

PRODUCT DEFINITION PROJECT REPORT

PERSONAL DASHBOARD

Submitted in partial fulfilment for the award of the degree of

MTSE

by

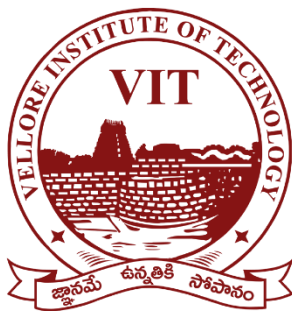
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Product Definition and Validation (CSE 3020) (Slot: B+ TB)



VIT-AP UNIVERSITY

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Chapter – 1

Introduction

Introduction

A dashboard is a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance.

Personal Dashboard is a task performance monitoring tool that allows a person to plan and measure individual performance. It offers a sophisticated way to digitally track work and personal activities.

Here we could find services and tools which can be used in our daily life, so that all the important tools can be found in a same place.

We are developing a Personal Dashboard Website which can contain more than one tool / service which we use daily in our digital life.

Like, a File management system in which we could store our files in a compressed and secured manner.

And also, we could share those files with others through this service.

A Weather forecast system in which we could observe the past weather data along with future weather predictions in a visualized way by graphs and charts for any user specified location.

A Chatting application in which we could chat with our contacts in a secured manner through Socket programming and other middleware to provide a secure channel to communicate.

And a Calendar event management system in which we could easily create events on any required date through an easy Calendar UI for interaction, along with time and receive email notifications for the events before any user specified time.

Literature Survey

This Personal Dashboard is a Highly Scalable product, due to openness in adding more services like Secured E-Mail application, Video / Audio calling application, and a Geolocation application, etc...

Now a days most of the cloud file storage applications like Dropbox, Mega, Google Drive, etc... are providing file storage applications without any compression techniques, due to that user might run out of size limitation thresholds quickly. Also, we are providing another secure way to protect the user files from unauthorized accesses though providing a unique master keys for every registered user which can be used to access their encrypted files.

Here with our Weather forecast application users could easily interpret the climate changes by visualizing through graphs and charts where has other weather applications like AccuWeather and Weather Channel just provide forecast in text and table formats.

Worldwide weather data consists for many parameters for huge number of locations. Daily, weather stations on earth generates huge amounts of historical, current and forecasted weather data.

It will be a huge overload for end users to understand and analyse that data. So, artificial techniques are used to generate faster and more accurate weather forecast data worldwide.

A simple, data based Artificial Intelligence can simulate a year's weather data around the globe much more quickly and almost as well as traditional weather models, by taking similar repeated steps from one forecast to the next.

Here comes the use of web technologies to represent and analyse the huge data to get desired brief and interactive outputs through widgets, graphs and charts.

Many APIs like Accu Weather, Open weather, and Dark sky are providing weather data through HTTP protocols for web developers to use that data to analyse and represent that data in user friendly websites.

Problem Statement

In this busy world we are using a lot of web and mobile applications where each are functioning for different reasons. Like google drive, OneDrive, etc... for file storage, which only provide limited amount of data without any compression techniques. These compression techniques can be used in a wide scale to allow users more storage to store their files.

Applications like Accu Weather and Weather Channel only provide historical, current and forecasted weather data in just text formats which can be difficult for the users to easily understand that kind of data. It would be better to represent weather data in the form of dynamic charts.

Study of the System

This project consists of 4 layers which are divided into user graphical interface, front-end, back-end, and database layers.

User interface layer consists of bootstrap which is used to create interface components thorough which user interacts and visualises data.

Front-end layer consists of Angular frame work used to build interactive and dynamic single page applications (SPAs) with its compelling features including templating, two-way binding, modularization, RESTful API handling, dependency injection, and AJAX handling.

Back-end layer consists of Node JS along with Express JS server which is an open source, cross-platform runtime environment for developing server-side and networking applications.

Node.js applications are written in JavaScript, and can be run within the Node.js runtime on OS X, Microsoft Windows, and Linux.

Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications.

This layer also consists of weather API, which receives respective coordinates and sends weather data to the back-end server.

Database layer consists of mongoose which is an Object Data Modelling library for Mongo Database and Node JS.

It manages relationships between data, provides schema validation, and is used to translate between objects in code and the representation of those objects in MongoDB.

And mongo DB is a document data model which is a powerful way to store and retrieve data.

Mongo DB's horizontal, scale-out architecture can support huge volumes of both data and traffic.

Scope of the Project

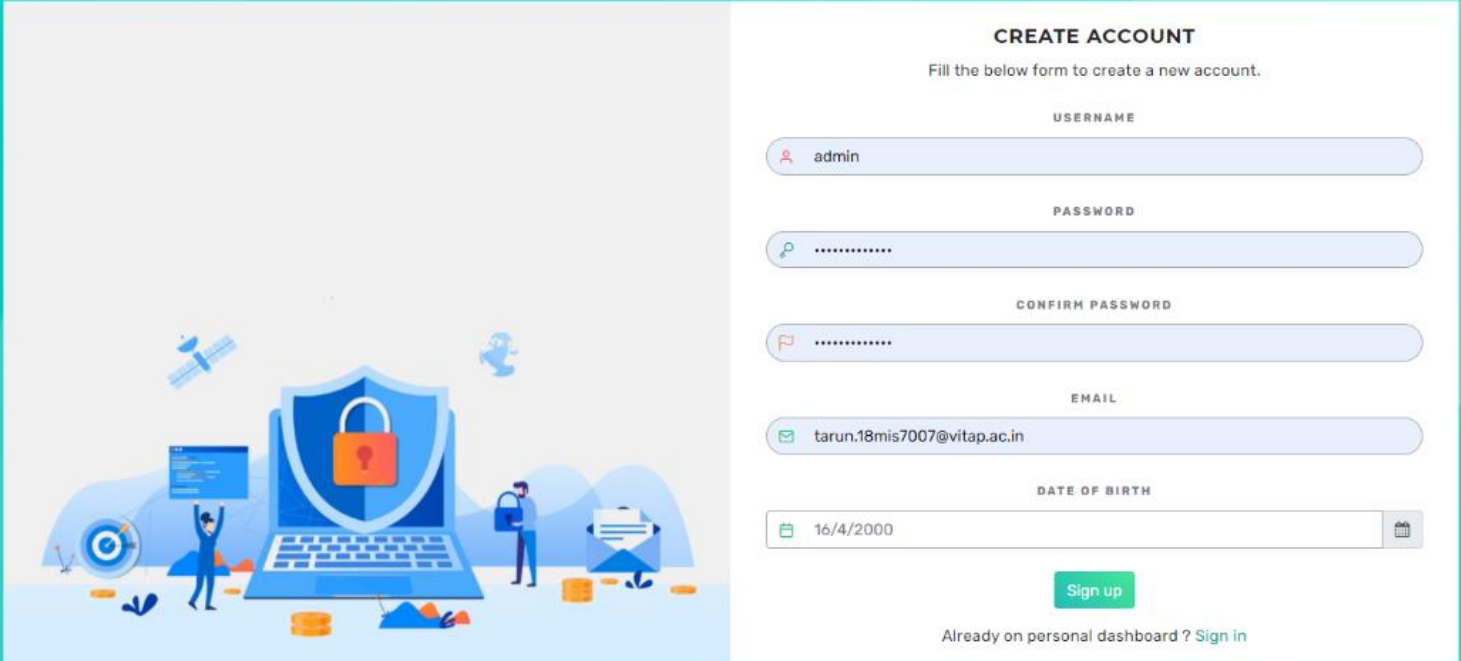
This project covers a wide range of users, who are interests in file management with secure storage, compressed storage, and secure sharing. And for the people to easily understand the weather data in the forms of widgets and charts. For the people who are working in the same organization could use this project to securely communicate with each other with socket programming.

Modules

- **File management:**
This module is used to store personal file in a secure cloud in compressed format. And also, can be used to fetch file statistics for user files.
- **Weather Widgets and Forecast:**
This module is used to represent historical, current, and forecasted weather data in the form of widgets and charts.
- **Event Management:**
This module is used to create custom calendar events for given data and time to get mail notifications for that specific date and time.

Outputs and Test Cases with Database Details

Authentication



CREATE ACCOUNT

Fill the below form to create a new account.

USERNAME

admin

PASSWORD

CONFIRM PASSWORD

EMAIL

tarun.18mis7007@vitap.ac.in

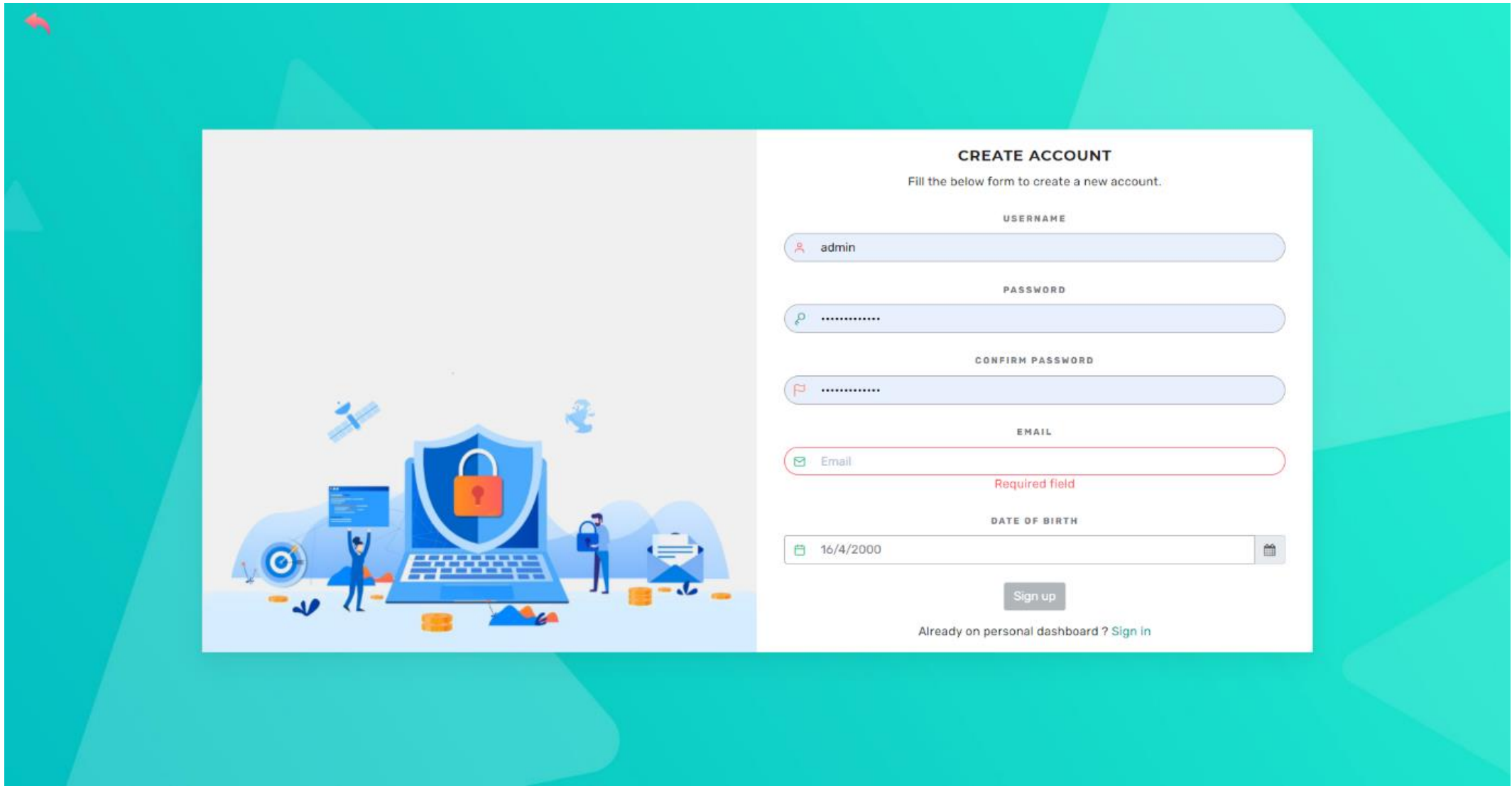
DATE OF BIRTH

16/4/2000


Sign up

Already on personal dashboard ? [Sign in](#)

Sign up page with all valid data



Sign up page with missing field entry



CREATE ACCOUNT

Fill the below form to create a new account.

USERNAME

admin

PASSWORD

.....

CONFIRM PASSWORD

.....

Passwords are not matching

EMAIL

tarun.18mis7007@vitap.ac.in

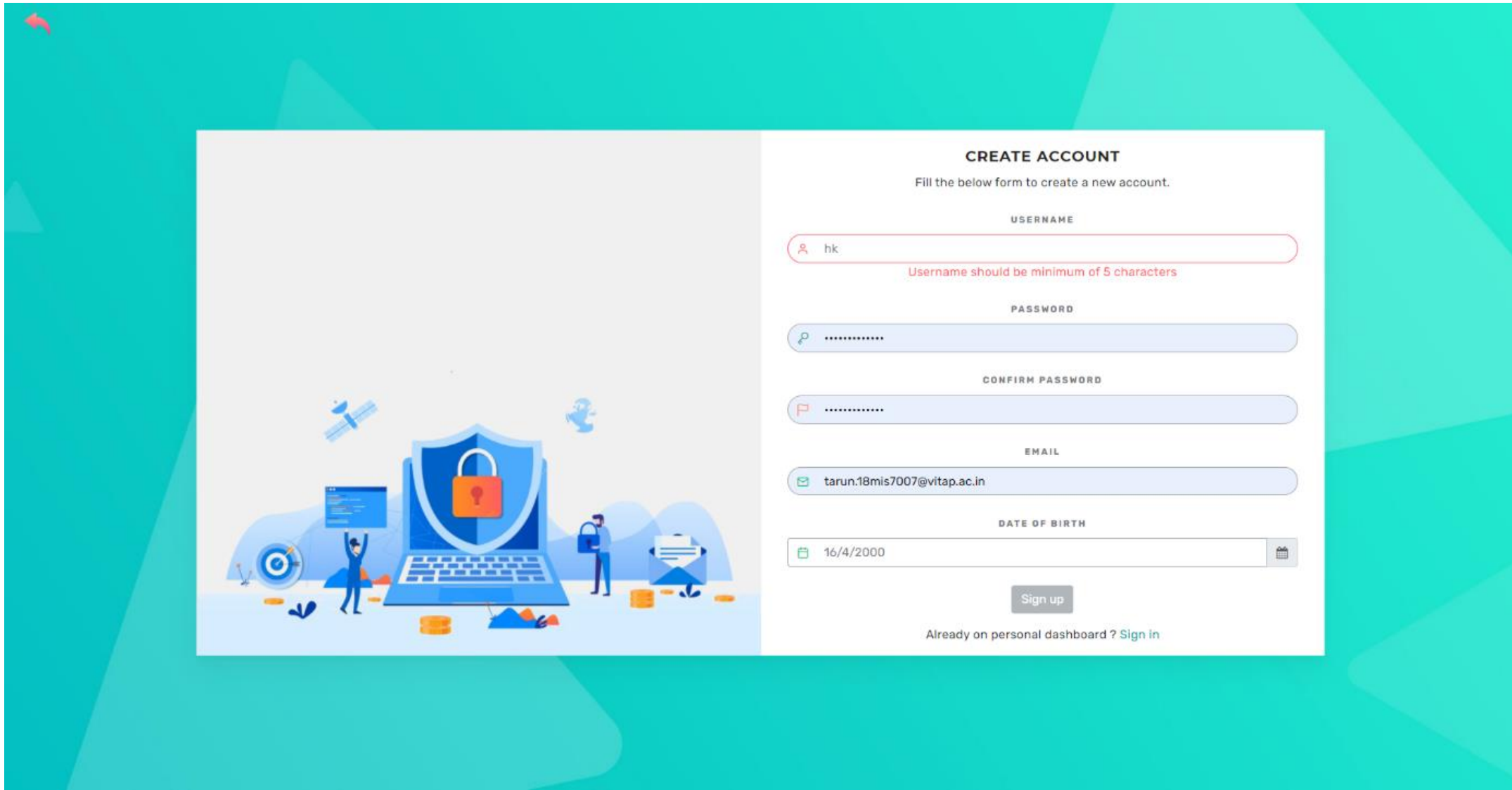
DATE OF BIRTH

16/4/2000


Sign up

Already on personal dashboard ? [Sign in](#)

Sign up page when passwords won't match



Sign up page when invalid username is given



CREATE ACCOUNT

Fill the below form to create a new account.

USERNAME

admin

PASSWORD

Password should be minimum of 6 characters

CONFIRM PASSWORD

Passwords are not matching

EMAIL

tarun.18mis7007@vitap.ac.in

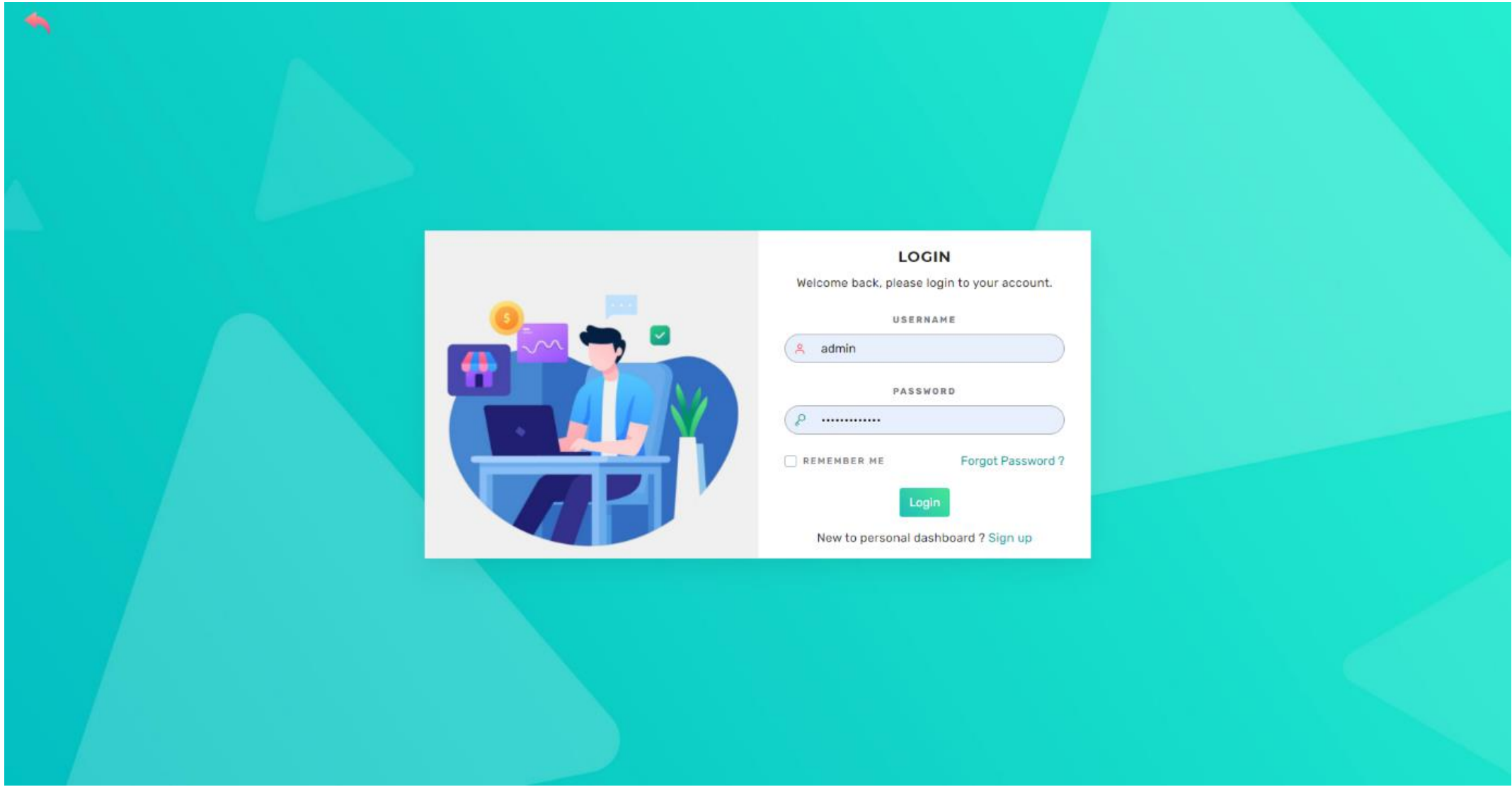
DATE OF BIRTH

16/4/2000

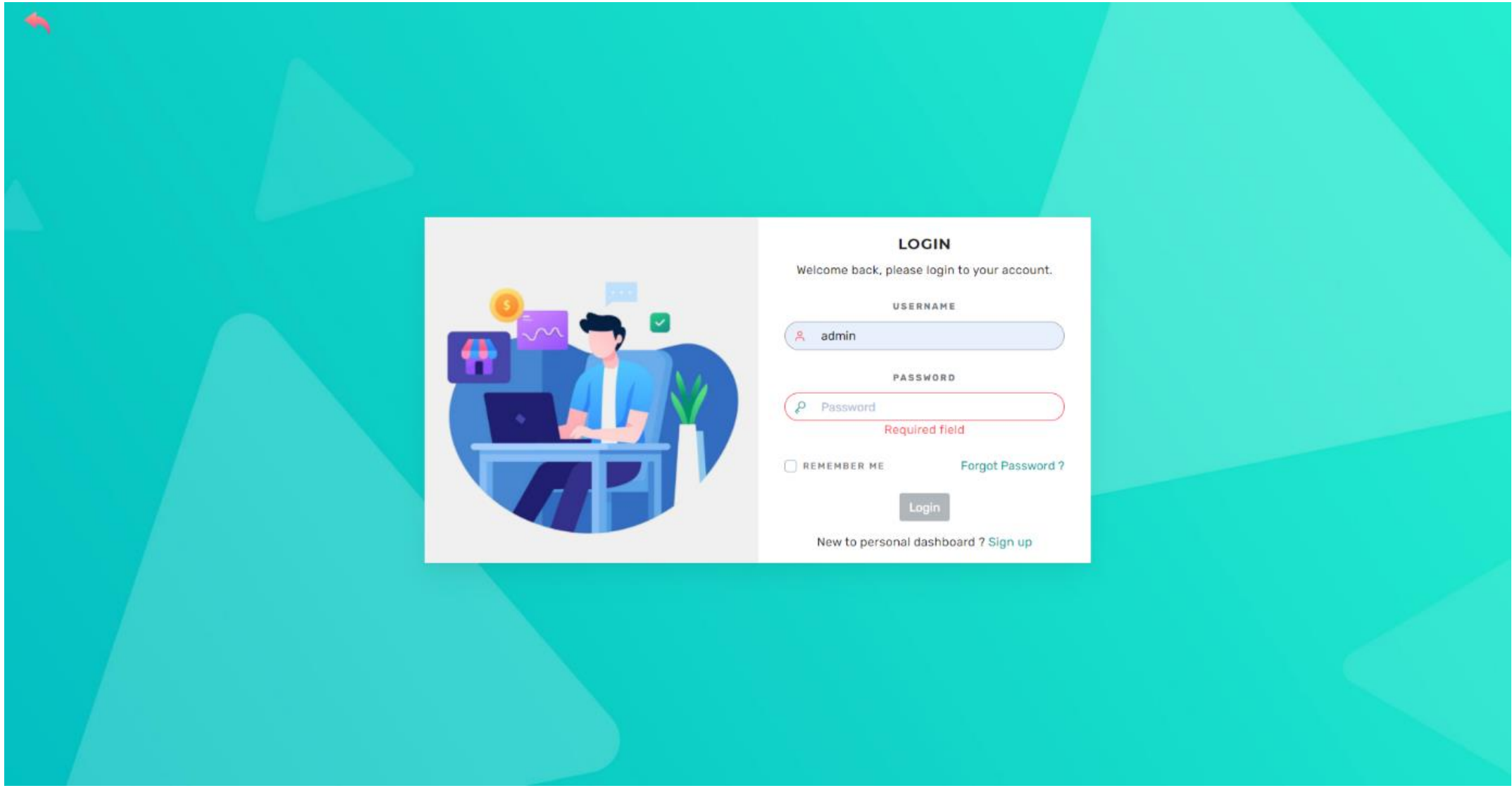
Sign up

Already on personal dashboard ? [Sign in](#)

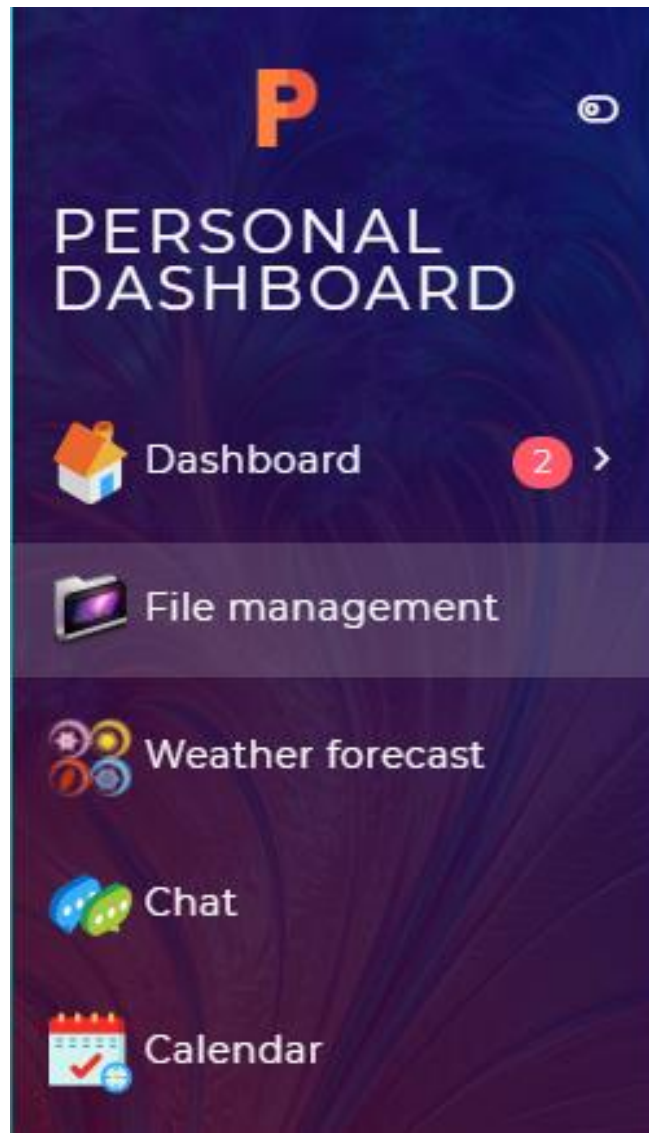
Sign up page when invalid password given



Sign in page when valid data is given



Sign in page when invalid data is given



P

Upload

DROP YOUR FILE HERE

Upload queue

Queue length : 0

Filename	Size	Progress	Status	Actions
----------	------	----------	--------	---------

Queue progress:

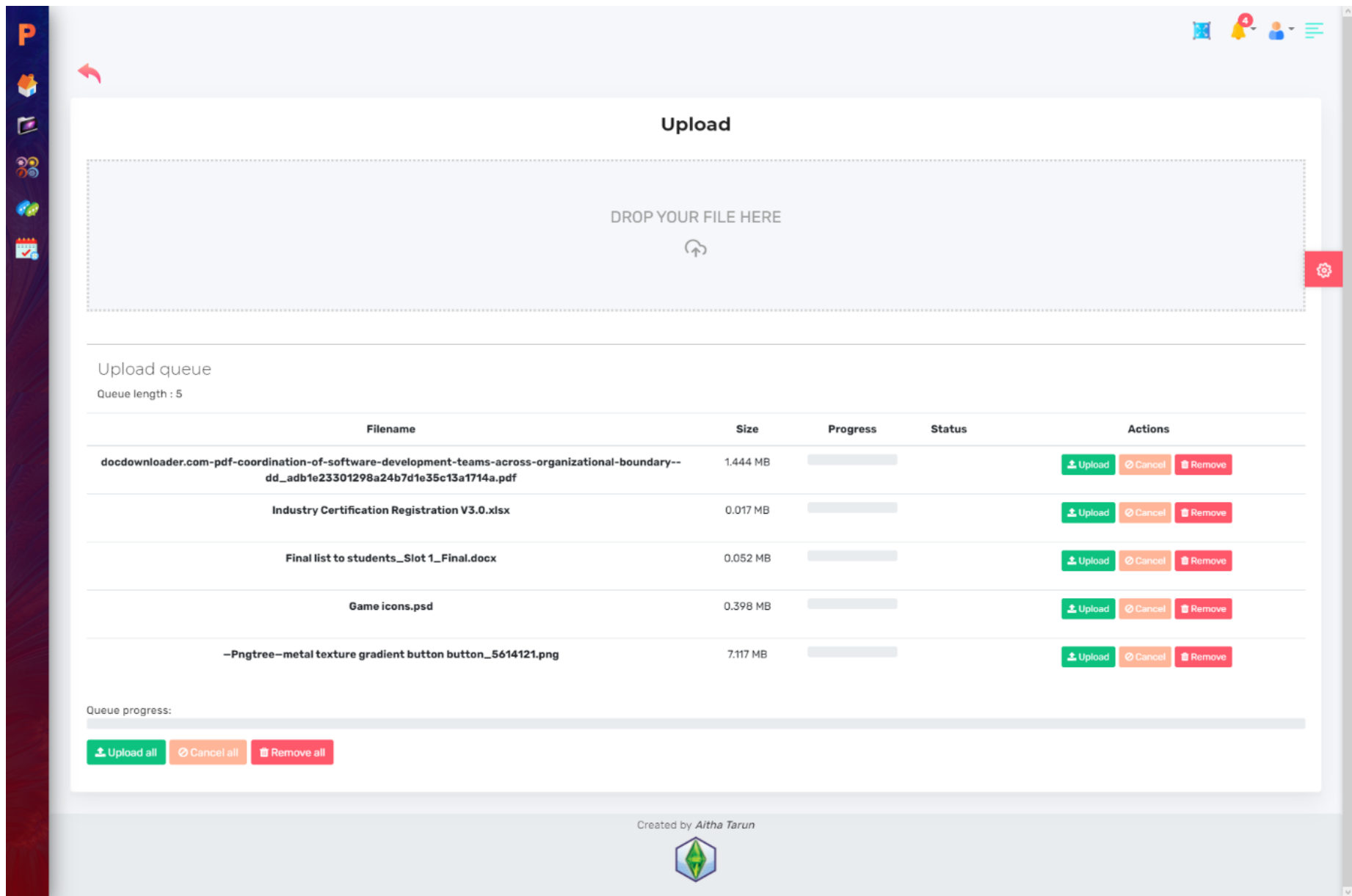
Upload all

Cancel all

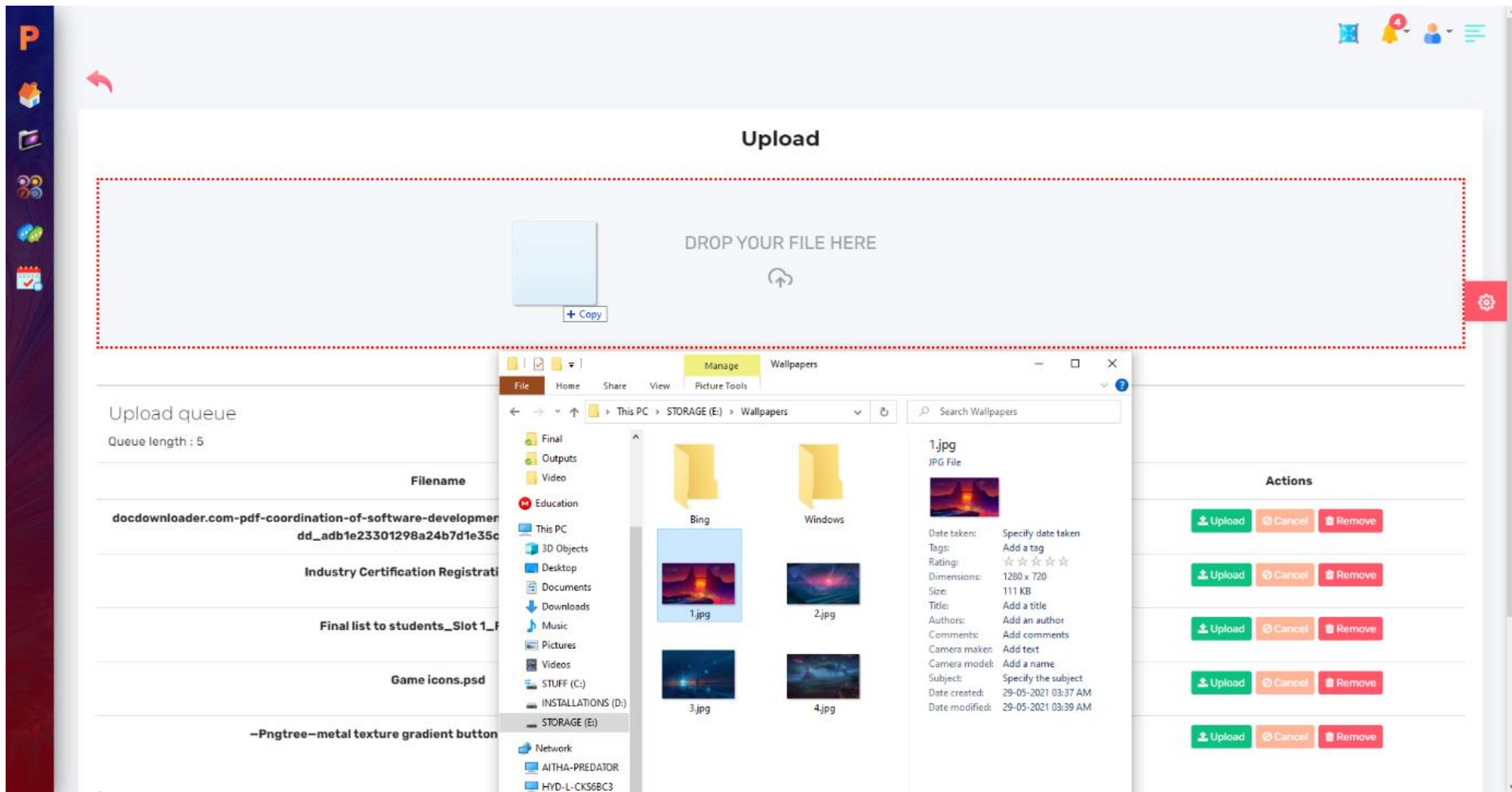
Remove all

Created by Aitha Tarun

Upload component with no files



Upload component with some files



Upload component while drag and dropping files

DROP YOUR FILE HERE

Upload queue

Queue length : 5

Filename	Size	Progress	Status	Actions
docdownloader.com-pdf-coordination-of-software-development-teams-across-organizational-boundary--dd_adb1e23301298a24b7d1e35c13a1714a.pdf	1.444 MB	<div></div>	<div>Uploaded successfully</div>	<div>Upload</div> <div>Cancel</div> <div>Remove</div>
Industry Certification Registration V3.0.xlsx	0.017 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>
Final list to students_Slot 1_Final.docx	0.052 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>
Game icons.psd	0.398 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>
-Pngtree-metal texture gradient button button_5614121.png	7.117 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>

Queue progress:

Upload all

Cancel all

Remove all

Created by Aitha Tarun

Upload component when a file is uploaded successfully

DROP YOUR FILE HERE

Upload queue

Queue length : 5

Filename	Size	Progress	Status	Actions
docdownloader.com-pdf-coordination-of-software-development-teams-across-organizational-boundary--dd_adb1e23301298a24b7d1e35c13a1714a.pdf	1.444 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>
Industry Certification Registration V3.0.xlsx	0.017 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>
Final list to students_Slot 1_Final.docx	0.052 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>
Game icons.psd	0.398 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>
-Pngtree-metal texture gradient button button_5614121.png	7.117 MB	<div></div>		<div>Upload</div> <div>Cancel</div> <div>Remove</div>

Queue progress:

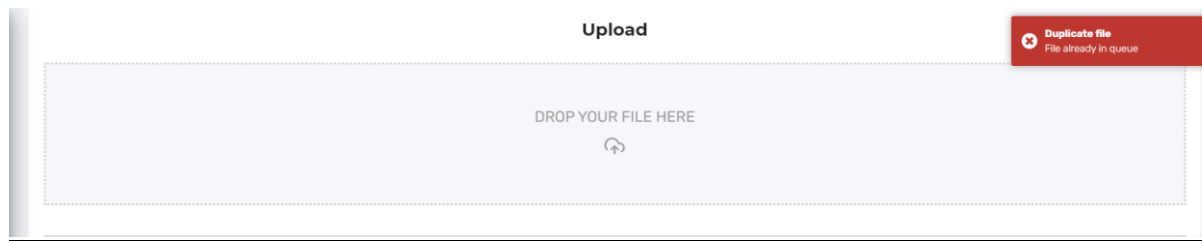
Upload all

Cancel all

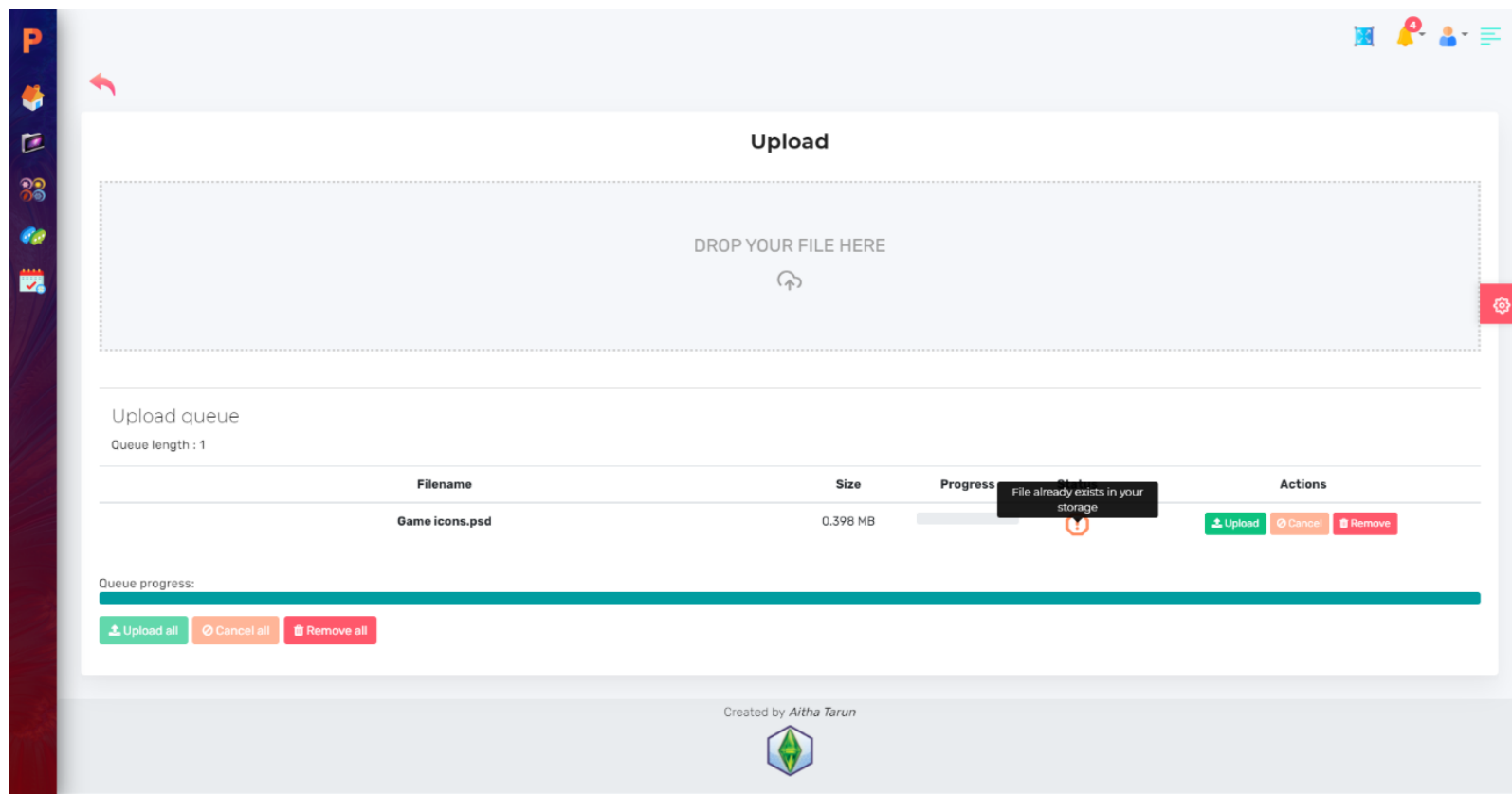
Remove all

Created by Aitha Tarun

Upload component when all files are uploaded successfully



Upload component when adding already existed file to the queue



Upload component when uploaded file already existed on cloud

P

Upload

DROP YOUR FILE HERE

Upload queue

Queue length : 1

Filename	Size	Progress	Actions
US_Accidents_June20.csv	1,265.714 MB	<div><div>Uploading : 63.286MB / 1,265.714MB</div></div>	<div><div>Upload</div><div>Cancel</div><div>Remove</div></div>

Queue progress:

Upload all

Cancel all

Remove all

Created by Aitha Tarun

Upload component while uploading file to cloud

P

Upload

DROP YOUR FILE HERE

Upload queue

Queue length : 1

Filename	Size	Progress	Actions
US_Accidents_June20.csv	1,265.714 MB	<div><div></div><div><div>Uploaded. Compressing and storing the file in your storage</div><div></div></div></div>	<div><div>Upload</div><div>Cancel</div><div>Remove</div></div>

Queue progress:

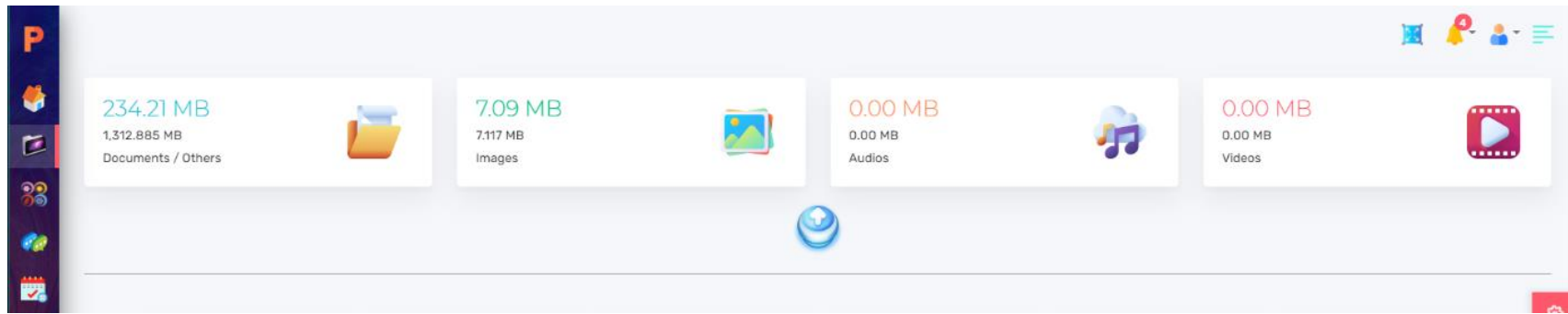
Upload all

Cancel all

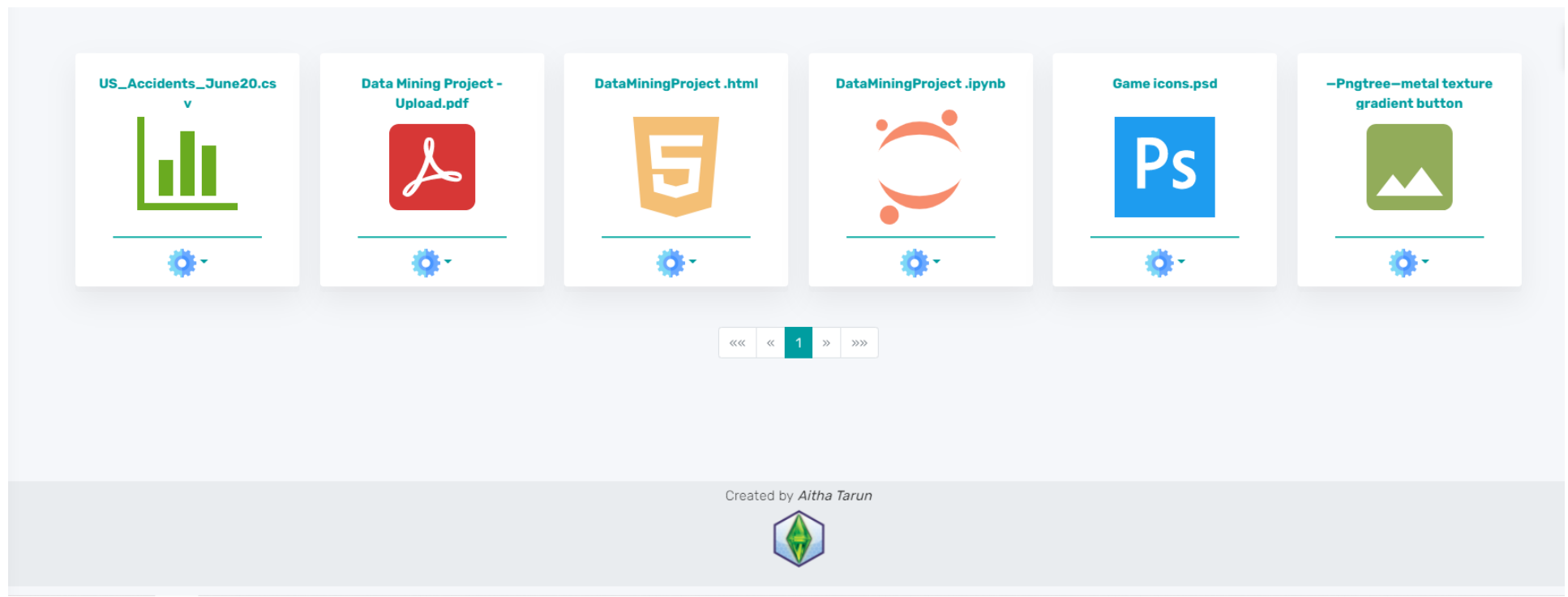
Remove all

Created by Aitha Tarun

Upload component when uploaded file is being compressed



Uploaded files statistics with original and compressed sizes



Uploaded files list

File info

File size : (1,265.714 MB) → (224.713 MB)

Uploaded on : June 4, 2021, 6:51 PM

File type : application/vnd.ms-excel



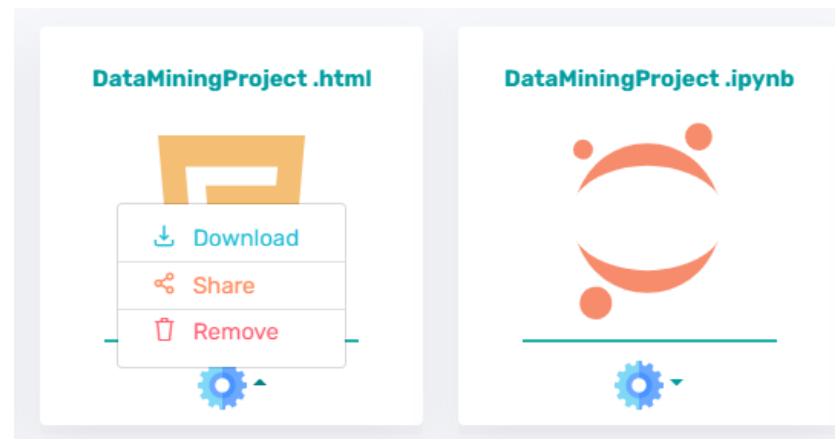
Data Mining Project - Upload.pdf



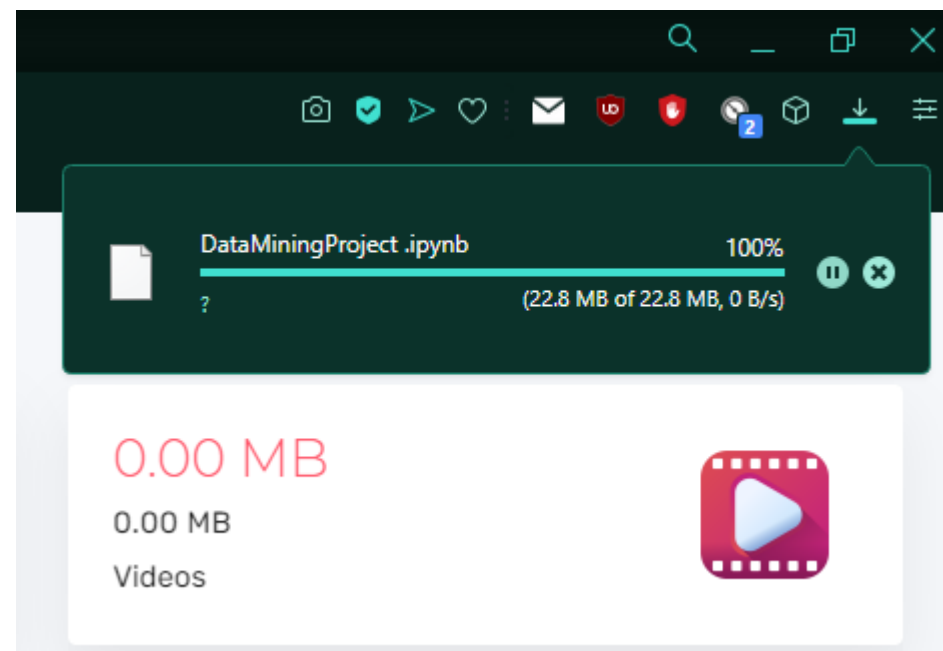
DataMiningProject .html



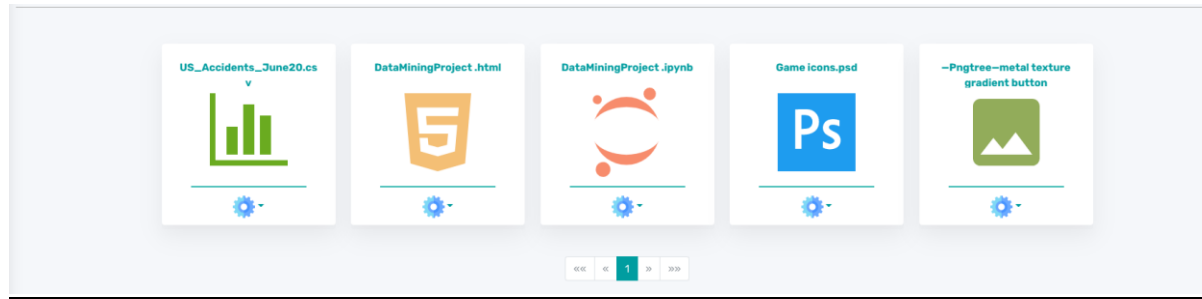
File details tooltip with file size, uploaded date, and file type



File options dropdown (Download, share, and remove)

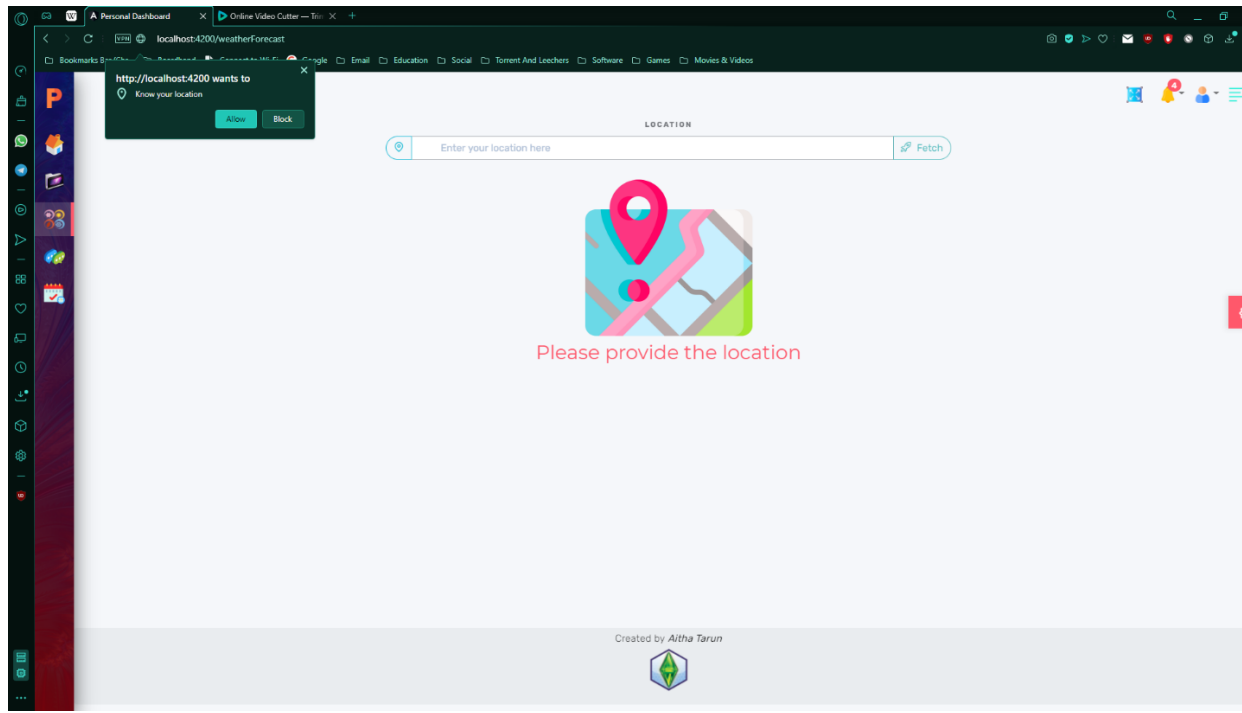


Downloading file

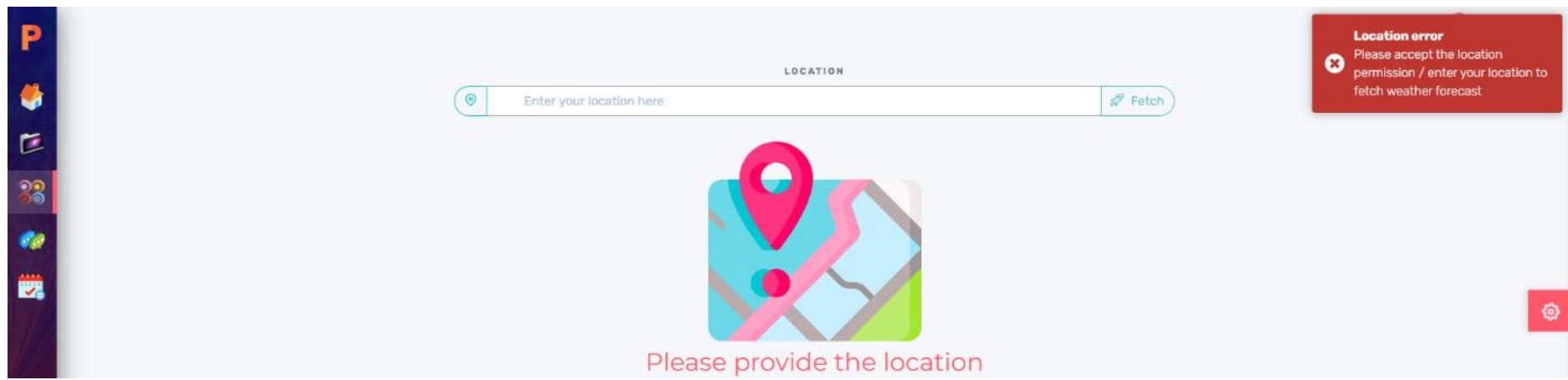


Files list after removing “Data Mining Project - Upload.pdf” file

Weather Widgets and Forecast



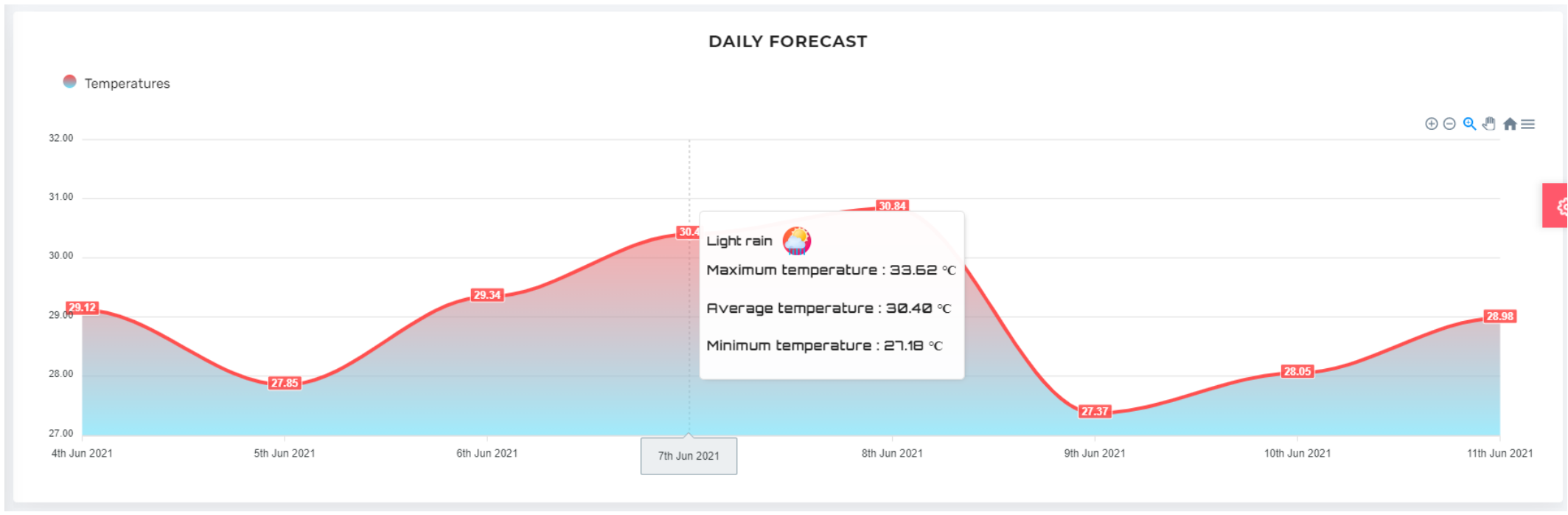
Weather component while asking user permission for user’s location permission



Weather component when user denied location permission



Weather widget for user current location with weather parameters like (time, temperature, weather condition, sunrise, sunset times, humidity, etc...)



Daily forecast chart for user current location

3rd Jun 2021 ▾

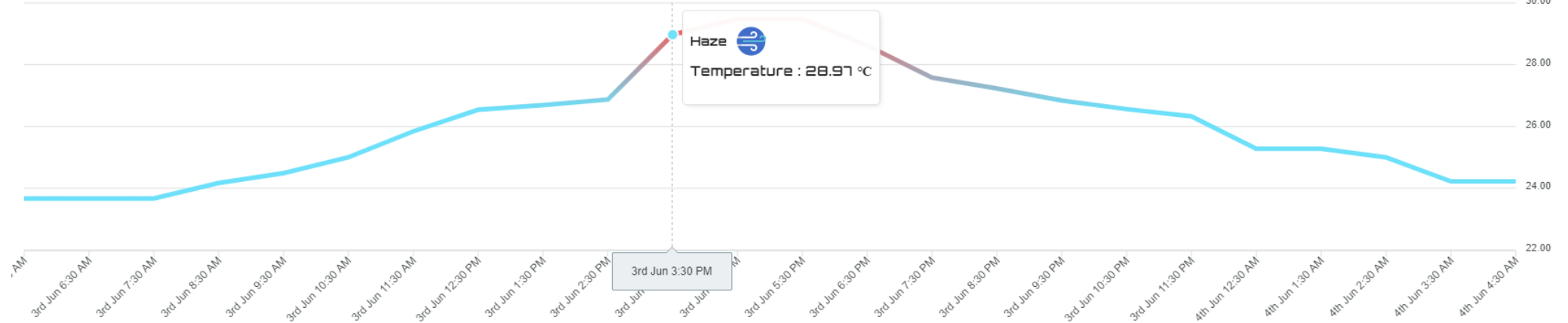
HISTORICAL DATA

● Temperatures

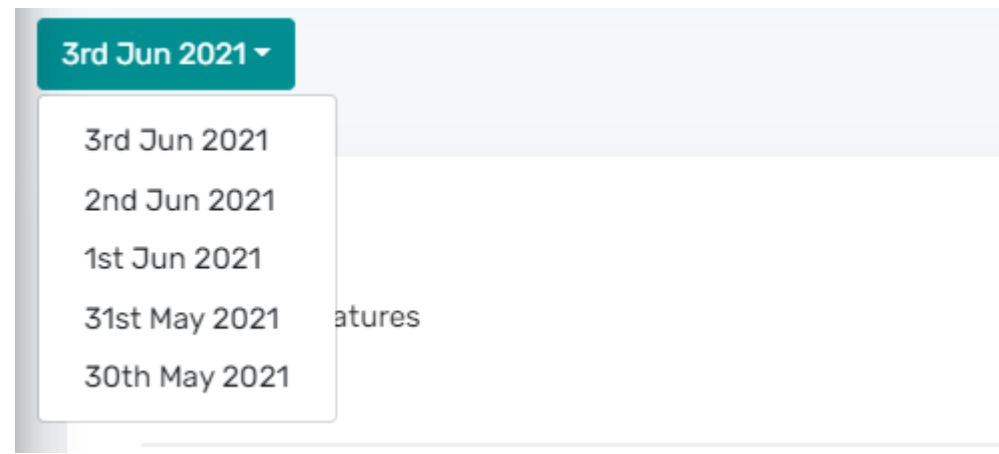
⊕ ⊖ 🔍 📱 🏠 ☰

Haze
Temperature : 28.97 °C

3rd Jun 3:30 PM



Historical weather data for 3rd June 2021



Historical dates dropdown

vello

Fetch

Vellore Woods, L6A 1S6, Vaughan, Ontario,

Broken clouds

19.59 °C

Vellore, Tamil Nadu, India

Light rain

29.57 °C

Vellinge, Skåne, Sweden

Broken clouds

19.17 °C

Velletri, Rome, Italy

Clear sky

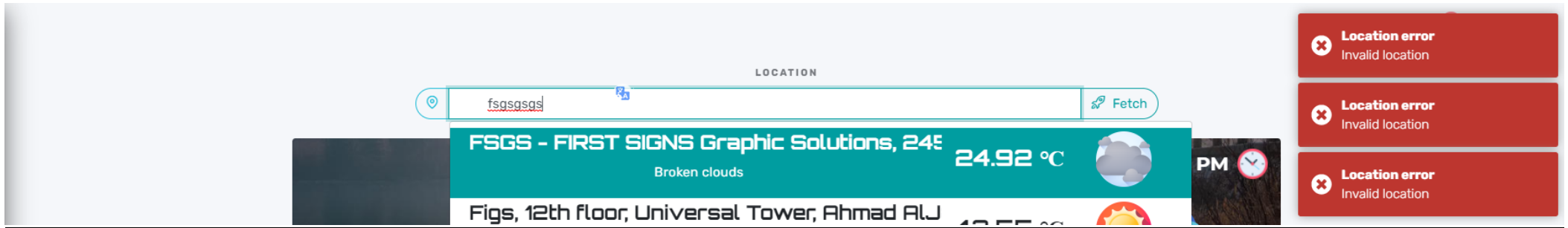
26.72 °C

Vellore Fort, Vellore, Tamil Nadu, India

Light rain

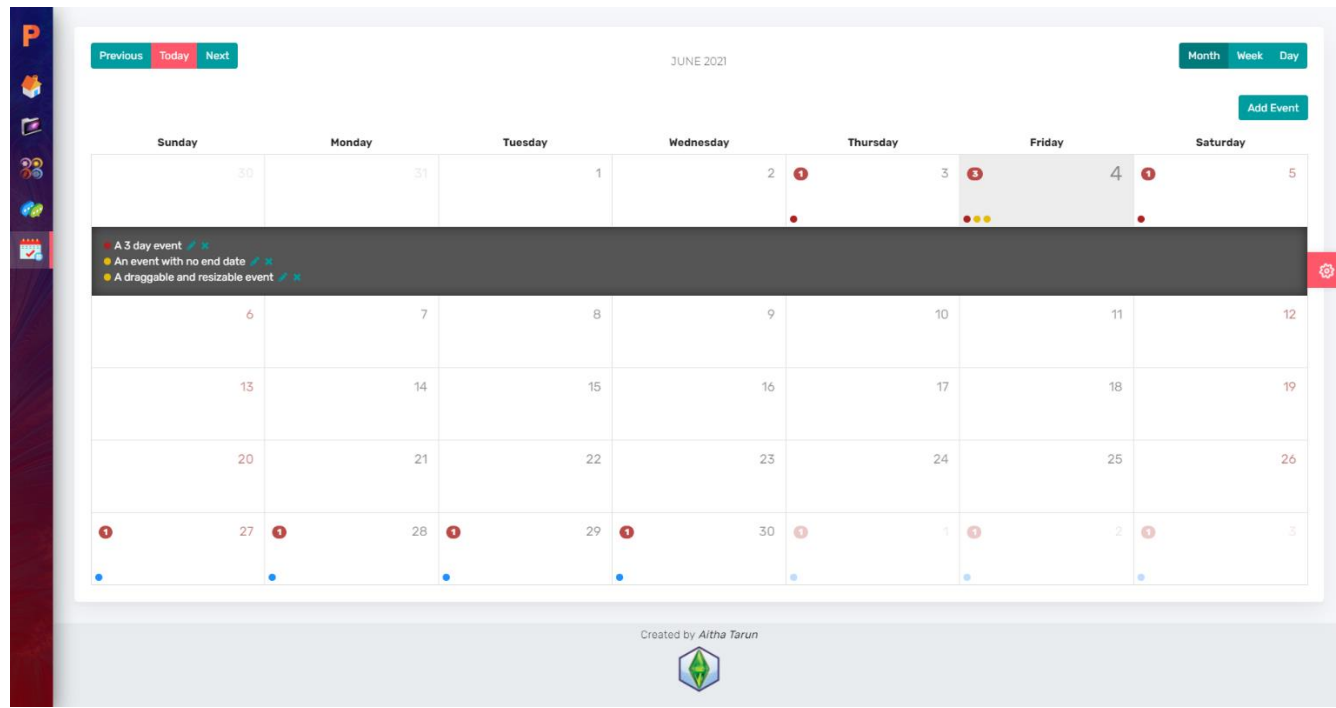
29.57 °C

Location suggestions while user entering location

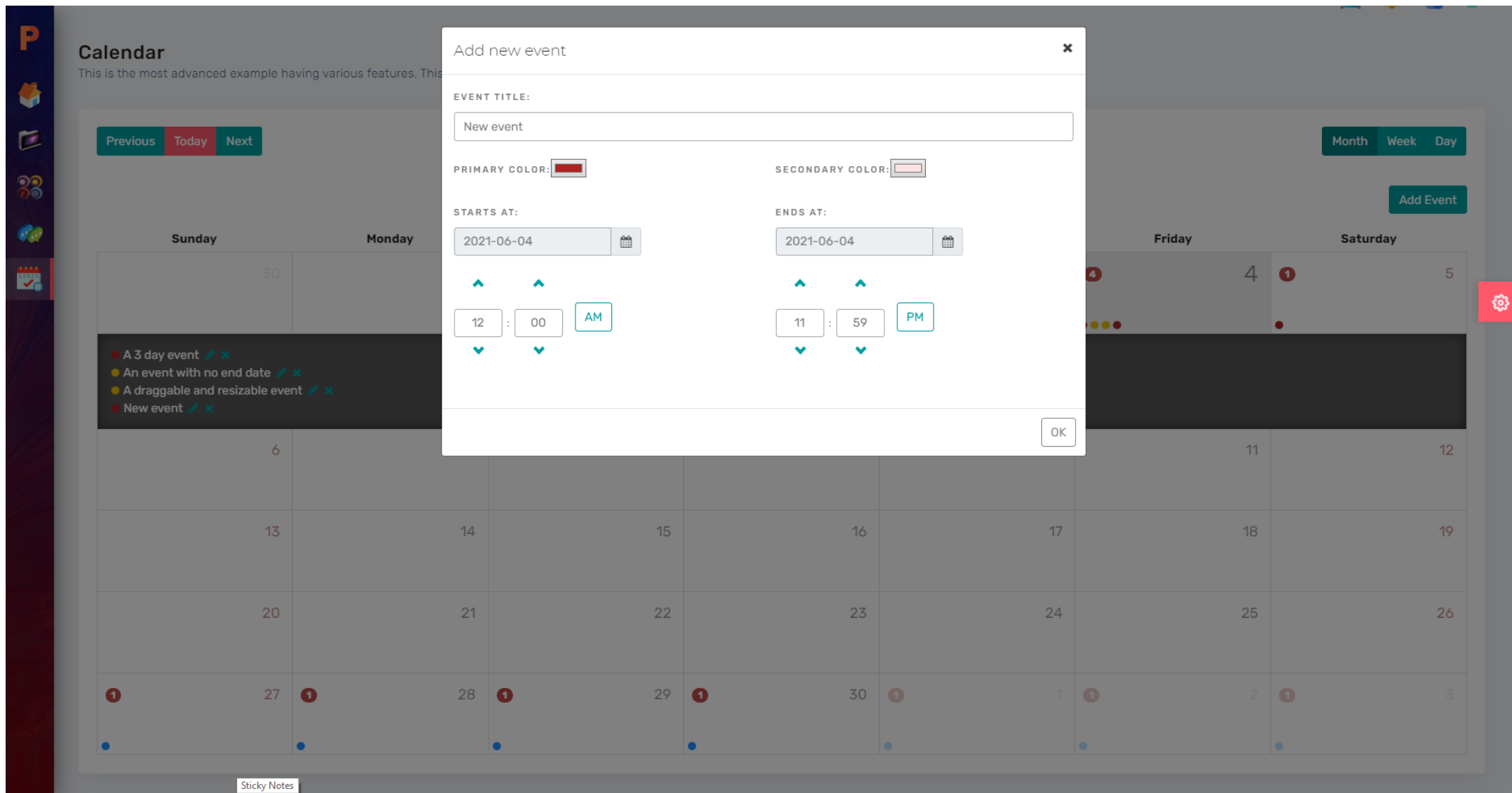


Error while invalid location is entered

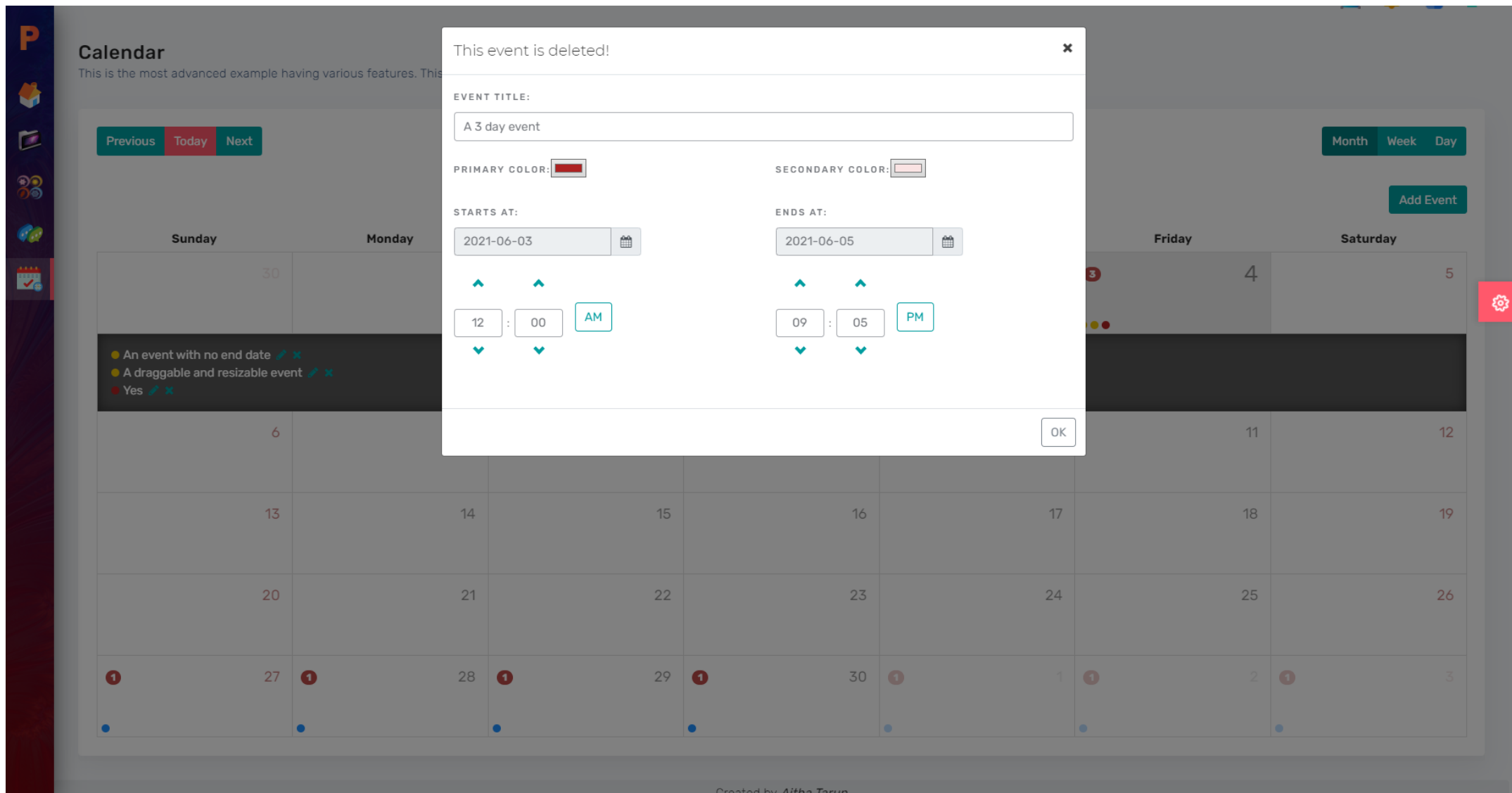
Event Management



Calendar to create and remove events

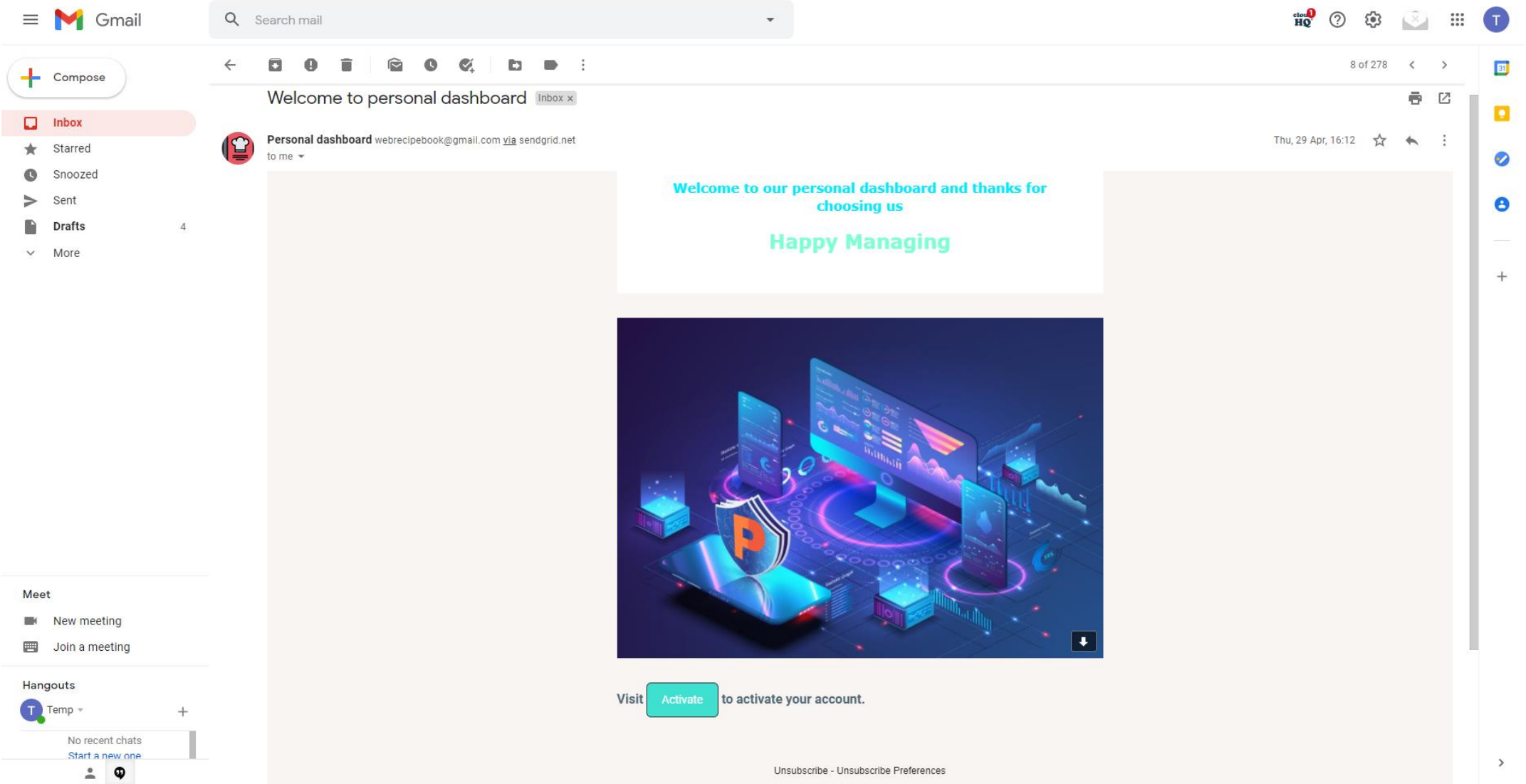


Adding new event modal

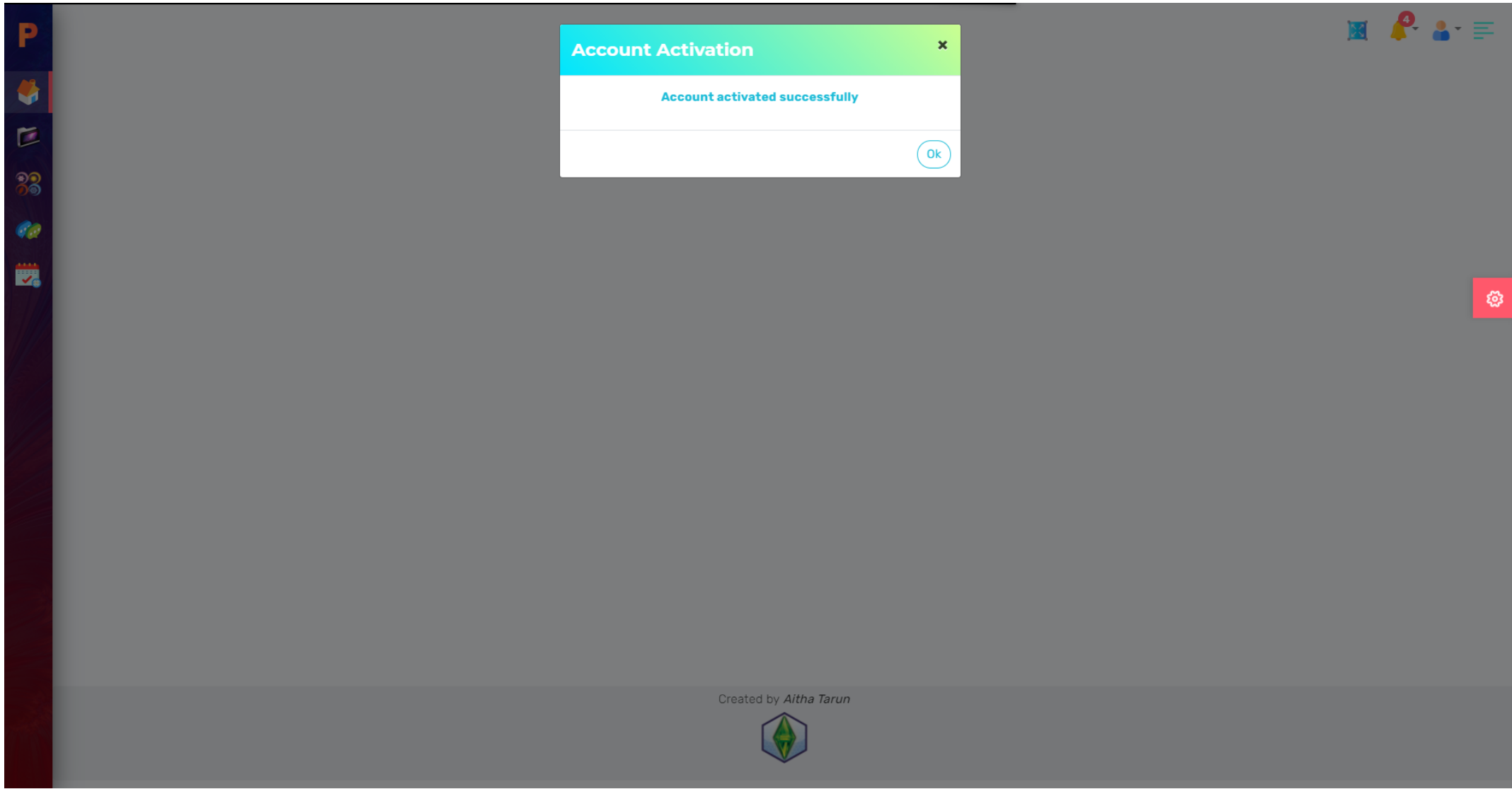


Modal when existing event is deleted

Account Activation

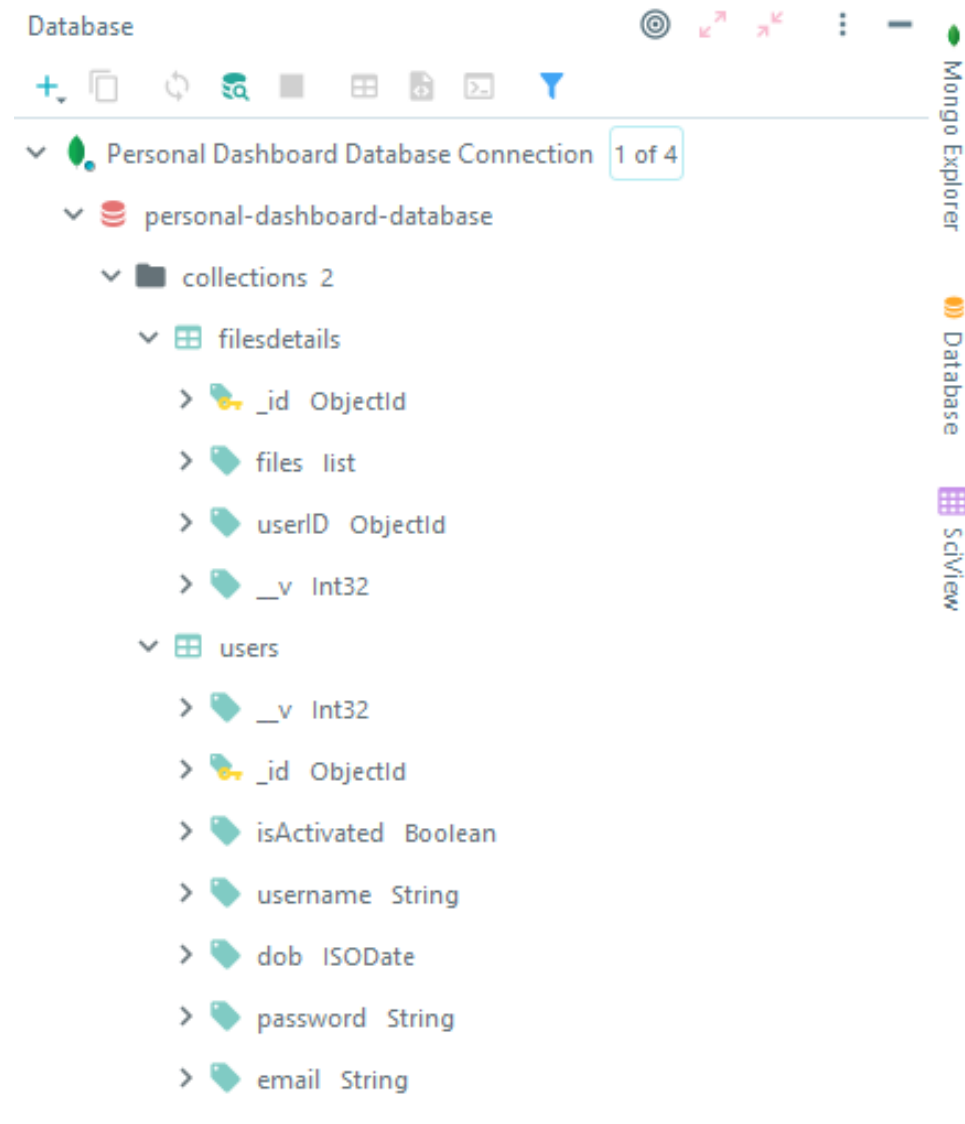


Account Activation Mail



Notification when Account is Activated

Database



Database Collections

console	weather.component.ts	users
2 rows		
filter	sort {}	
_id	__v	dob
1	608a8d9965d11f1340157ad4	0
2	60a33e494952713c9c09a24c	0
email	isActivated	password
andriodmactemporary@gmail.com	true	\$2b\$10\$BaDvaR8FqwdvYyGtYDjNj.NXFEj9e0hkKiIaEglnUkekW/WxmNu1a
test@gmail.com	true	\$2b\$10\$oasF7YctUhrVpVSKI0M.HuG2IcwV1/7utXgyrDsp286U99Ze7IVHS
username		
admin		Testing

User Collection Data

2 rows		
filter	sort {}	
1		
_id	__v	dob
60a51957e883cf38ef7dc0ca	0	
files		
0		{createdAt: 1622812890434, _id: new ObjectId("60ba40a26cb8ba1fe85b4ecd"), fileName: "US_Accidents_June20.csv", originalFileSize: new NumberInt("1327197738"), compressedFileSize: new NumberInt("235628926"), fileType: "applicat
1		{createdAt: 1622812890434, _id: new ObjectId("60ba40d06cb8ba1fe85b4ecf"), fileName: "DataMiningProject .html", originalFileSize: new NumberInt("2223943"), compressedFileSize: new NumberInt("3811859"), fileType: "text/html"
2		{createdAt: 1622812890434, _id: new ObjectId("60ba40d16cb8ba1fe85b4ed0"), fileName: "DataMiningProject .ipynb", originalFileSize: new NumberInt("23913716"), compressedFileSize: new NumberInt("3783141"), fileType: "application
3		{createdAt: 1622812890434, _id: new ObjectId("60ba40d26cb8ba1fe85b4ed1"), fileName: "Game Icons.psd", originalFileSize: new NumberInt("417805"), compressedFileSize: new NumberInt("90435"), fileType: "application/octet-stream"
4		{createdAt: 1622812890434, _id: new ObjectId("60ba40d26cb8ba1fe85b4ed2"), fileName: "-Pngtree-metal texture gradient button button_5614121.png", originalFileSize: new NumberInt("7462423"), compressedFileSize: new NumberInt("743
userID		608a8d9965d11f1340157ad4
2		
_id	__v	dob
60a5198be883cf38ef7dc12a	0	
files		
0		{createdAt: 1621432643100, _id: new ObjectId("60a51991c78ba21de015aa3"), fileName: "HoliCelebration_EN-IN1644734975_1920x1080.jpg", originalFileSize: new NumberInt("335189"), compressedFileSize: new NumberInt("334546"), fileT
1		{createdAt: 1621432763952, _id: new ObjectId("60a519d4008c6d248c04fed4"), fileName: "AltaFloresta_EN-IN1054793039_1920x1080.jpg", originalFileSize: new NumberInt("341630"), compressedFileSize: new NumberInt("340780"), fileType
2		{createdAt: 1621485104561, _id: new ObjectId("60a5e866f4b92a30c4bd5da8"), fileName: "Sample Template PDV report (1).docx", originalFileSize: new NumberInt("27235123"), compressedFileSize: new NumberInt("26963489"), fileType:
3		{createdAt: 1621485104561, _id: new ObjectId("60a5e867f4b92a30c4bd5da9"), fileName: "Proctored Test on CodeTantra using Scan 6 Upload.mp4", originalFileSize: new NumberInt("15447268"), compressedFileSize: new NumberInt("1501841
4		{createdAt: 1621485104561, _id: new ObjectId("60a5e8e4f4b92a30c4bd5daa"), fileName: "US_Accidents_June20.csv", originalFileSize: new NumberInt("1327197738"), compressedFileSize: new NumberInt("235628926"), fileType: "applicat
5		{createdAt: 1621485104561, _id: new ObjectId("60a5e999f4b92a30c4bd5dab"), fileName: "Data Mining Project - Upload.pdf", originalFileSize: new NumberInt("2906376"), compressedFileSize: new NumberInt("2272649"), fileType: "appl
6		{createdAt: 1621837699936, _id: new ObjectId("60ab501450a4441194a87b98"), fileName: "01n.jpg", originalFileSize: new NumberInt("794922"), compressedFileSize: new NumberInt("786339"), fileType: "image/jpeg"
7		{createdAt: 1621837699936, _id: new ObjectId("60ab501450a4441194a87b99"), fileName: "50n.jpg", originalFileSize: new NumberInt("654977"), compressedFileSize: new NumberInt("649560"), fileType: "image/jpeg"
8		{createdAt: 1621837699936, _id: new ObjectId("60ab501450a4441194a87b9a"), fileName: "50d.jpg", originalFileSize: new NumberInt("1031501"), compressedFileSize: new NumberInt("1026270"), fileType: "image/jpeg"
9		{createdAt: 1621837699936, _id: new ObjectId("60ab501450a4441194a87b9b"), fileName: "13n.jpg", originalFileSize: new NumberInt("816369"), compressedFileSize: new NumberInt("811500"), fileType: "image/jpeg"
10		{createdAt: 1621837699936, _id: new ObjectId("60ab501450a4441194a87b9c"), fileName: "13d.jpg", originalFileSize: new NumberInt("853399"), compressedFileSize: new NumberInt("848870"), fileType: "image/jpeg"
11		{createdAt: 1621837699936, _id: new ObjectId("60ab501450a4441194a87b9d"), fileName: "11n.jpg", originalFileSize: new NumberInt("783123"), compressedFileSize: new NumberInt("777357"), fileType: "image/jpeg"
12		{createdAt: 1621837699936, _id: new ObjectId("60ab501450a4441194a87b9e"), fileName: "11d.jpg", originalFileSize: new NumberInt("930075"), compressedFileSize: new NumberInt("921524"), fileType: "image/jpeg"
13		{createdAt: 1621837699936, _id: new ObjectId("60ab501550a4441194a87b9f"), fileName: "10n.jpg", originalFileSize: new NumberInt("210191"), compressedFileSize: new NumberInt("210232"), fileType: "image/jpeg"
14		{createdAt: 1621837699936, _id: new ObjectId("60ab501550a4441194a87ba0"), fileName: "09n.jpg", originalFileSize: new NumberInt("1573606"), compressedFileSize: new NumberInt("1566385"), fileType: "image/jpeg"
15		{createdAt: 1621837699936, _id: new ObjectId("60ab501550a4441194a87ba1"), fileName: "10d.jpg", originalFileSize: new NumberInt("858011"), compressedFileSize: new NumberInt("850881"), fileType: "image/jpeg"
16		{createdAt: 1621837699936, _id: new ObjectId("60ab501550a4441194a87ba2"), fileName: "09d.jpg", originalFileSize: new NumberInt("841160"), compressedFileSize: new NumberInt("839191"), fileType: "image/jpeg"
17		{createdAt: 1621837699936, _id: new ObjectId("60ab507b50a4441194a87ba3"), fileName: "batman-vs-robin-2015-english-yify-51468.zip", originalFileSize: new NumberInt("24597"), compressedFileSize: new NumberInt("24572"), fileType
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userID		60a33e494952713c9c09a24c

File Details Collection Data

Functionalities

- ❖ Creating a web application for graphical representation of the historical and forecasted data using Mongo DB, Express JS, Angular and Node JS.
- ❖ Providing user to store files in cloud securely in a compressed format.
- ❖ Provide user a way to observe his/her uploaded files with their respective details.
- ❖ Providing widgets for analysed weather data for better understanding of the Weather parameters such as temperature, humidity, dew point, etc...
- ❖ Creating a Database using Mongo DB and Mongoose to store the information of worldwide city names and respective details to fetch at the respective time and use those details to fetch weather data.
- ❖ Allowing the user to observe and analyse historical data through maximum, minimum daily temperatures and weather descriptions.
- ❖ To allow user to fetch weather data for desired location through typing location names and choosing for location typeheads.
- ❖ To allow user to fetch weather data for their current location through browser location permissions.
- ❖ To allow user to download graphical weather data in SVG or PNG or CSV data formats.
- ❖ To allow user to interact with graphical data through zooming in and out, and panning the graph.

Future Works

- In the future we can extend this application to allow user to pin-point desired location on an interactive map to fetch its weather data and represent in the form of widgets and charts.
- Also, we could create a weather alerts component which describes about the weather catastrophic conditions for users desired location and notify user through a mail notification about weather alerts for his/her location if exists.
- We could also, implement directory system in file management, so that users can also store files in directories.
- Also, we could implement secure file sharing system so that users within the authorized range of this website can share files with ease.

References

- https://en.wikipedia.org/wiki/Weather_forecasting
- <https://www.accuweather.com>
- https://www.sciencedaily.com/terms/weather_forecasting.htm
- <https://www.ametsoc.org/index.cfm/ams/about-ams/ams-statements/statements-of-the-ams-in-force/weather-analysis-and-forecasting/>
- <https://towardsdatascience.com/weather-forecasting-with-data-science-approaches-cb8f2afd3f38>

Challenges

- ✓ In file management system when we upload a big file to the server, it takes huge server resources and slowdown the system to compress the file and store in the server file system.
- ✓ Since, open weather and map box APIs are freeware here, if we request location suggestions quickly, the APIs will not respond to our requests and throws error, and if this continues like this APIs account can be blocked temporarily.
- ✓ Same applies for the event management system, Send Grid API is also a freeware account which will have some limitations in sending number of mails to the users. So, if we create large number of events send grid API won't allow to send that many numbers of mails in a day.

User Manual

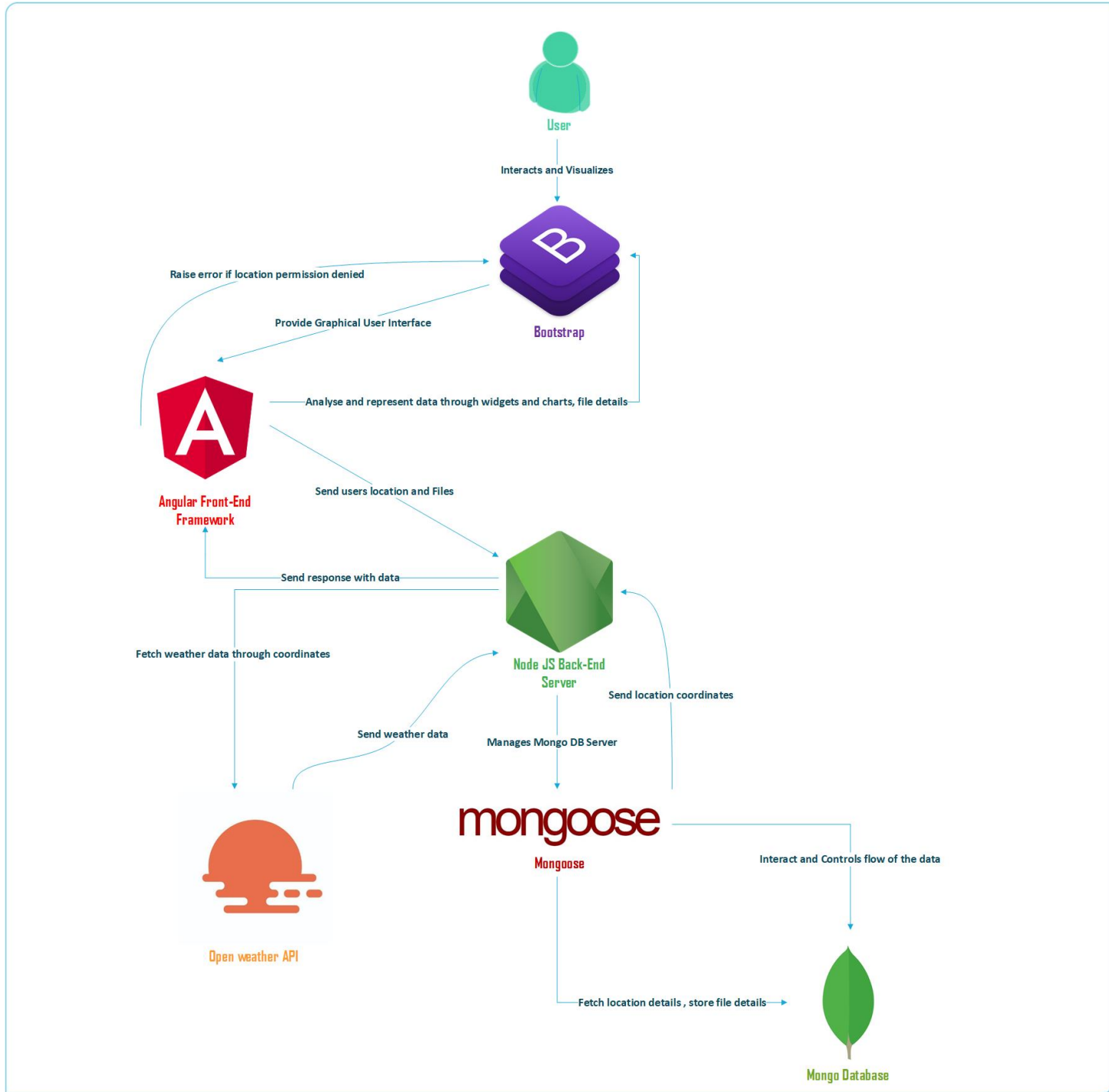
This project is built user-friendly so that users can easily understand the functionalities of the projects. We could also include a landing home page to explain the features that we provide if the user has an account in our website.

To understand the functionalities of our project we also, included the popups and tooltips in the place where they are required.

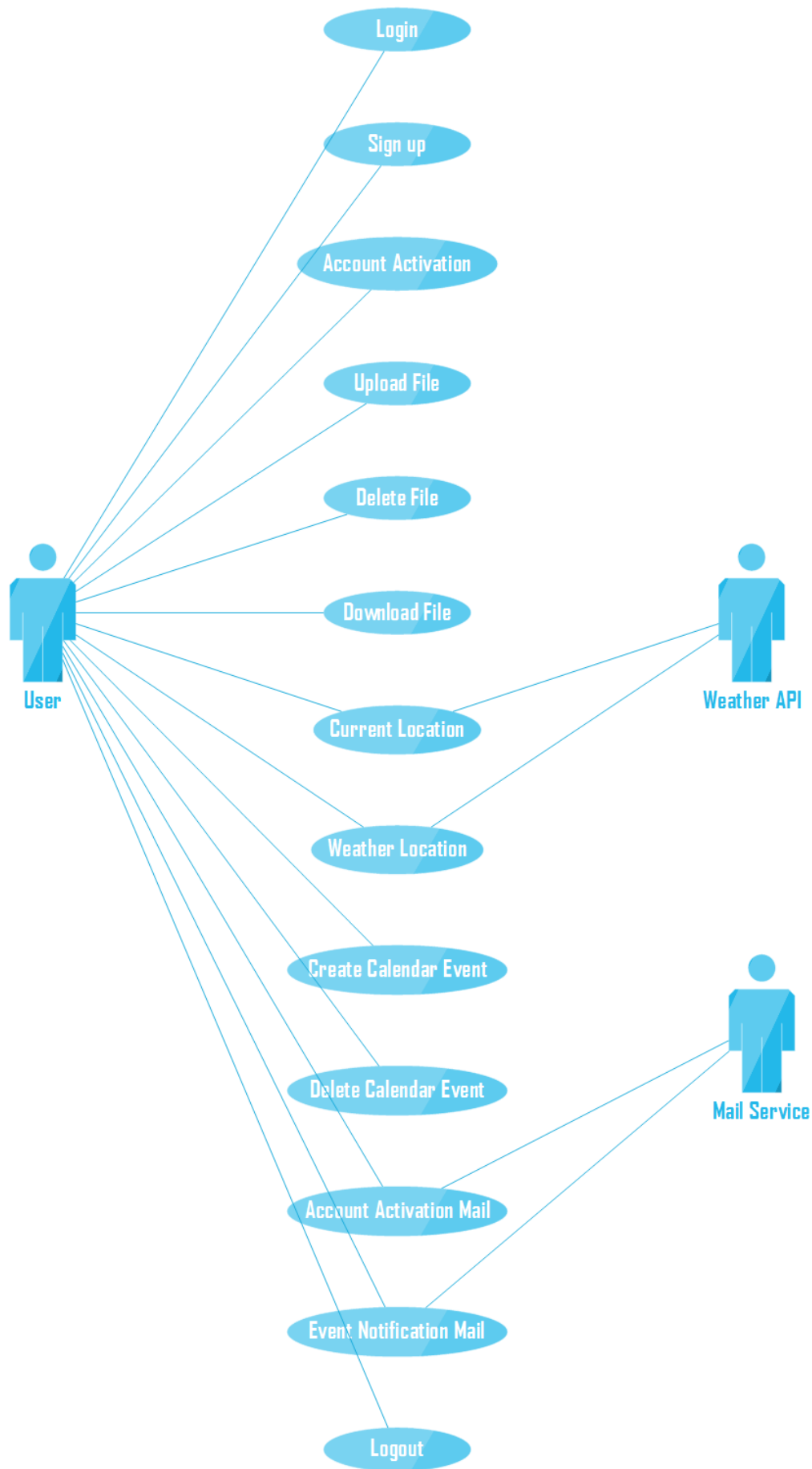
Chapter – 2

List of Figures

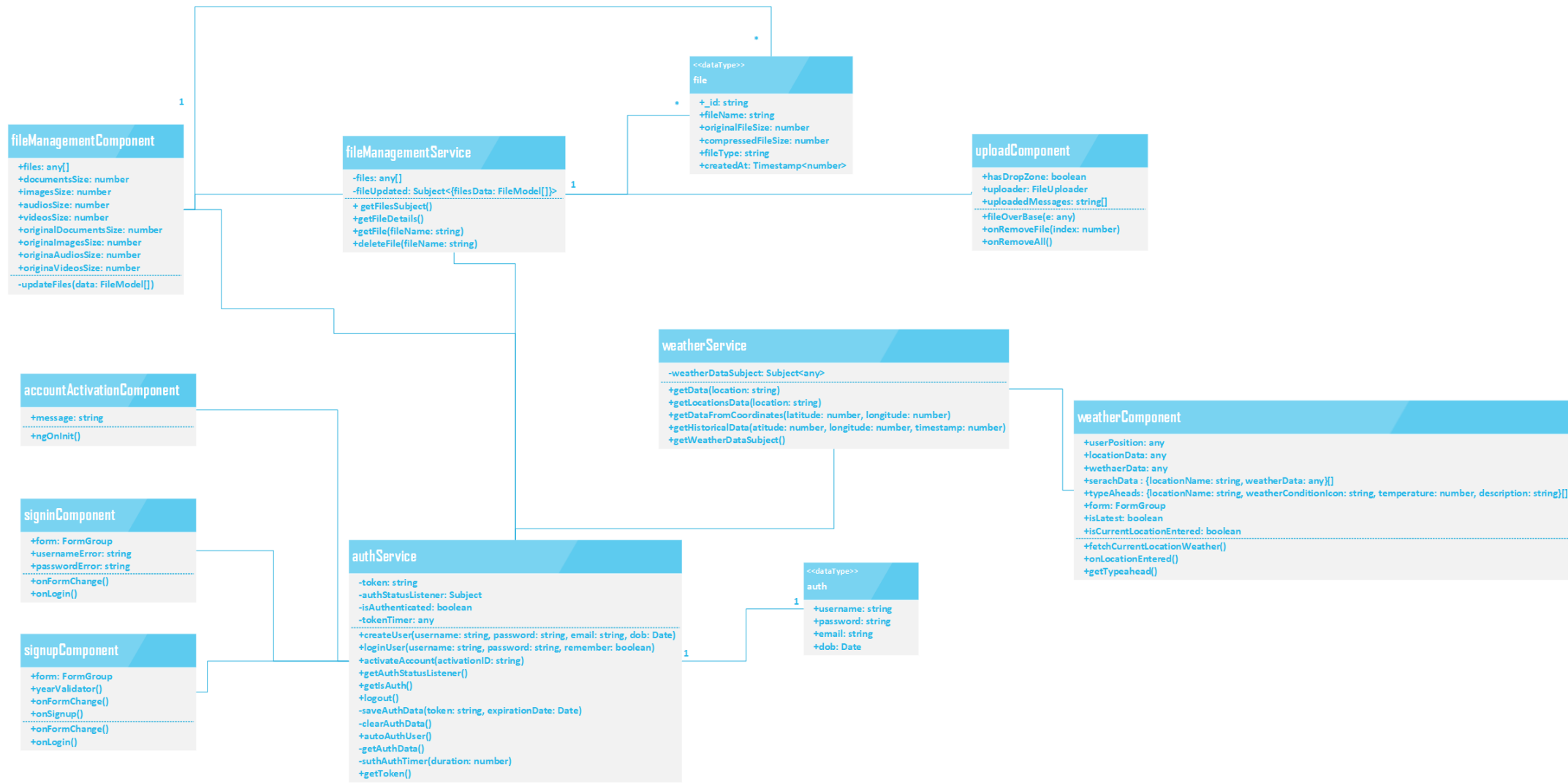
Software Architecture



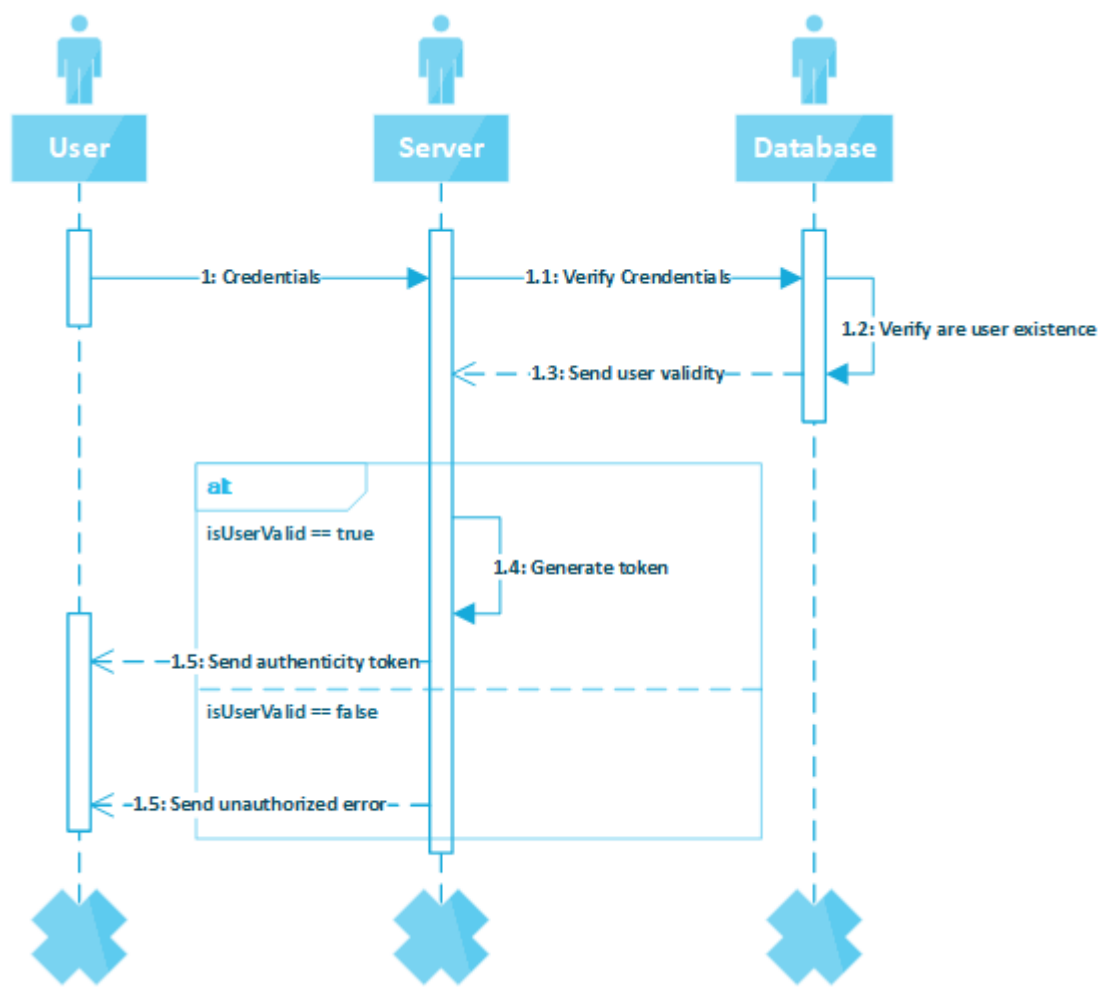
UML Diagrams



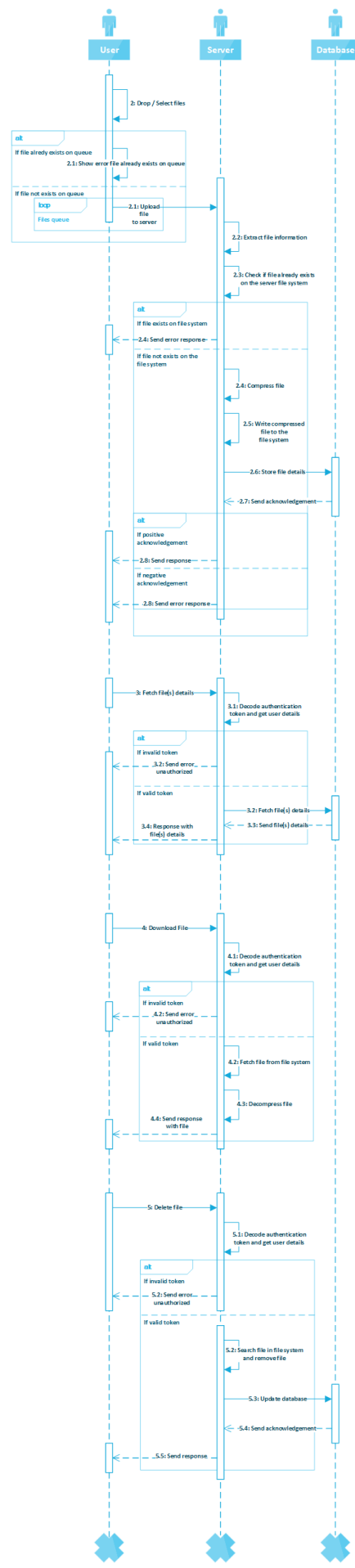
Use Case Diagram



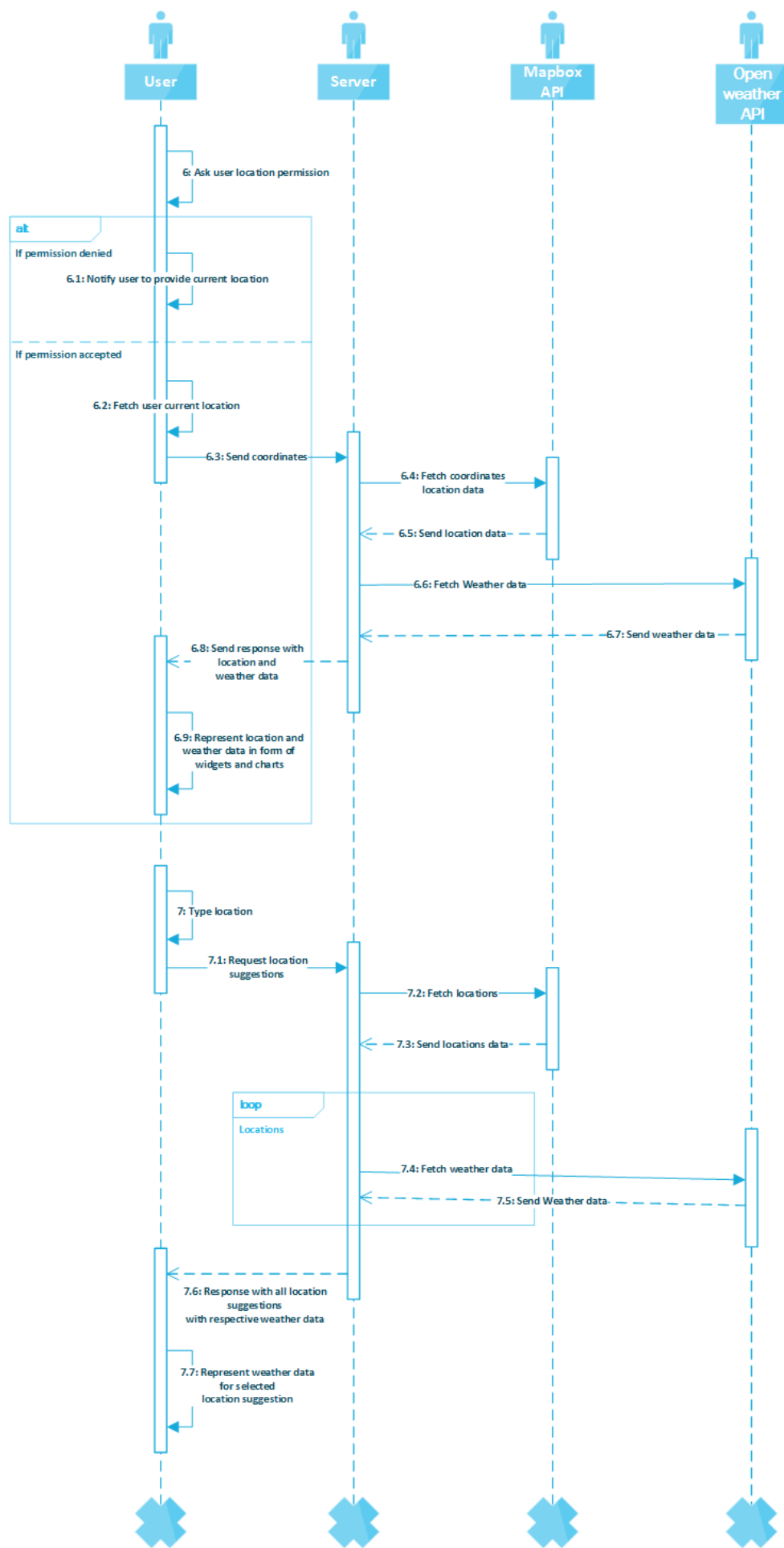
Class Diagram



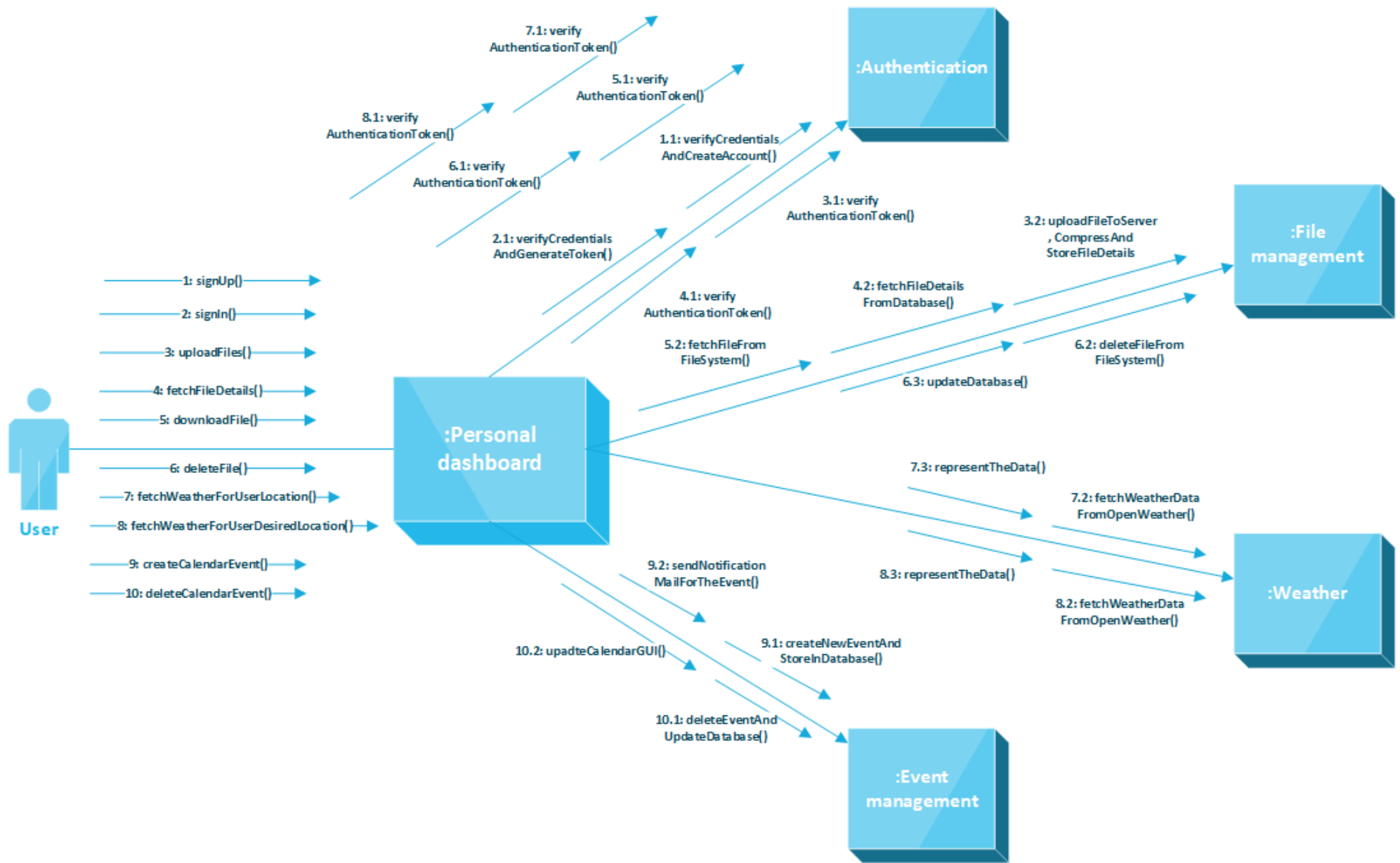
Authentication Sequence Diagram



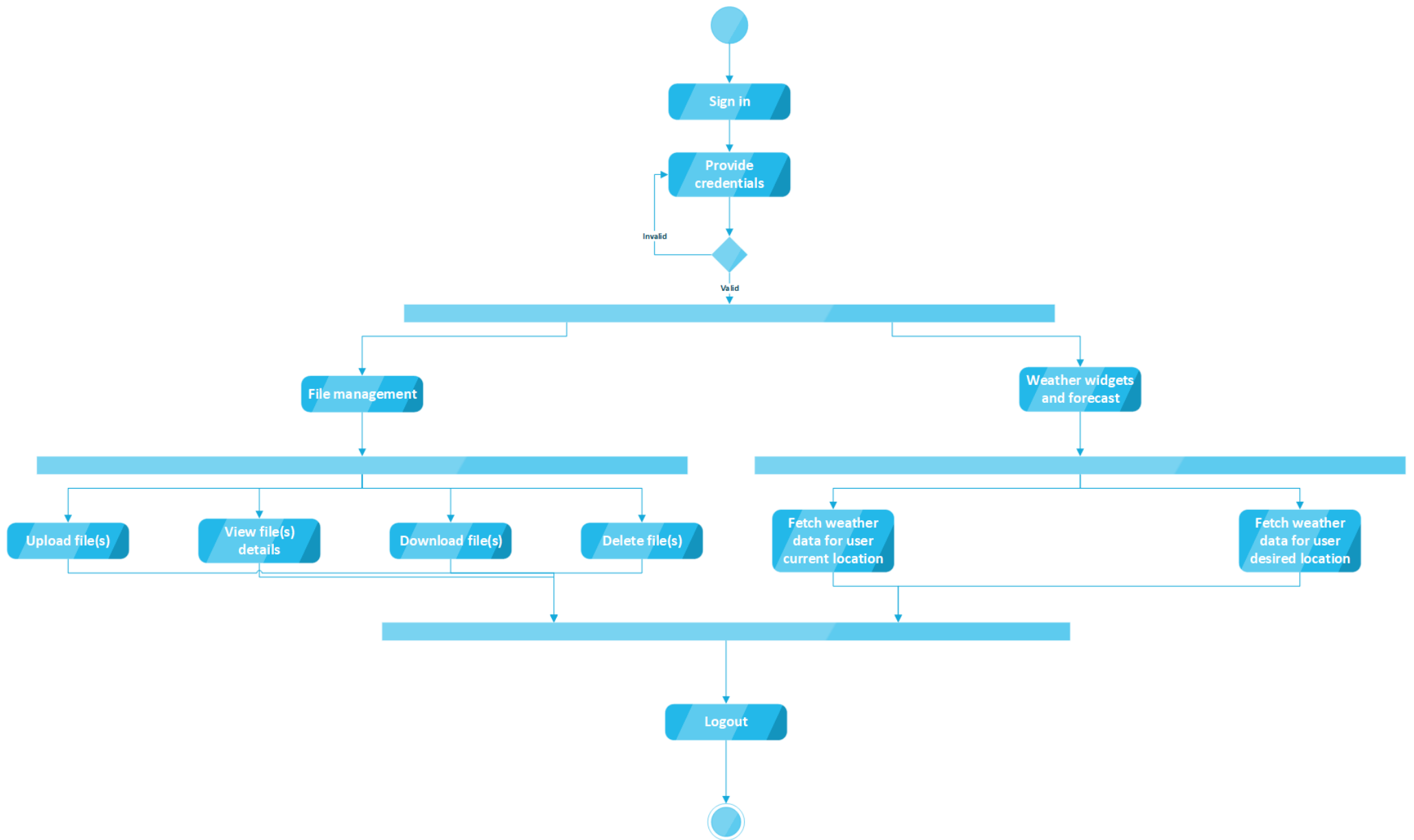
File Management Sequence Diagram



Weather Widgets Sequence Diagram



Collaboration Diagram



Activity Diagram