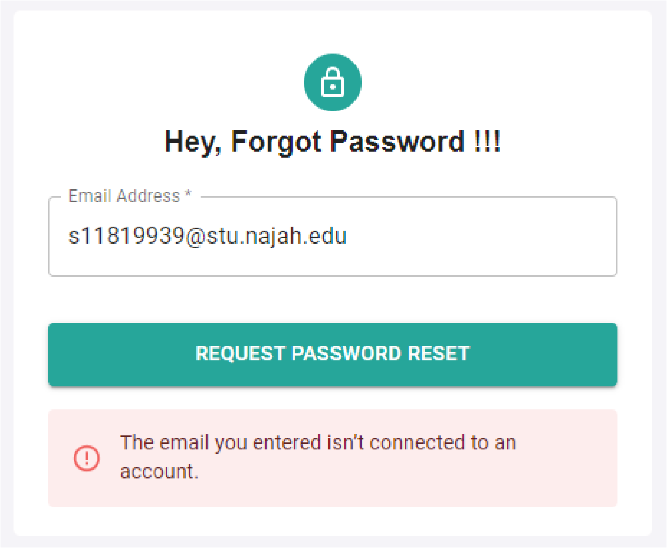


Figure 5.10: Forgot Password

If the user enter a unregistered email, an error message will show, and no links will send.

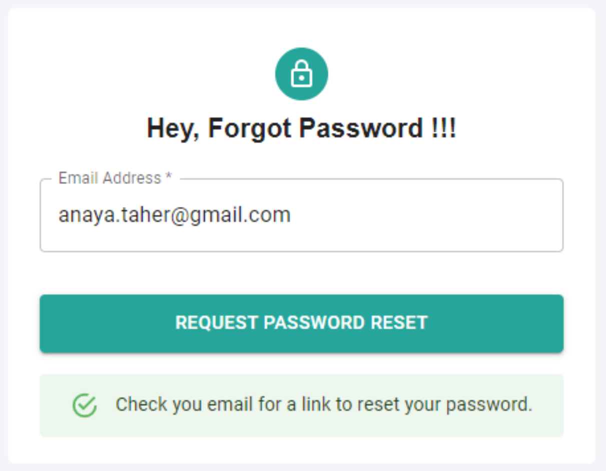


Email Address *
s11819939@stu.najah.edu

The email you entered isn’t connected to an account.

Figure 5.11: Forgot Password With Unregistered Email

Else if the user enter a registered email, a reset password link will sent on the email to reset his password.



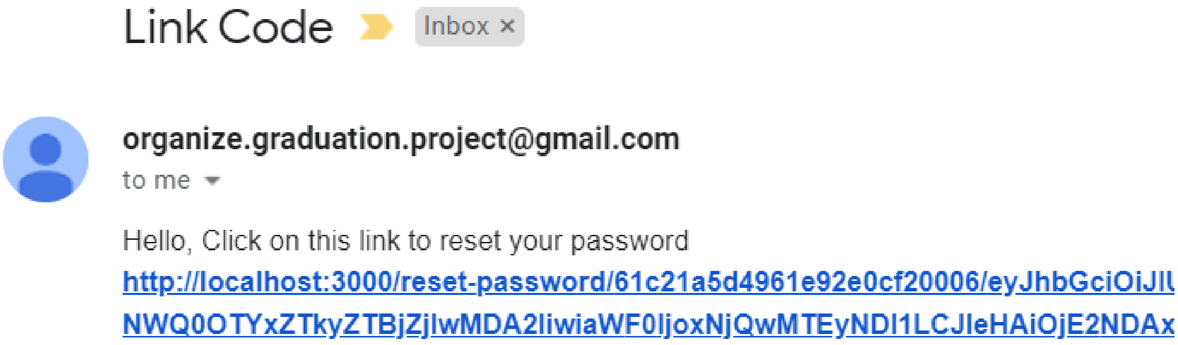
Hey, Forgot Password !!!

Email Address *

anaya.taher@gmail.com

Check you email for a link to reset your password.

Figure 5.12: Forgot Password With Registered Email



Link Code

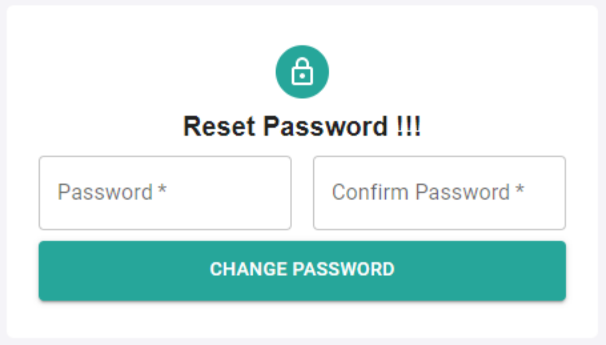
organize.graduation.project@gmail.com

to me

Hello, Click on this link to reset your password
http://localhost:3000/reset-password/61c21a5d4961e92e0cf20006/eyJhbGciOiJI
NWQ0OTYxZTkyZTBjZjIwMDA2IiwiaWF0IjoxNjQwMTEyNDI1LCJleHAiOjE2NDAx

Figure 5.13: Reset Link

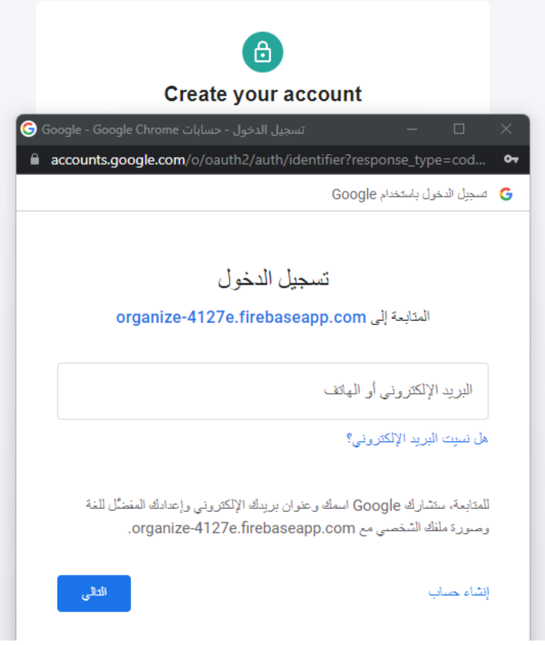
The link is valid for 15 minutes only, when user click it, it routing to reset password page to enter new one. Note that the link is valid to use for only one time.



Reset Password !!!

Figure 5.14: Reset Password Page

Also, our website offers the option of logging in using a Google, Facebook, and Github accounts, so if a user has one of these accounts, he may sign up without having to fill out a form.



Create your account

Google - Google Chrome حسابات - تسجيل الدخول

accounts.google.com/o/oauth2/auth/identifier?response_type=cod...

تسجيل الدخول باستخدام Google

تسجيل الدخول

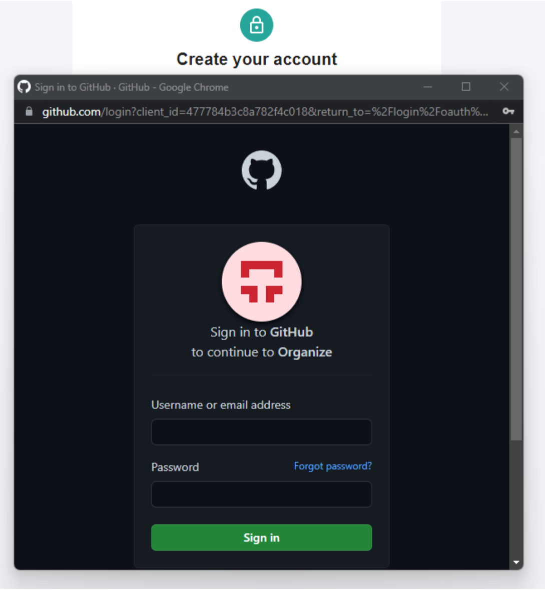
المتابعة إلى organize-4127e.firebaseapp.com

البريد الإلكتروني أو الهاتف

هل نسيت البريد الإلكتروني؟

للمتابعة، ستشارك Google اسمك وعنوان بريدك الإلكتروني وإعدادك المفضّل للغة
وصورة ملفك الشخصي مع organize-4127e.firebaseapp.com.

Figure 5.15: Login With Google



Create your account

Sign in to GitHub · GitHub - Google Chrome

github.com/login?client_id=477784b3c8a782f4c018&return_to=%2Flogin%2Foauth%...

Sign in to GitHub
to continue to Organize

Username or email address

Password

Figure 5.16: Login With Github

Because the Twitter corporation declined to grant a license of our application, our website does not accept registration with a Twitter account. "Your application has been reviewed. Thank you for your interest. Unfortunately, we're unable to approve your application."

5.2.3 User Projects

After the user is logged in, the user can navigate to the projects tab from the header at the top of the screen. The projects tab contains 2 types of projects, the projects that are being administrated (You are the manager of the administrated projects) and the projects that you are contributed in (You are a member of one of the teams in the "contributed in" projects). Additionally, the user shall be able to create projects from that tab and access any existing projects from that tab.

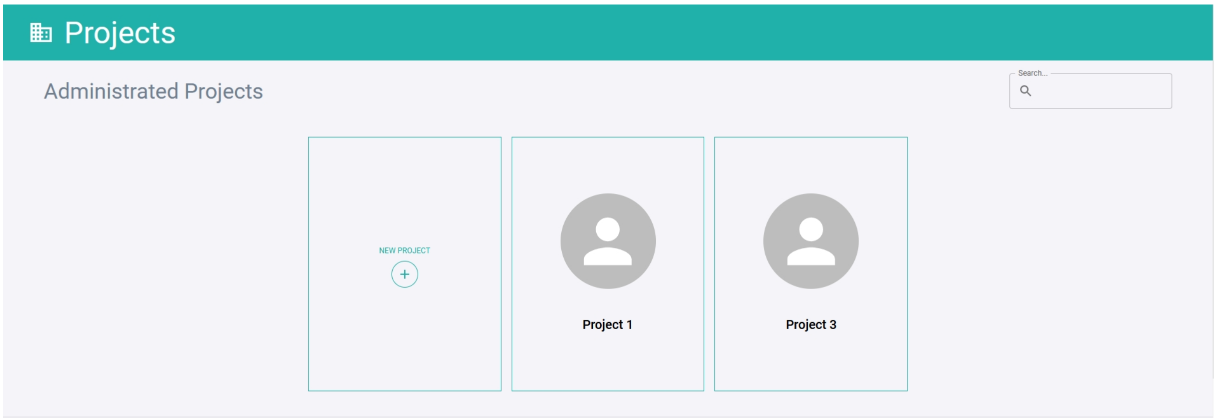


Figure 5.17: Administrated Projects

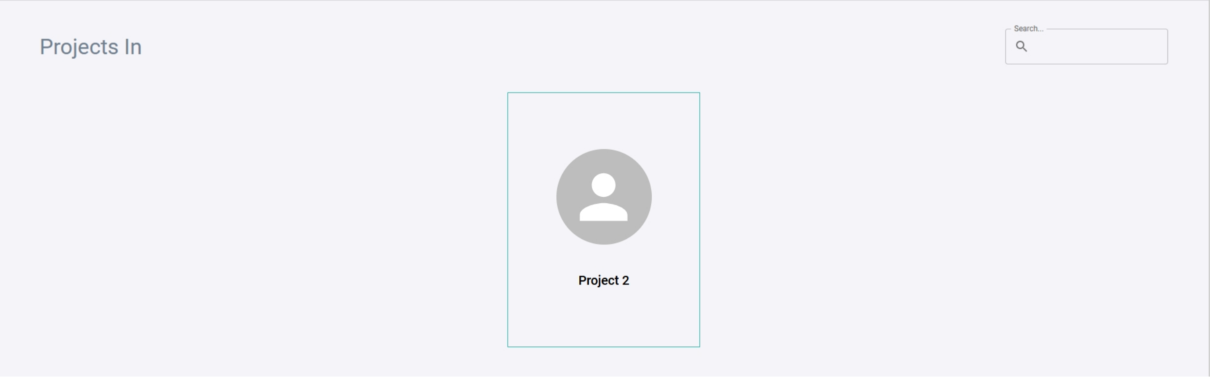
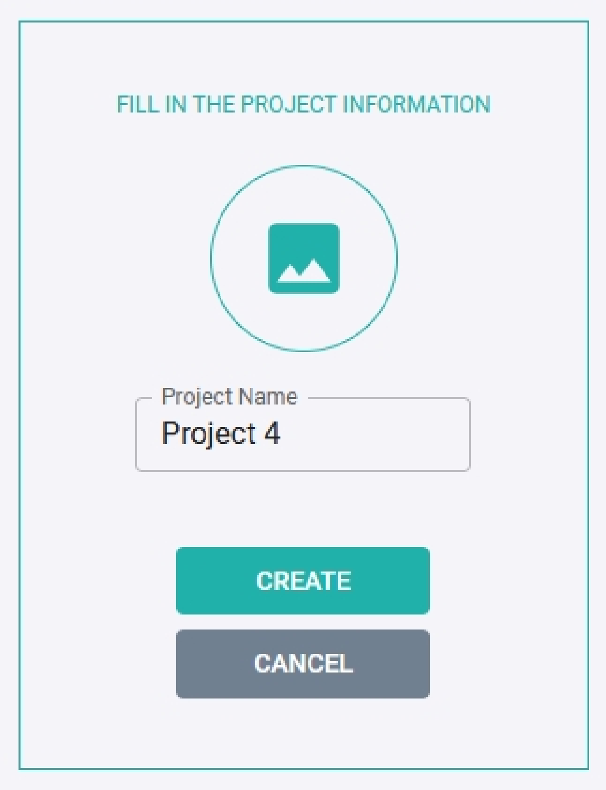


Figure 5.18: Contributed Projects

To create a project, you can click on the "New Project" button that will allow the manager to see the fields required to start a new project.


FILL IN THE PROJECT INFORMATION

Project Name: Project 4

Figure 5.19: Adding a New Project

In these fields, you can type the name of the project and specify a project icon from your desktop. All of the details that are written here can be modified later on from the project settings tab.

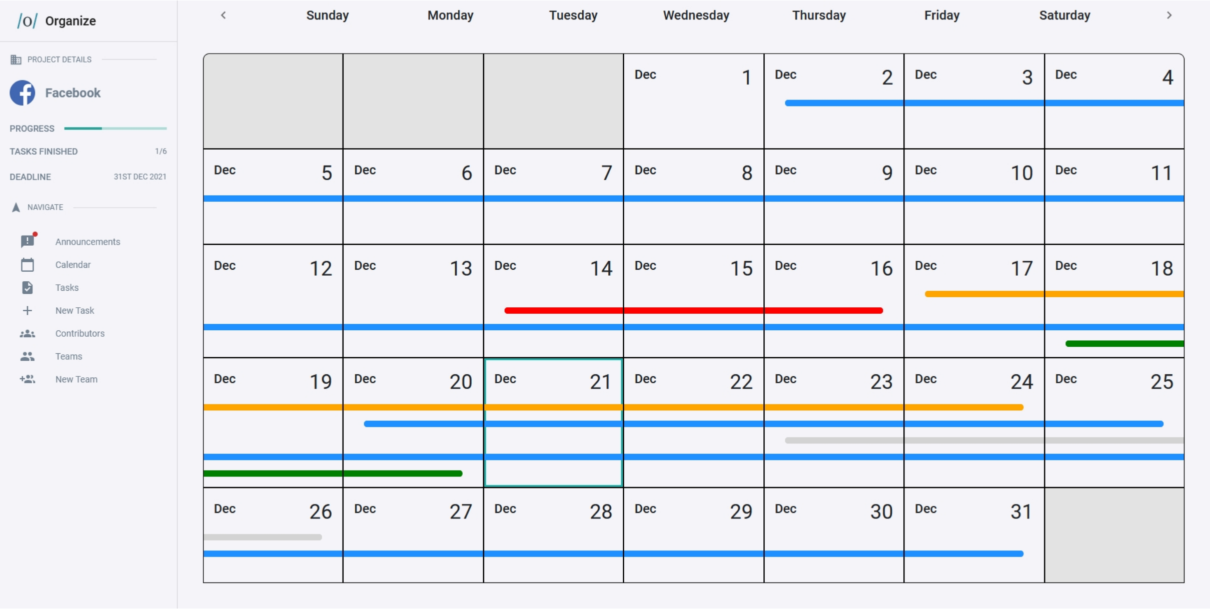
To access a project, all you need to do is to click on the project box, which will navigate the user to another page that contains all the info about the project progress, project teams and project tasks.

Finally, each view of the available projects contains a fully functional search bar. The search bar will make it easier to look for available projects in case there are a lot of projects that are available.

5.3 Project Calendar

The project calendar is the first page that you will navigate to as you enter the project web page. The idea behind the project calendar is to be able to view the tasks for the current month in on a big calendar with minimal information about the tasks. This type of view will help the project team get a general idea on how many tasks are being worked on and how many tasks are behind the schedule in a single look. The calendar view is not aimed to be a perfect view of the project tasks, it can become a bit confusing when looking at the calendar, and that's why there's an alternative way to view the tasks that will be discussed later. Initially, it is normal to see an empty calendar with no tasks. The calendar shall view the tasks as long as they are added to the project task list.

In the following figure, the calendar represents a list of 6 tasks, where 1 task is finished, 2 tasks that are being worked on (marked as in-progress), 1 task that's behind the schedule, 1 task that is not able to start due to a prerequisite task lagging it behind, and 1 task that has not been worked on by the responsible team yet, that's as of date 21st of December.



PROGRESS

TASKS FINISHED 1/6

DEADLINE 31ST DEC 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			Dec 1	Dec 2	Dec 3	Dec 4
Dec 5	Dec 6	Dec 7	Dec 8	Dec 9	Dec 10	Dec 11
Dec 12	Dec 13	Dec 14	Dec 15	Dec 16	Dec 17	Dec 18
Dec 19	Dec 20	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25
Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	

Figure 5.20: Adding a New Project

5.4 Project Contributors

Project contributors are essentially members of the project that will be assigned to teams later. The manager is able to invite members to their project after project creation. The manager will invite the team members one by one according to their email address that has been used to register their own accounts. A validation measure was added to deny the manager from doing certain things, like adding the same user twice or adding him/herself as a contributor.

To add a contributor to the project. The project manager will navigate to the "Contributors" tab from the drawer on the left side of the screen. The contributors tab shall be empty initially, and upon adding different users, it shall update the contributors list immediately. To add a contributor, the manager will need to click on the "Add Member" button at the top of the page. Upon doing that, a modal will appear on the screen that will allow the manager to input the email address of the desired contributor and a button to add the user to the list of contributors.

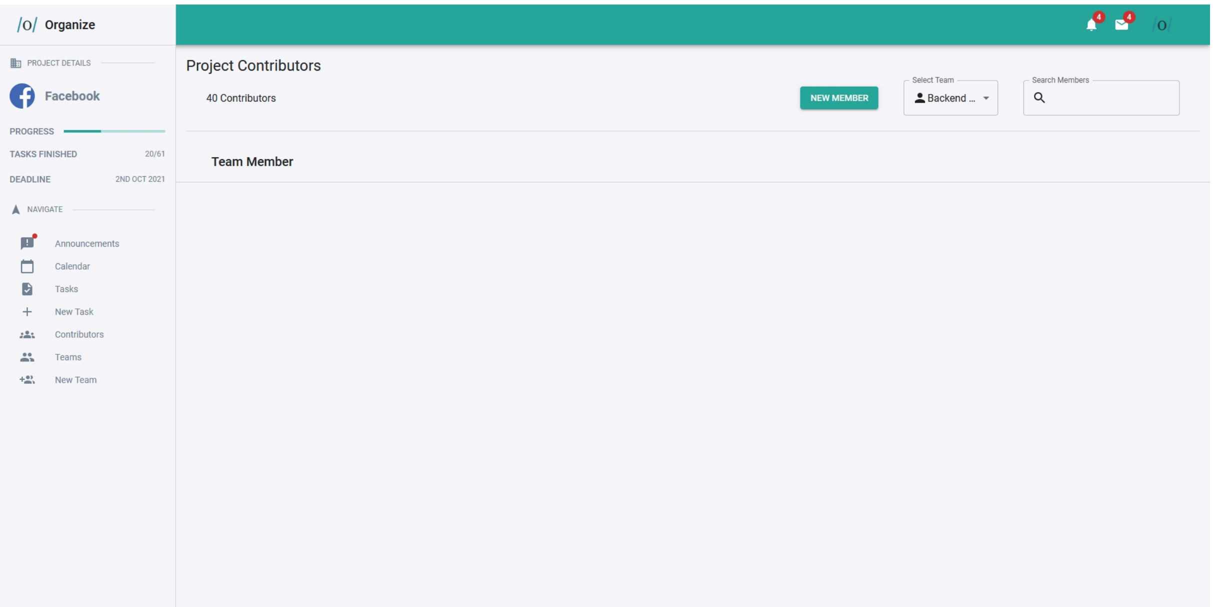
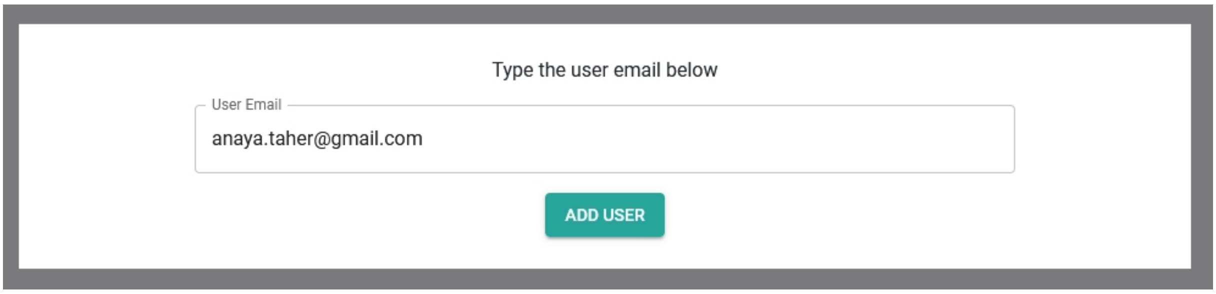


Figure 5.21: The Contributors Page Upon Project Creation



Type the user email below

User Email: anaya.taher@gmail.com

Figure 5.22: Adding a Contributor to the Project

After adding the contributor to the project, the contributor will immediately be listed on the contributors list. The contributor initially will not have any teams assigned. The teams creation and assignment to the project will be discussed later.

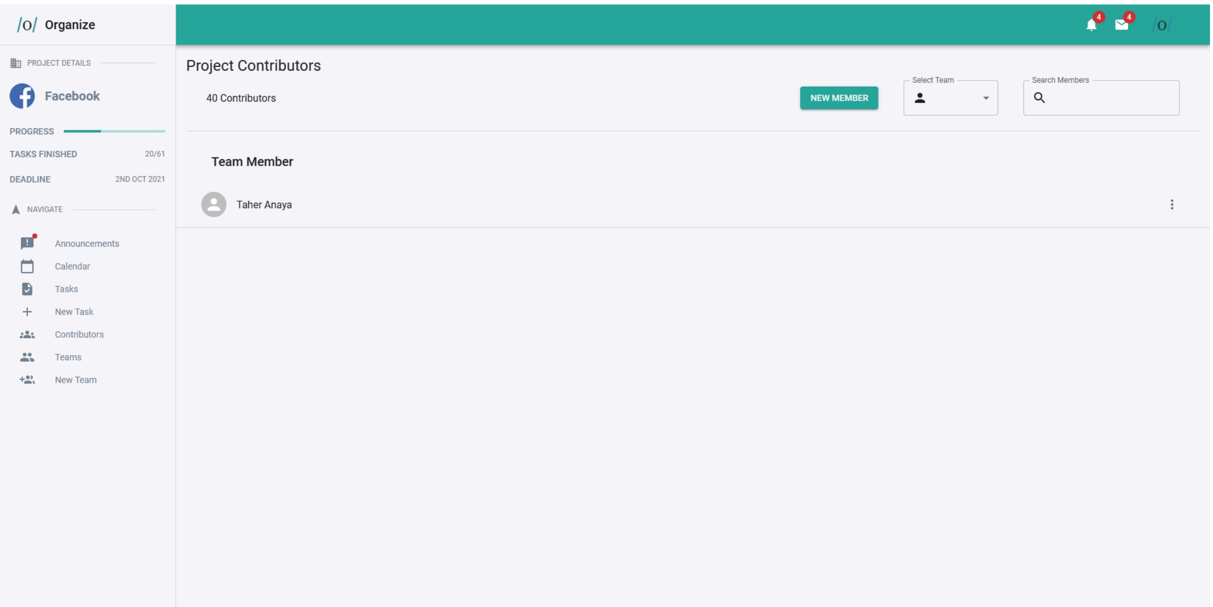


Figure 5.23: A New User was Added to the Contributors List

The project manager has a few different options for each contributor. For example, the manager is able to remove the contributor from the project from the settings button at the right side of each contributor.

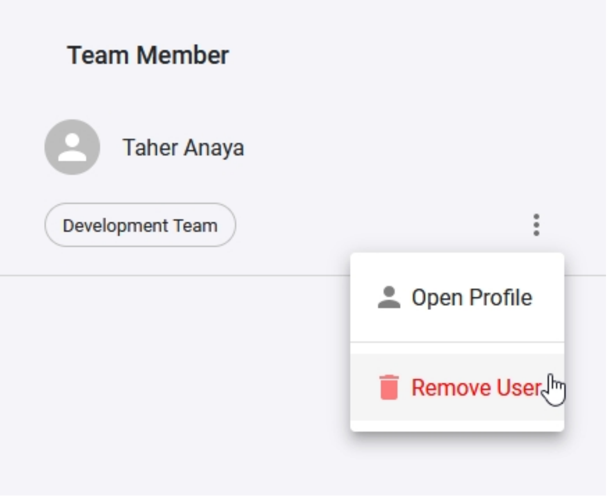
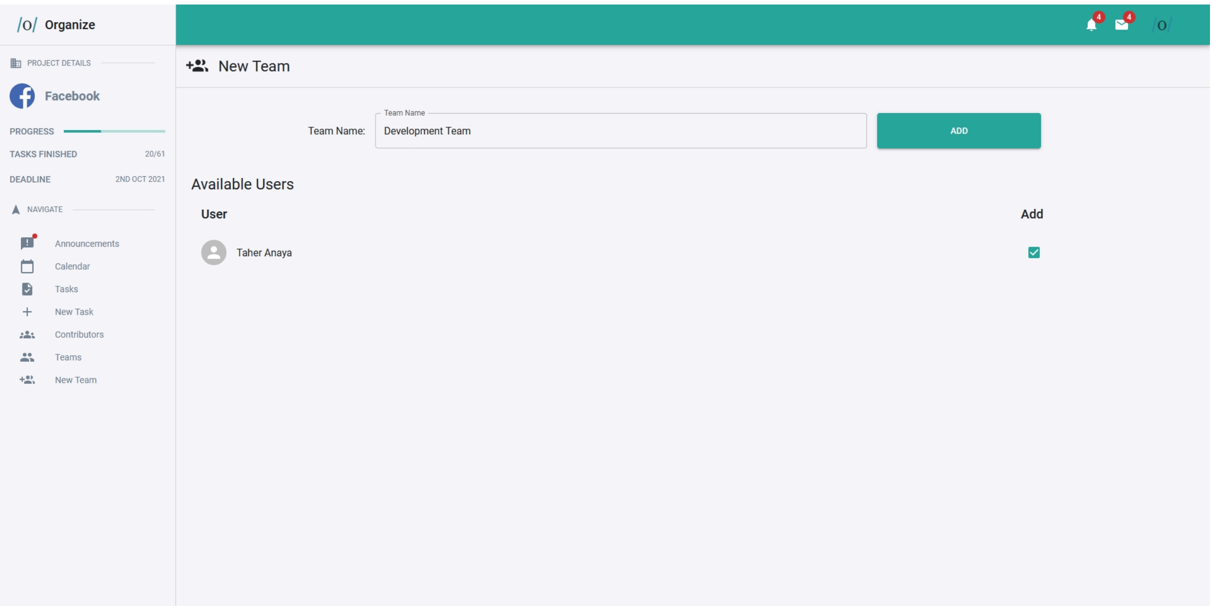


Figure 5.24: Contributor Management Settings

5.5 Project Teams

It is necessary for each project that there will be a variety of teams, where each team is responsible for working on a certain set of tasks. For example, a development team is only required to do development related tasks, and should not be involved in any tasks related to the texture design. The same principle can be applied to any team in any project. Members can also belong to different teams which is something our website implemented as a feature.

To create a team, the project manager has to navigate to the "New Team" tab from the drawer on the left side of the screen. The "New Team" tab allows the team manager to specify the team name and add team members from the available project members to the team upon creation by checking the "Add" checkbox on the right side of each member. Once the team information is filled, the manager can click on the "ADD" button to finish the team creation. All of the data that is saved upon creation can be edited and modified later, that's because the manager might need to add/remove members to the team at later stages of project progression due to different external factors.



TASKS FINISHED 20/61

DEADLINE 2ND OCT 2021

New Team

Team Name: Development Team

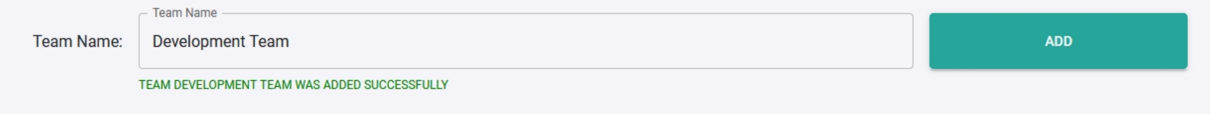
ADD

Available Users

User	Add
Taher Anaya	☑

Figure 5.25: Creating a New Team and Assigning Users to the Team

Once the team has been successfully added, a green success text will appear below the team name text field along with the name of the created team. The manager will still remain in the same page to give him/her the opportunity to create additional teams.



Team Name: Development Team

ADD

TEAM DEVELOPMENT TEAM WAS ADDED SUCCESSFULLY

Figure 5.26: Team Creation Success Message

After adding a member to a certain team, the team tag will be added to the member. All of the team tags can be viewed from the previously explained contributors page.

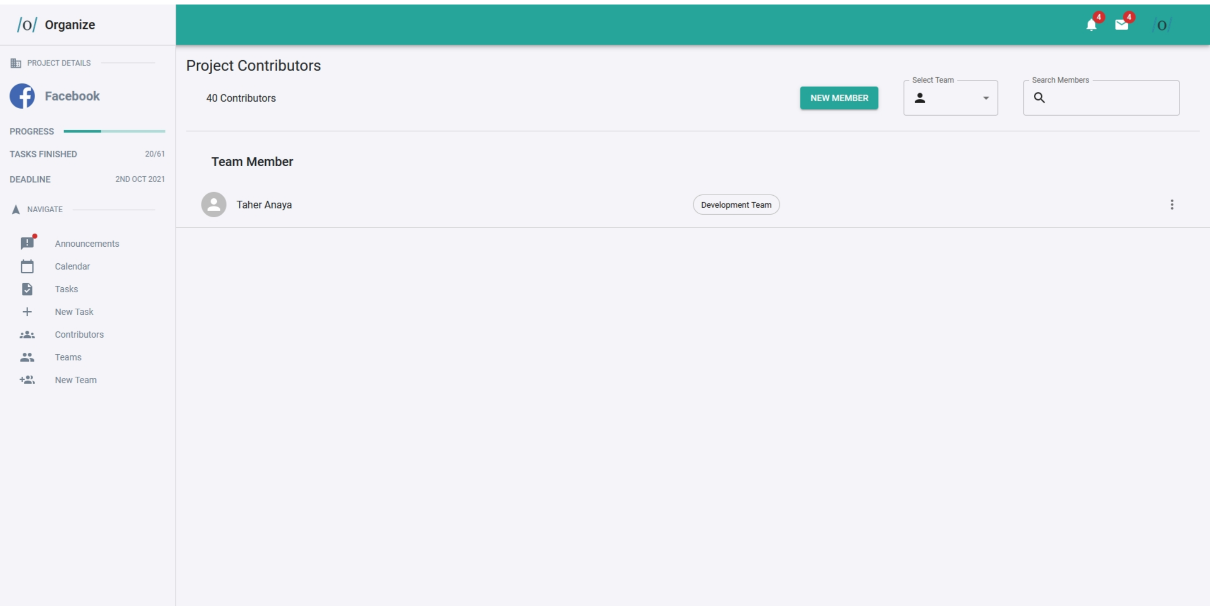


Figure 5.27: Team Member Tags

5.6 Adding Tasks

Each project has a variety of different tasks that should be trackable by the project manager. Each task has different attributes that shall be discussed:

Task Name

The task name shall be a small piece of text that describes the task in as less words as possible. For example, if the task was about developing the front-end for the home page of a certain website, then the task name shall only be called "Developing the Front-end for the Homepage" without going into details about used technologies, requirements, and what shall be present and what shall not be present.

Task Description

The task description is where all of the details of the task shall be present, including what technologies shall be used, what are the requirements of the task, and what the task should achieve and what it should not bother with. The task description is flexible and allows the project manager to type as much details as possible about the task.

Task Weight

The task weight is an estimated measure that allows the project manager to predict how much effort does the task need. This type of measure is needed as the task start date and the task deadline are not accurate enough to judge the task difficulty as some tasks are very flexible and can be done during any period of the project. For example, a task with a weight that's equal to 100 shall be 10 times harder than a task with a weight of 10. The task weight is used by the Organize system to generate reports about the members of each project and their contribution to the project.

Task Start Date

The task start date is when the task shall begin being worked on. The start date is set by the project manager but it is not strictly followed by the project team members. The start date is simply a *recommended* date that is set by the project manager to organize the workflow between the team members.

Task Deadline

The task deadline is the last date required by the project manager to finalize a certain task. Tasks that pass the deadline without being finished will be given a red color on the calendar and a special icon on the tasks list page that will be discussed later.

Sub-tasks

Some tasks can be tedious to finish, some tasks are easier to be done step by step rather than finishing the entire task in one go. For that reason, the ability to divide tasks into sub-tasks is required in project management. Organize allows the project manager to divide the task into multiple sub-tasks. Each sub-task has its own title and a its own weight. It is important to note that summation of all the sub-task weights shall not exceed the total task weight. Our application takes that in consideration to avoid any errors and mistakes that can be done by the project manager while creating sub-tasks.

Team Assignment

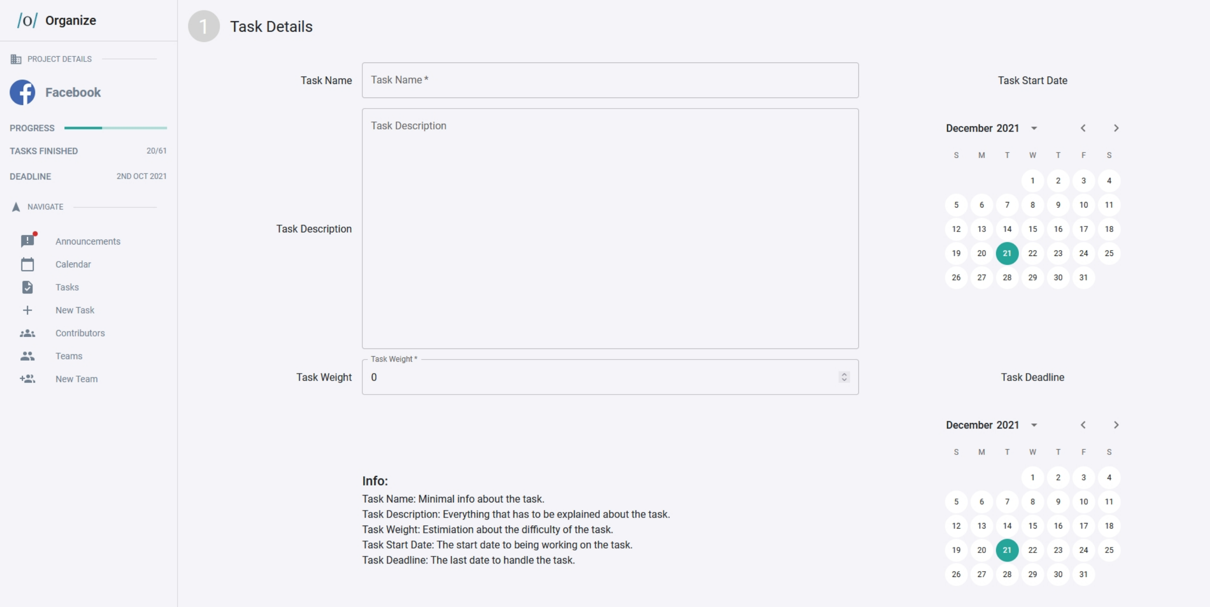
Tasks can be given to different teams upon creation. A task can be shared between different teams. This allows the project manager to create multiple development teams, for example, and assign different tasks to each team, but the manager will still be able to create shared tasks between both teams when needed.

Task Dependency

Some tasks cannot be worked on due to the fact that some files/data is still not ready. For example, the front-end development team will not be able to work on their website if the designing team has not finished working on their UI design. Organize takes that into consideration and allows the project manager to establish task dependency across different tasks. If a task is being lagged behind due to the fact that some other task is behind the schedule, then the team will be told that they cannot work on their task due to some work being behind the schedule.

New Task Creation

To create a new task, the project manager shall click on the "New Task" button from the drawer at the left side of the screen. Upon doing that, the project manager will be able to see different fields. Each field is responsible for filling each piece of information about the task that was discussed above.



TASKS FINISHED 20/61

DEADLINE 2ND OCT 2021

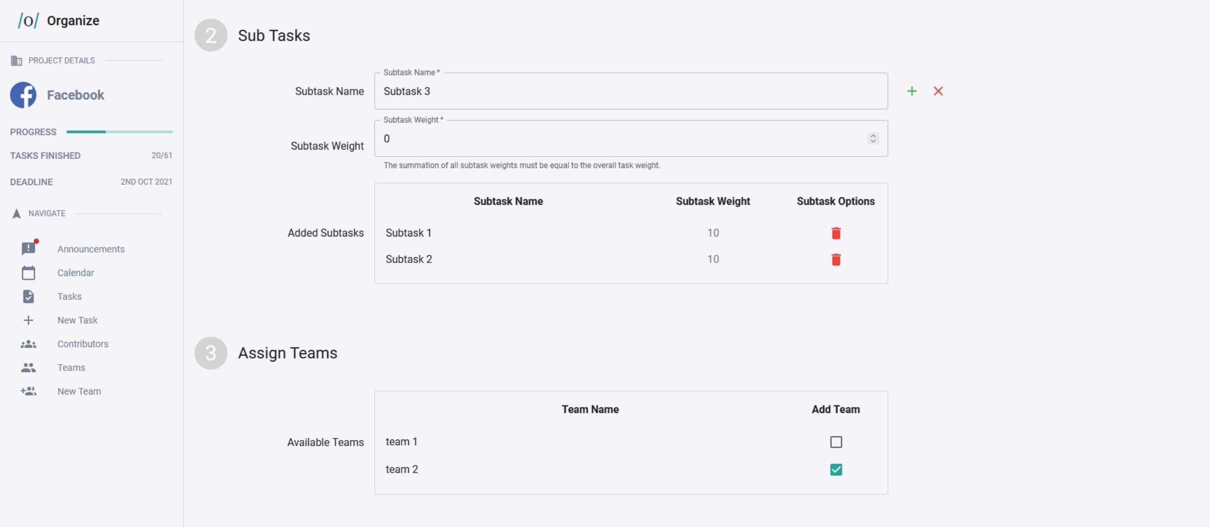
Task Name: Task Name *

Task Description: Task Description

Task Weight: Task Weight * 0

Info:
Task Name: Minimal info about the task.
Task Description: Everything that has to be explained about the task.
Task Weight: Estimiation about the difficulty of the task.
Task Start Date: The start date to being working on the task.
Task Deadline: The last date to handle the task.

Figure 5.28: Fields for Main Task Details



TASKS FINISHED 20/61

DEADLINE 2ND OCT 2021

Subtask Name: Subtask Name * Subtask 3

Subtask Weight: Subtask Weight * 0

The summation of all subtask weights must be equal to the overall task weight.

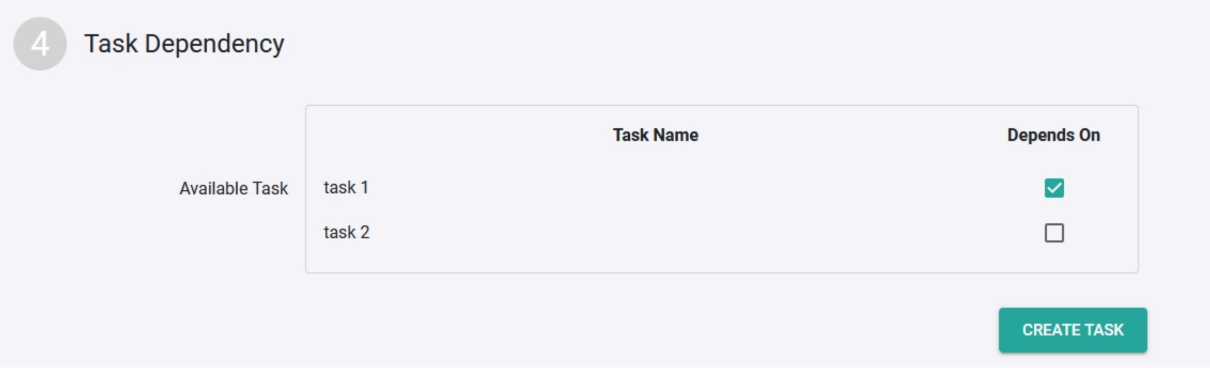
Added Subtasks:

Subtask Name	Subtask Weight	Subtask Options
Subtask 1	10	🗑
Subtask 2	10	🗑

Available Teams:

Team Name	Add Team
team 1	□
team 2	☑

Figure 5.29: Fields for Sub-tasks and Team Assignment



Available Task:

Task Name	Depends On
task 1	☑
task 2	□

Figure 5.30: Assigning Task Dependency for New Tasks

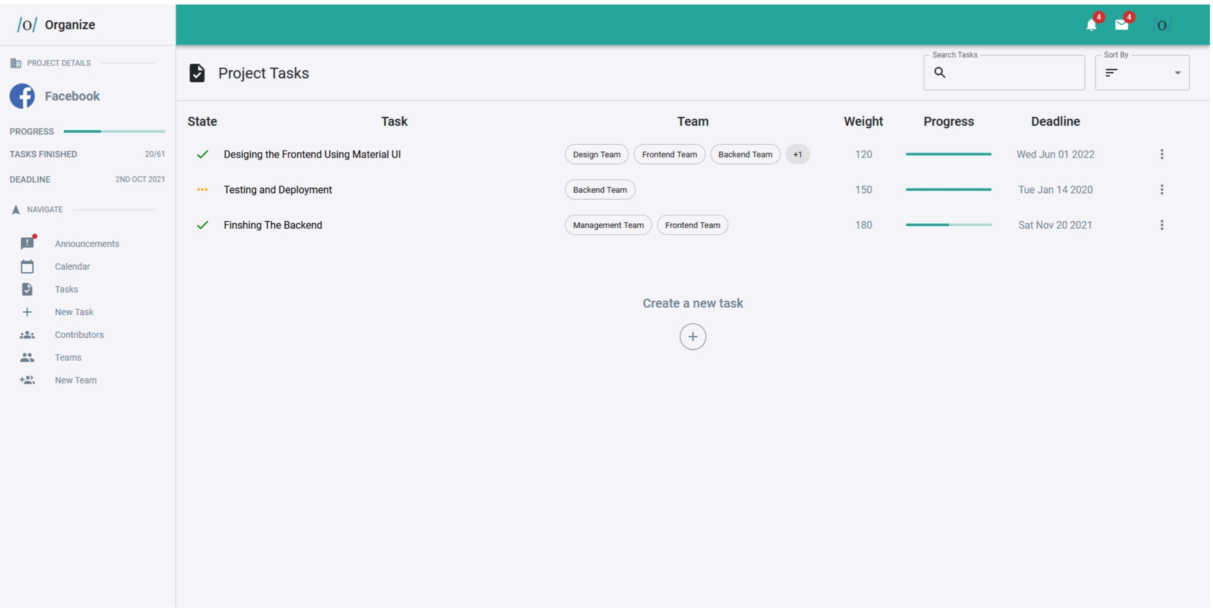
5.7 Task List

The task list is an alternative viewing method for all tasks. The task list contains most of the important information about all the tasks available in the list, including:

1. Task Name.
2. Task State (In Progress, On Hold, Behind the Schedule, Complete, Not Started).
3. Teams involved in each task.
4. Task total weight.
5. The progress bar representing the task completion progress (How many sub-tasks/weight is complete out of the total sub-task count/weight).
6. Task Deadline.
7. Different options to edit/modify or delete the desired task.

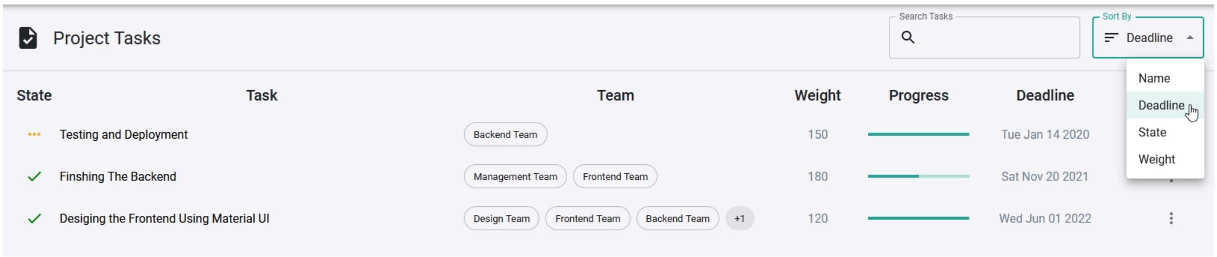
It also contains different fully functional options for sorting and searching between tasks. It also contains a quick-access button to create tasks.

You can also click on each task to view full details about each task including the task description, task sub-tasks, task dependency, etc...



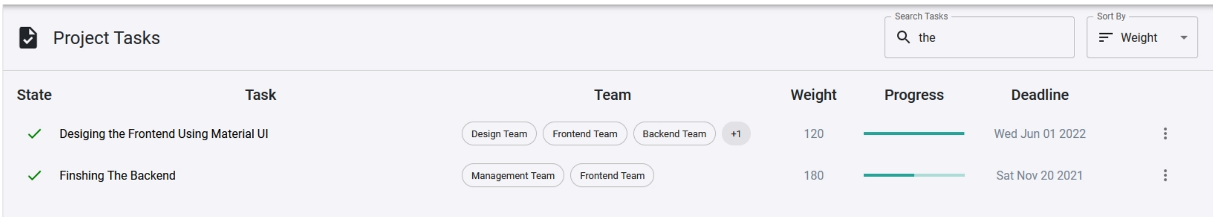
State	Task	Team	Weight	Progress	Deadline
✓	Desiging the Frontend Using Material UI	Design Team Frontend Team Backend Team +1	120		Wed Jun 01 2022
•••	Testing and Deployment	Backend Team	150		Tue Jan 14 2020
✓	Finshing The Backend	Management Team Frontend Team	180		Sat Nov 20 2021

Figure 5.31: Task List



State	Task	Team	Weight	Progress	Deadline
•••	Testing and Deployment	Backend Team	150		Tue Jan 14 2020
✓	Finshing The Backend	Management Team Frontend Team	180		Sat Nov 20 2021
✓	Desiging the Frontend Using Material UI	Design Team Frontend Team Backend Team +1	120		Wed Jun 01 2022

Figure 5.32: Different Sorting Options for the Task List



Search Tasks: the

Sort By: Weight

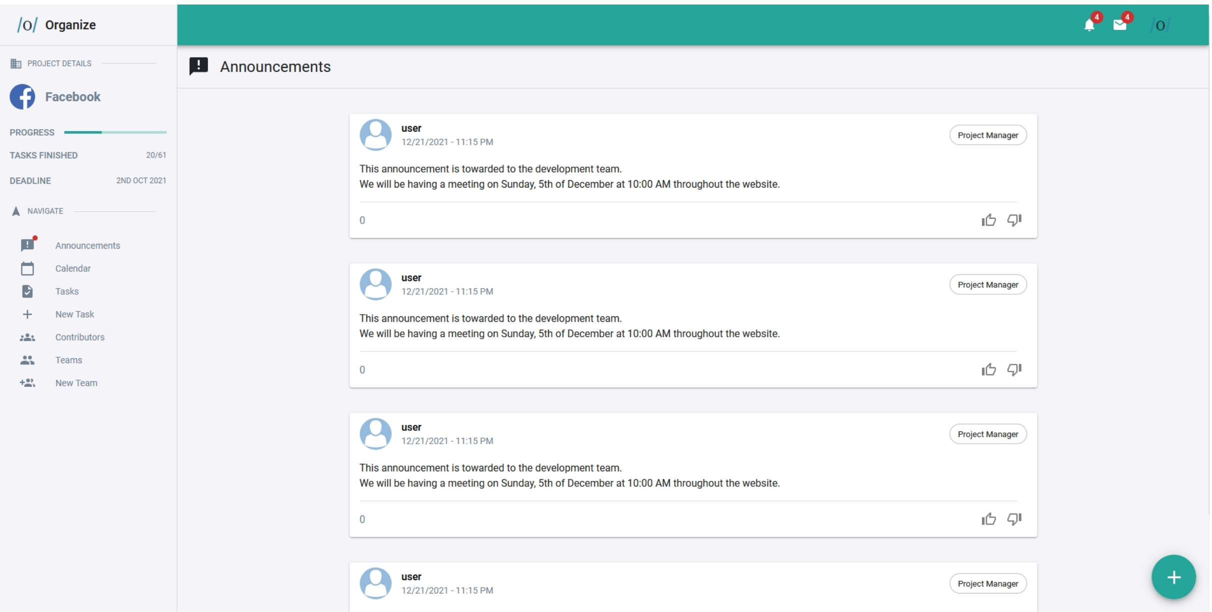
State	Task	Team	Weight	Progress	Deadline
✓	Desiging the Frontend Using Material UI	Design Team Frontend Team Backend Team +1	120		Wed Jun 01 2022
✓	Finshing The Backend	Management Team Frontend Team	180		Sat Nov 20 2021

Figure 5.33: A Mixture Between Sorting and Searching in the Task List

5.8 Announcements

The project contains an area for project announcements. This area is used by the project manager to post different announcements to the project contributors. An announcement system can improve the communication between the each team and their manager.

The announcement page allows the project manager to post different announcements. Each announcement contains the name of the project manager to distinguish the announcement poster among other project members. It also contains an area for the announcement date to distinguish when the announcement was posted. Finally, it contains two different buttons that allow the project contributors to up-vote and down-vote the posted announcement. There's also two different management options for the project manager to edit and delete a certain announcement.



Facebook

PROGRESS

TASKS FINISHED 20/61

DEADLINE 2ND OCT 2021

user
12/21/2021 - 11:15 PM
Project Manager

This announcement is towarded to the development team.
We will be having a meeting on Sunday, 5th of December at 10:00 AM throughout the website.

0

user
12/21/2021 - 11:15 PM
Project Manager

This announcement is towarded to the development team.
We will be having a meeting on Sunday, 5th of December at 10:00 AM throughout the website.

0

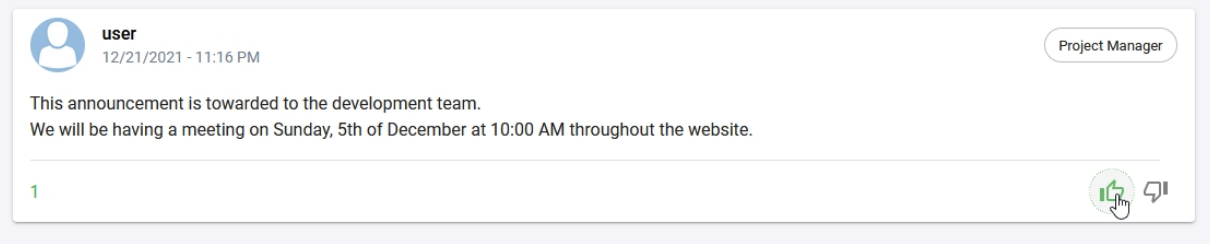
user
12/21/2021 - 11:15 PM
Project Manager

This announcement is towarded to the development team.
We will be having a meeting on Sunday, 5th of December at 10:00 AM throughout the website.

0

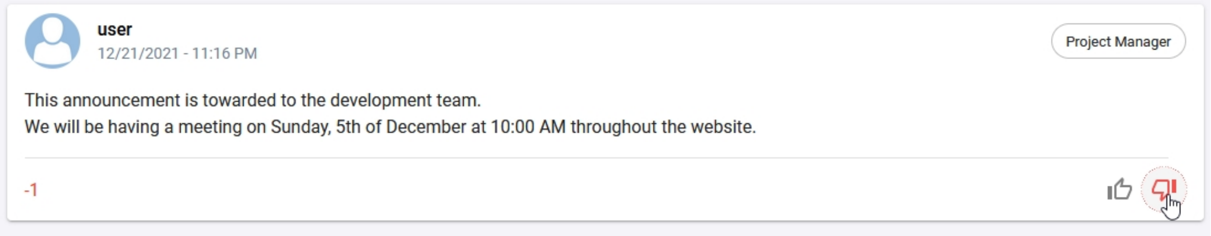
user
12/21/2021 - 11:15 PM
Project Manager

Figure 5.34: The Project Announcement Page



This announcement is towarded to the development team.
We will be having a meeting on Sunday, 5th of December at 10:00 AM throughout the website.

Figure 5.35: Up-voting an Announcement



This announcement is towarded to the development team.
We will be having a meeting on Sunday, 5th of December at 10:00 AM throughout the website.

Figure 5.36: Down-voting an Announcement

To create an announcement, the project manager shall first click on the green "+" button at the bottom right corner of the screen. This will open a modal that will contain a text field and two different buttons. The text field allows the project manager to input the announcement details. The two other buttons are used to post/cancel the announcement.

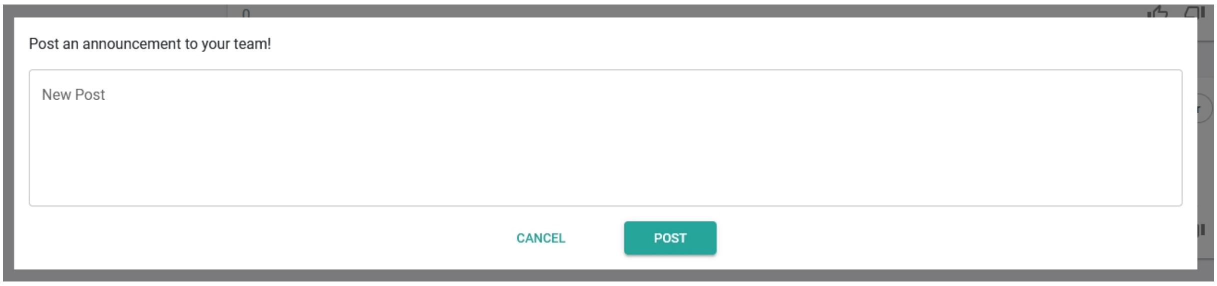

Post an announcement to your team!

Figure 5.37: Creating a New Announcement

5.9 Project Reports

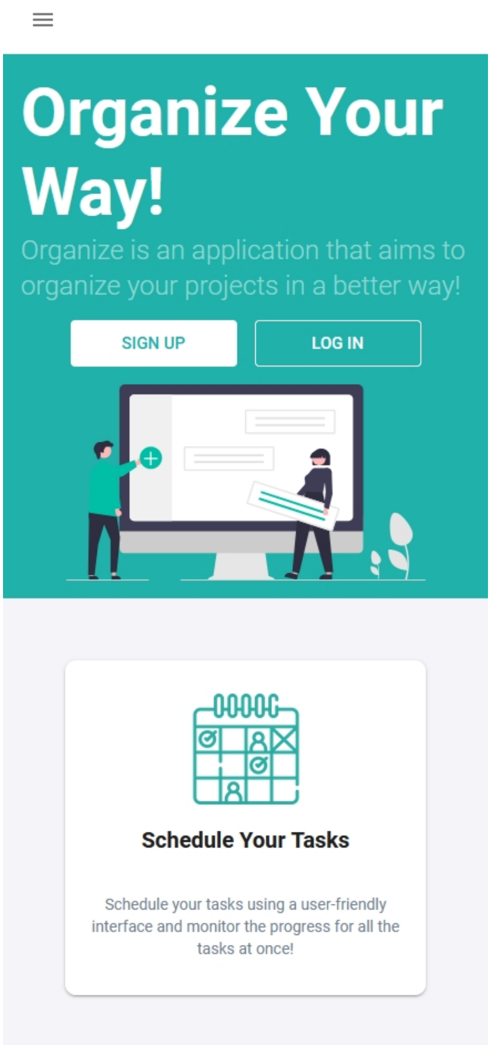
The project has a section for generating reports. The reports will focus on measuring the performance for each project team/member.

The task weight will be used to determine the performance for each team/member. The criteria will simply be total amount of weight finished by each team/team member during the total duration of the project.

5.10 Responsive Components

The website supports a responsive view of the website, which means that the website will look different according to the monitor resolution. This idea was introduced to allow the web application to run well on older monitors and mobile devices.

Here are some examples on how our website implements a responsive design:



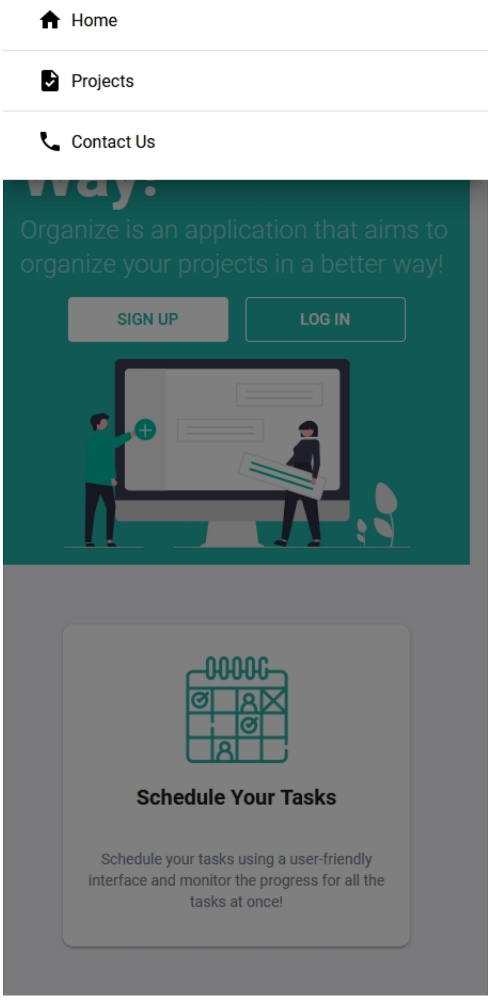
Organize Your Way!

Organize is an application that aims to organize your projects in a better way!

Schedule Your Tasks

Schedule your tasks using a user-friendly interface and monitor the progress for all the tasks at once!

Figure 5.38: The Mobile View of the Homepage



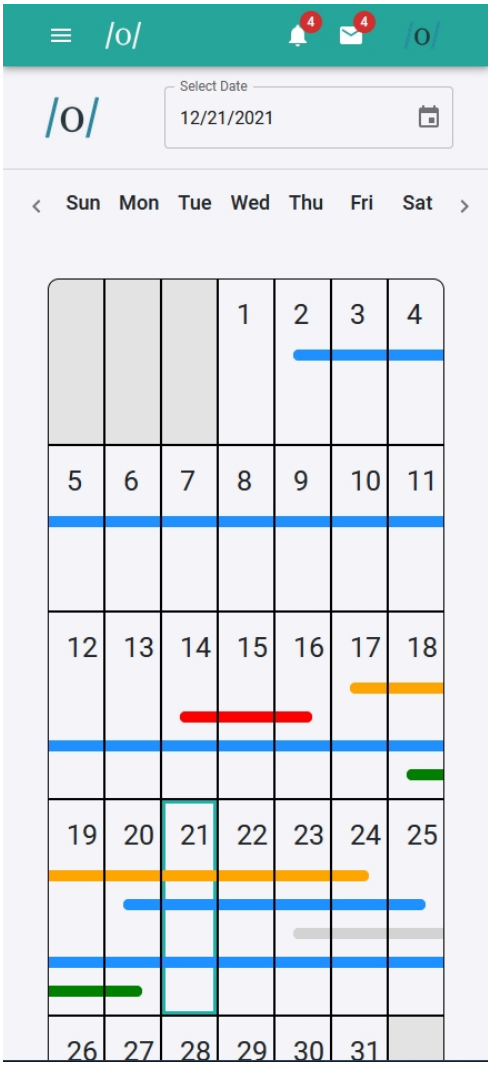
Way!

Organize is an application that aims to organize your projects in a better way!

Schedule Your Tasks

Schedule your tasks using a user-friendly interface and monitor the progress for all the tasks at once!

Figure 5.39: The Mobile View of Homepage Drawer

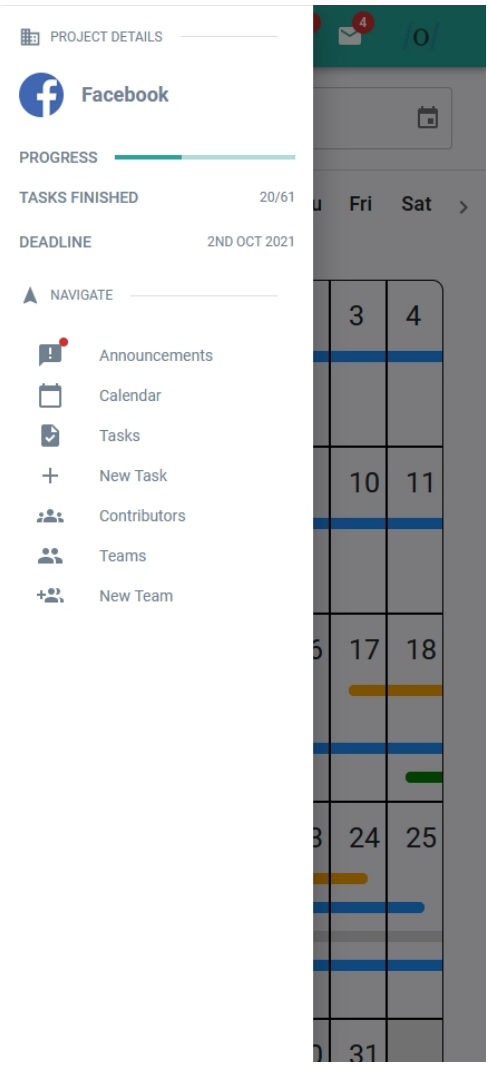


Select Date

12/21/2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Figure 5.40: The Mobile View of the Project Calendar



PROJECT DETAILS

Facebook

PROGRESS

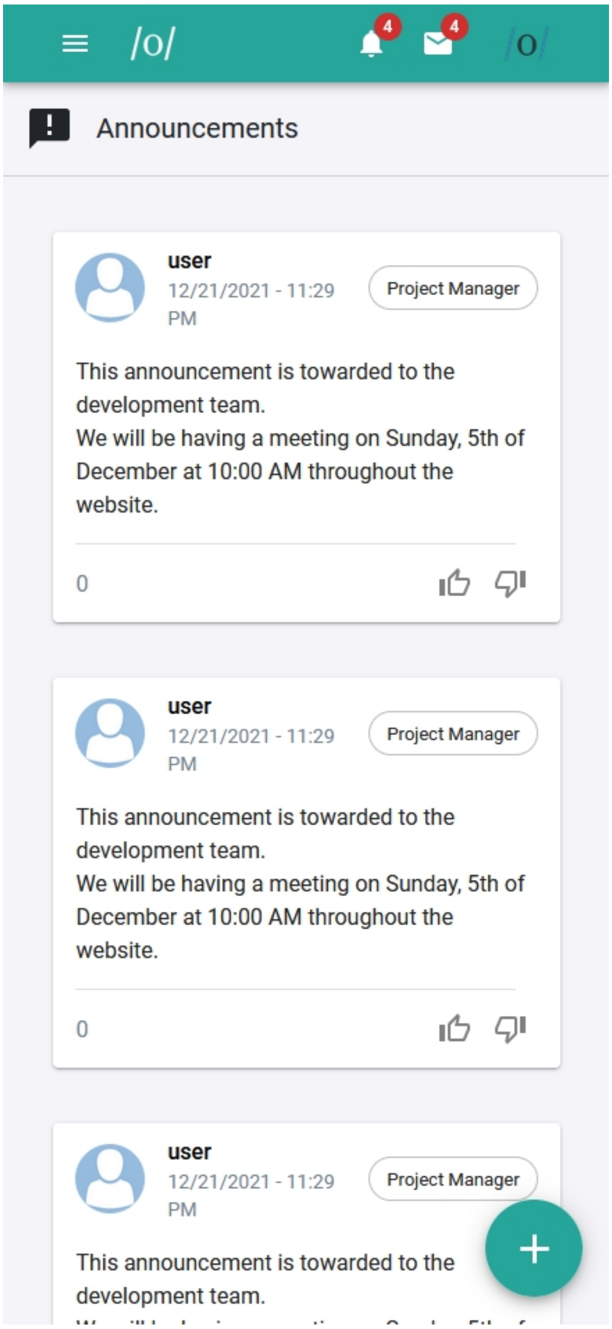
TASKS FINISHED 20/61

DEADLINE 2ND OCT 2021

NAVIGATE

- Announcements
- Calendar
- Tasks
- New Task
- Contributors
- Teams
- New Team

Figure 5.41: The Mobile View of the Project Drawer



Announcements

user
12/21/2021 - 11:29 PM
Project Manager

This announcement is towarded to the development team.
We will be having a meeting on Sunday, 5th of December at 10:00 AM throughout the website.

0

user
12/21/2021 - 11:29 PM
Project Manager

This announcement is towarded to the development team.
We will be having a meeting on Sunday, 5th of December at 10:00 AM throughout the website.

0

user
12/21/2021 - 11:29 PM
Project Manager

This announcement is towarded to the development team.

Figure 5.42: The Mobile View of the Project Announcement Page

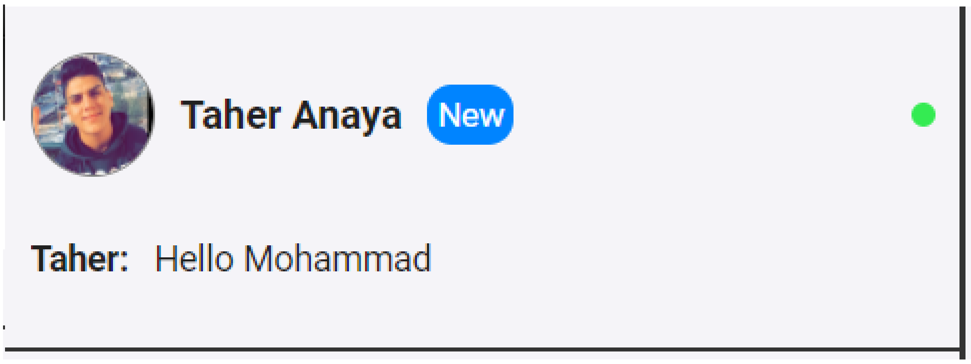
5.11 Chat

The project provides an area for chatting. This feature is used by the project users and managers to exchange messages, it provides the ability to exchange text and images and any type of files. A chatting can improve the communication between users, and easily exchange ideas a common space for everyone without the need to resort to other applications.

The Chat feature allows the users to send and receive messages between other user in the same project. Each message contains the name of the sender and the time it sent and the message content.

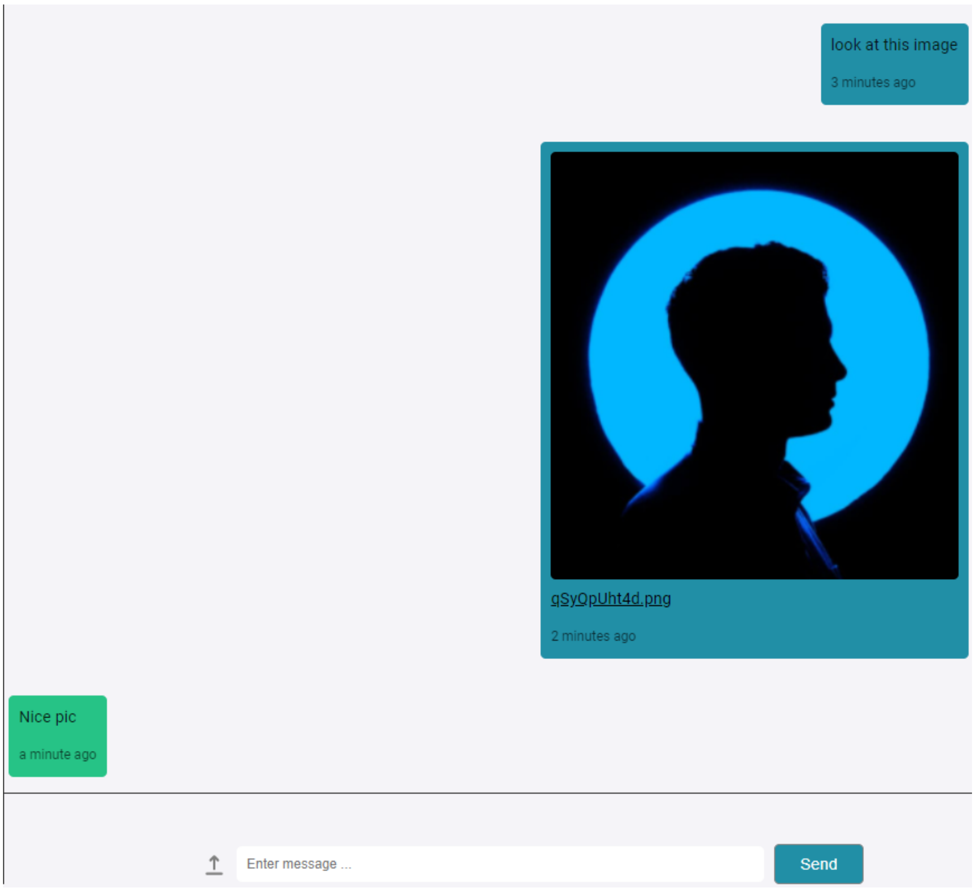
And the chat provides the ability to know if the other users is online or not.

It is important to mention that the current chat UI design is inconsistent due to the time limit, and shall be changed later.


Taher Anaya

Taher: Hello Mohammad

Figure 5.43: New Message


look at this image
3 minutes ago

qSyQpUht4d.png
2 minutes ago

Nice pic
a minute ago

Figure 5.44: Messages Example

5.12 Video Streaming and Screen Sharing

The project provides an area for video chatting and screen sharing. This feature is used by the project users and managers to real time meeting and talking with other in audio and video, it provides the ability to share screen with others. video chatting also provides a simple text chat with it and this can improve the communication between users, and easily exchange ideas a common space for everyone without the need to resort to other applications. and it also record video and screen sharing.

And the website provides the ability to create new room or join existing one, and provide to meeting more than one person in meeting.

It is important to mention that the current chat UI design is inconsistent due to the time limit, and shall be changed later.

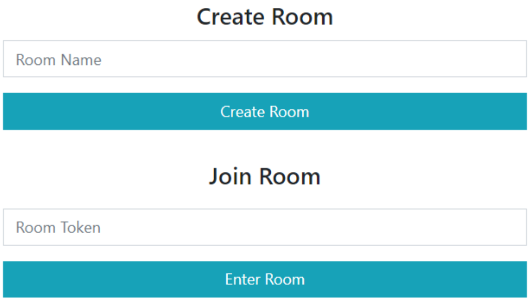


Figure 5.45: Create Or Join Room

Note that the right one is share his screen and left one is watch it, and note that the upper screen is for others, and the bottom one's is for user it self.

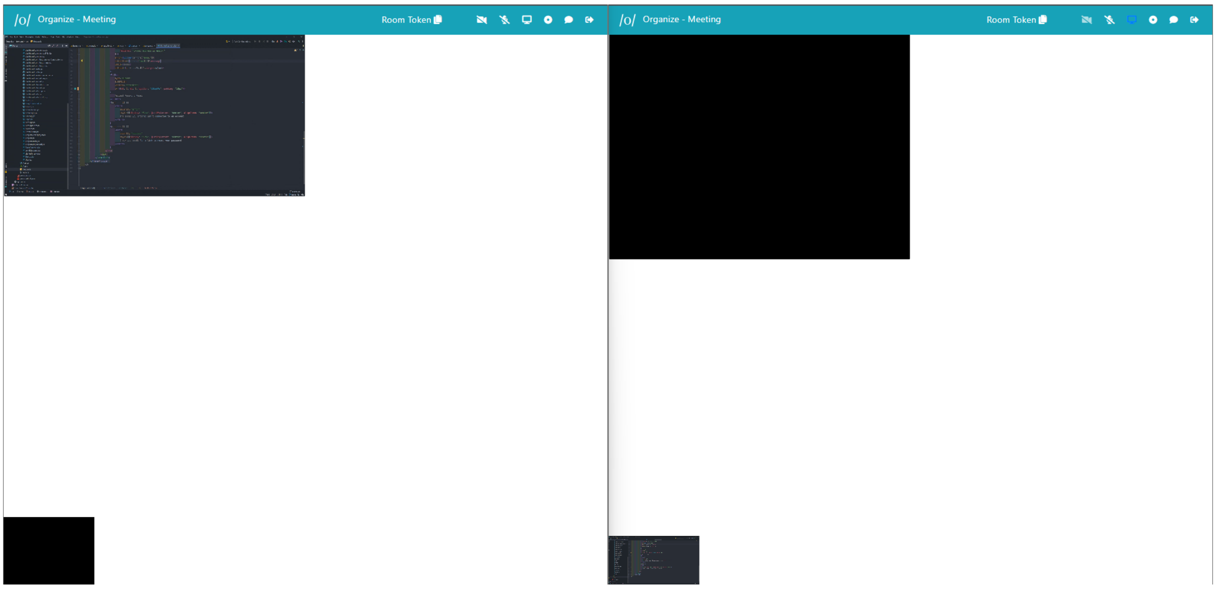


Figure 5.46: Video Chatting and Screen Sharing

Chapter 6

Results & Discussion

6.1 Final Application

The final product is a web application that allows users to:

1. Create new projects, divide each one into particular tasks, and assign each job to a specific team.
2. Make new teams and assign them new responsibilities.
3. Monitor the overall project's development as well as the progress of each team separately.
4. Every team's efficiency in each task is reported.
5. Chat with other users and send and receive text messages and files of various forms.
6. Real-time video and voice conversation is possible with video conferencing.
7. Real-time screen sharing with other project participants.

6.2 Project Outcomes

Hopefully, this application will:

1. Increase the efficiency of teamwork and provide a manager more control over project development.
2. Allow users to meet other users in real-time video and audio chatting, as well as making sharing work simple.
3. Make its users feel that teamwork is a lot more fun than it looks to be.

Chapter 7

Conclusion & Future Work

7.1 Summary

Organize is a project management application aimed to create a simple and easy-to-use user interface. There are a lot of other alternatives, but most of them are limited to a certain type of projects (such as software development) or contain a lot of unnecessary features which makes the application overwhelming and not easy to get into.

Additionally, Organize aimed to enhance the communication experience between the team members and their manager by utilizing member chatting, on-site meetings and an area to post announcements, which is very important to create a successful project in tight deadlines and short intervals.

We hope that Organize achieved the purpose it was created for. There was a small collection of tiny features we hoped to implement in the project that were unfortunately dropped due to the tight schedule and focusing on more important features.

7.2 Future Work

There are some aspects that Organize could be improved in. that includes:

1. The mobile application doesn't contain all the features that the website provides. These features could be implemented.
2. Allowing to expand in sub-tasks to create sub-sub-tasks, which apparently was needed in some cases.
3. Improving the project structure to include other task states, like Bugged/Should be Maintained.
4. Allow the project manager to transfer teams among projects if their performance was as expected.
5. Improving the reporting system to report extra project information.

Bibliography

[1] React. URL: https://reactjs.org/. (accessed: 21.12.2021) (page 10).

[2] MUI. URL: https://mui.com/. (accessed: 21.12.2021) (page 10).

[3] MUI Lab. URL: https://mui.com/components/about-the-lab/. (accessed: 21.12.2021) (page 11).

[4] ExpressJS. URL: https://expressjs.com/. (accessed: 21.12.2021) (page 11).

[5] Mongoose. URL: https://mongoosejs.com/. (accessed: 21.12.2021) (page 11).

[6] MongoDB Atlas. URL: https://www.mongodb.com/atlas. (accessed: 21.12.2021) (page 11).

[7] Firebase. URL: https://firebase.google.com/. (accessed: 21.12.2021) (page 12).

[8] React Router. URL: https://reactrouter.com/. (accessed: 21.12.2021) (page 12).

[9] JSON Web Token. URL: https://jwt.io/. (accessed: 21.12.2021) (page 12).

[10] bcrypt. URL: https://www.npmjs.com/package/bcrypt. (accessed: 21.12.2021) (page 12).

[11] axios. URL: https://github.com/axios/axios. (accessed: 21.12.2021) (page 12).

[12] photoshop. URL: https://www.adobe.com/products/photoshop.html. (accessed: 21.12.2021) (page 12).