Testing report

Unit testing

In this project, we have highlighted the following requirements regarding the webapp:

1. Signing up/logging in
    - Without this requirement, the user will not be able to see neither the list of the recordings nor the dashboard
2. Email address verification
    - This is necessary for several reasons including preventing bots from accessing the website, expanding marketing reach, being able to inform users about any security breaches or any other important site issues etc.
3. Basic user management
    - The client asked to ensure that only admins can control access to recordings and be able to upload recordings
4. Basic authentication
    - This requirement is essential in overcoming the issue of stateless HTTP requests nature
5. Password reset feature
    - Password reset is critical for customer experience i.e. they reduce the person's frustration and prevent users from having multiple failed login attempts

Based on the identified requirements, an attempt was made to create appropriate JUnit tests. It was decided to have only two test classes since most of the methods that need to be tested belong to two classes, namely UserDao and RecordingDao. This is where database connections are created to access information about users and their recordings' permissions. The UserDao class also calls methods of other classes such as SessionTokenDao (authentification), PasswordResetTokenDao (password reset) etc. In the end the test coverage was as follows: the test covers 100% of the PasswordResetTokenDao class, 85% of the SessionTokenDao class, 54% of the UserDao class, 25% of the EmailVerficationDao class**.** It is also worth noting that several classes of the model package ended up with relatively high test coverage as these were used for creating conditions for the tests.

All tests passed the first time. Later on a system testing was performed to evaluate the system as a whole.

System testing

For system testing, the goal was to evaluate the system from the user's point of view and make sure it meets the requirements. The following test cases were considered:

Test case	Test data	Expected result	Pass/Fail
1.If the website launches properly on the login page	Tested by all team members	Login page is displayed to the user after website launch; Mindhash Logo is displayed above the login form; upon clicking on Mindhash logo, the website switches to dark mode	Pass
If the user can register Requirements: - Password at least 8 characters long with at least one uppercase letter and one number	**1. Test data meeting the requirements:** Email: newadmin@gmail.com Pass: 1234567A Confirm Pass: 1234567A **2. Test data not meeting the requirements** 2.1 passwords do not match Email: newadmin@gmail.com Password: 1234567A Confirm Password: 1234567 2.2 password does not contain an uppercase letter Email: newadmin@gmail.com Password: 1234567 Confirm Password: 1234567	1. User is redirected to the registration successful page 2. User is displayed an appropriate error message (user is not redirected to the next page)	1. Pass 2.Pass((see Fig.1)
If the user is sent verification email after registration	1. Opening an active verification link 2. Opening an expired verification link/link with token which has already been verified	User's verification email contains a heading "Email Verification required"; body of the email contains a link which redirects the user to the page displaying the results of the	1. Pass (see Figure 2) 2. Pass(see Figure 2)

		verification	
If the user can login	1. **Entering correct login credentials** **2. Entering incorrect login credentials** 2.1 credentials with existing email, wrong password 2.2 credentials with existing password, wrong email 2.3 completely wrong credentials	1. User is redirected to the recordings page 2. User is displayed appropriate error message (user is not redirected to the next page)	1. Pass 2. Pass(see Fig.3)
If the user can see a list of recordings upon logging in	1. Logging in under admin account 2. Logging in under non-admin account which has access to some of the recordings 3. Logging in under non-admin account which does not have access to any of the recordings	1. User can see a list of all the recordings 2. User can see a list of recordings he has access to 3. User cannot see any of the recordings	1. Pass (see Fig.4.1) 2. Pass (see Fig.4.2) 3. Pass (see Fig.4.3)
If the user can see the dashboard for each recording	Tested under several accounts	User can click on any of the recordings in the list to be redirected to the page with the dashboard for that particular recording, user can click on the return button to go back to the list, after that, the user can click on another recording and be redirected to a different dashboard	Pass
If the content of the dashboard page is properly displayed and aligned	1. Checking the content is properly displayed upon clicking on the recording for the first time 2. Checking the content is properly displayed after reloading the page 3. Checking the content is		Pass

	properly displayed after going back to a list of all recordings and clicking on the recording again		
If the user can filter and choose an object in the list of objects	1. Filtering vehicles in the list of objects, clicking on a couple of filtered vehicles 2. Filtering pedestrians in the list of objects, clicking on a couple of filtered pedestrians 3. Filtering two-wheelers in the list of objects, clicking on a couple of filtered wheelers	After choosing a certain category, user is displayed a list of objects of that category with their object ids; upon clicking on the object, a speed-time graph is shown for that object	Pass (see filtered lists and graphs for objects of different categories in Fig.5)
If the user can upload a JSON of the recording	1. Logging in under admin account 2. Logging in under non-admin account	1. Profile page contains an option to upload the JSON of the recording 2. Profile page does not contain an option to upload the json	1. Pass (see Fig. 6.1) 2. Pass (see Fig. 6.2)
If the user can grant access of the recording to another user	1. Logging in under admin account 2. Logging in under non-admin account	1. Profile page contains an option to grant access to a recording to a particular user. The admin user can click on the email and RecordingId fields and choose from a list of options 2. Profile page does not contain an option to grant access.	1. Pass (see Fig.7) 2. Pass(see Fig. 6.2)
If the user can log out	Tested under several accounts	1. Profile page contains a logout button. Upon clicking on the button, the user is redirected to the login page.	Pass (see Fig. 6.1 & 6.2 for logout button)
If the user can reset their password		Login page contains “Forgot password? Click here” button which	

If the user can reset their password (continuing)		redirects the user to a page where he is asked to enter his email. After entering his email:	
	1.1 Entering email which exists in the database	1.1. Password reset link is sent to user’s email	1.1 Pass (see Fig.8)
	1.2. Entering email which does not exist in the database	1.2. “Unable to send password reset link” is displayed (no password reset link is sent)	1.2 Pass
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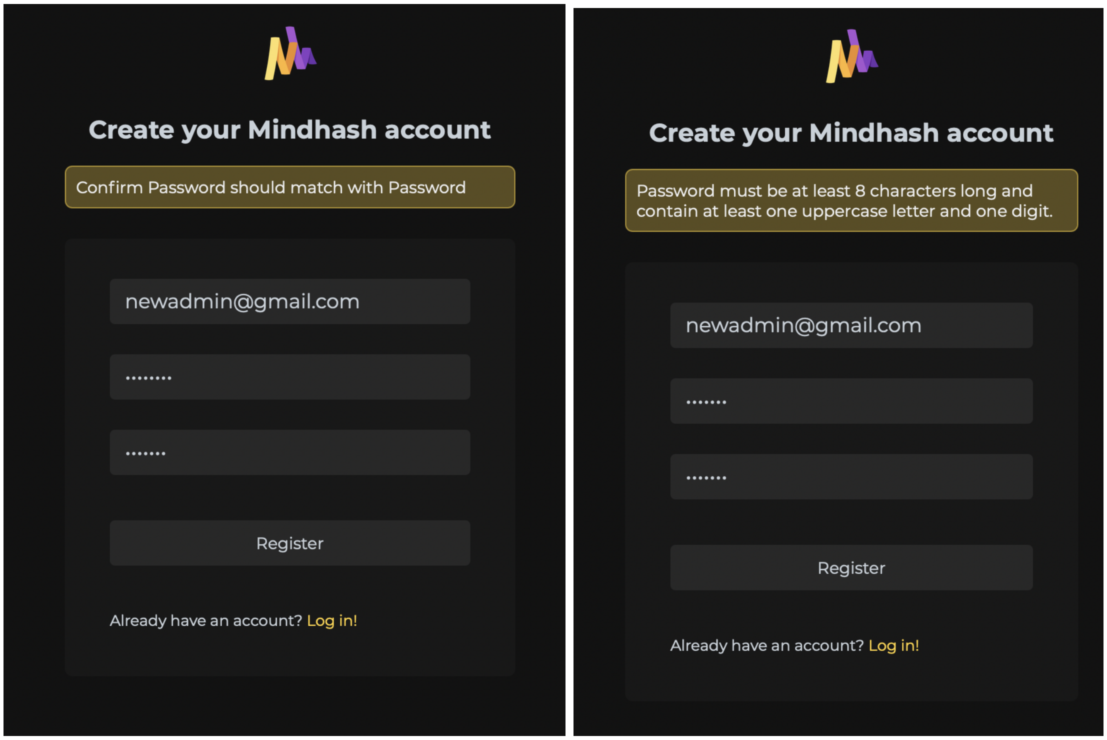
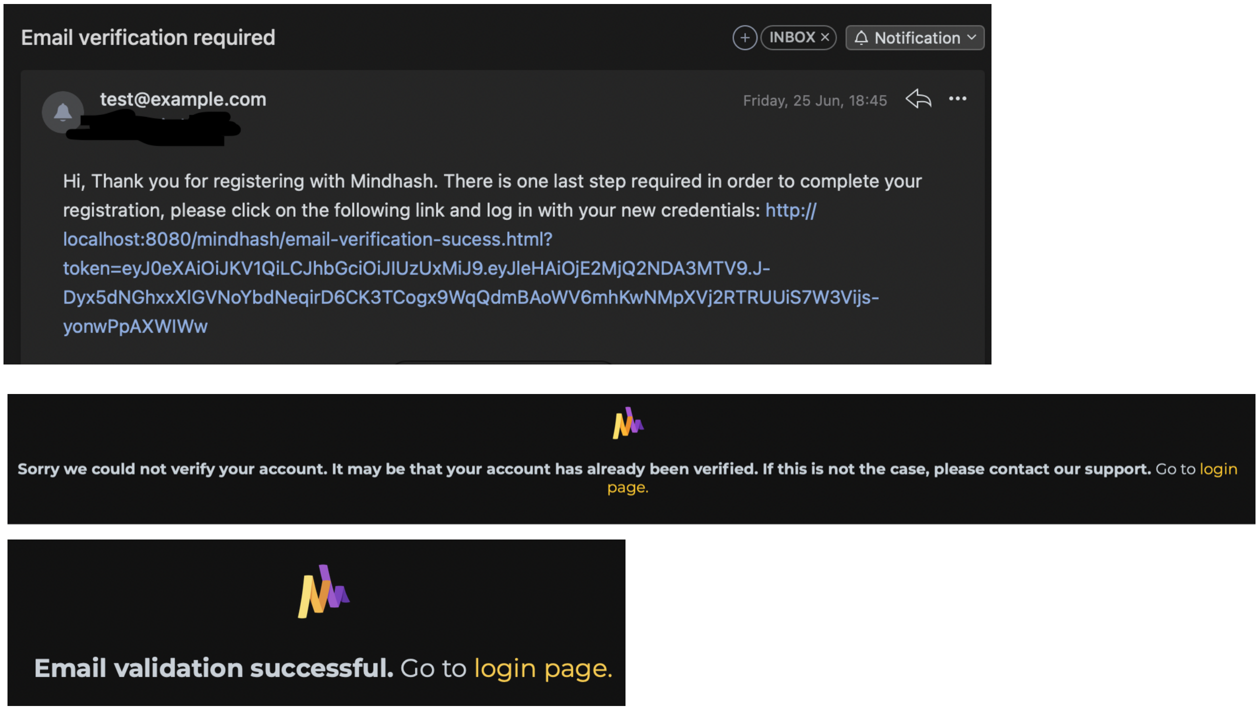
		User’s password-reset email contains a heading “Password reset request”; body of the email contains a link which redirects the user to a page where he is asked to enter a new password Upon clicking on “save password” button:	
	2.1 Opening an active password reset link	2.1. User is redirected to the next page displaying that the password reset was successful	2.1. Pass
	2.2 Opening an expired password reset link	2.2. User is shown an error message	2.2. Pass(see Figure 8)
	2.3 Opening a password reset link with a non-existent token	2.3. User is shown an error message	2.3. Pass (see Figure 8)


Create your Mindhash account
newadmin@gmail.com
Register
Already have an account? Log in!

Confirm Password should match with Password

Password must be at least 8 characters long and contain at least one uppercase letter and one digit.

Figure 1. Error messages when registration requirements are not met.



test@example.com [redacted]

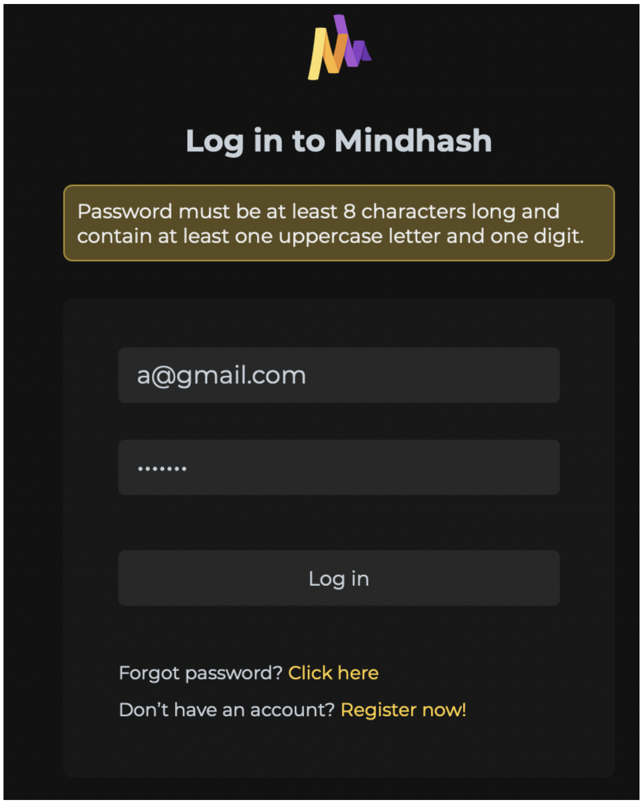
Friday, 25 Jun, 18:45

Hi, Thank you for registering with Mindhash. There is one last step required in order to complete your registration, please click on the following link and log in with your new credentials: http://localhost:8080/mindhash/email-verification-sucess.html?token=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzUxMiJ9.eyJleHAiOjE2MjQ2NDA3MTV9.J-Dyx5dNGhxxXlGVNoYbdNeqirD6CK3TCogx9WqQdmBAoWV6mhKwNMpXVj2RTRUUiS7W3Vijs-yonwPpAXWIWw

Sorry we could not verify your account. It may be that your account has already been verified. If this is not the case, please contact our support. Go to login page.

Email validation successful. Go to login page.

Figure 2. Email verification results.



Log in to Mindhash

Password must be at least 8 characters long and contain at least one uppercase letter and one digit.

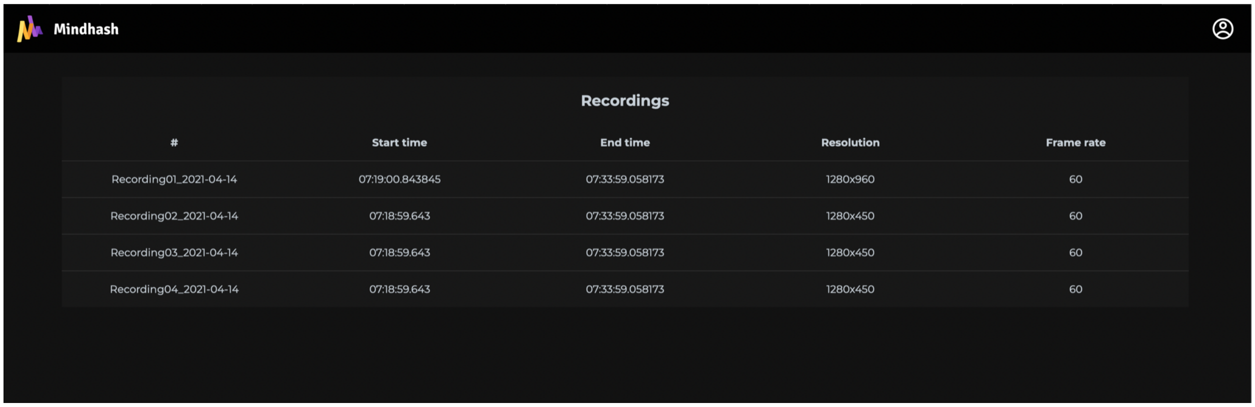
a@gmail.com

•••••••

Forgot password? Click here

Don’t have an account? Register now!

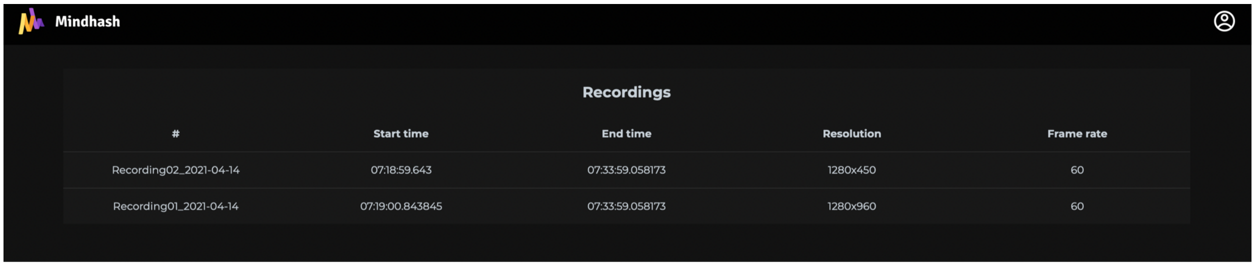
Figure 3. Error message when login credentials are incorrect



Recordings

#	Start time	End time	Resolution	Frame rate
Recording01_2021-04-14	07:19:00.843845	07:33:59.058173	1280x960	60
Recording02_2021-04-14	07:18:59.643	07:33:59.058173	1280x450	60
Recording03_2021-04-14	07:18:59.643	07:33:59.058173	1280x450	60
Recording04_2021-04-14	07:18:59.643	07:33:59.058173	1280x450	60

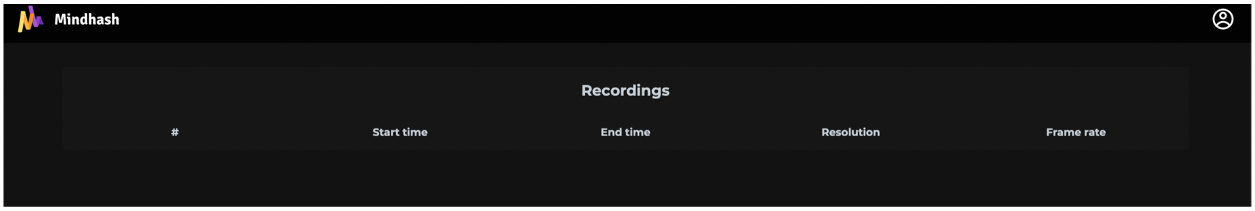
Figure 4.1. Admin account with access to all of the recordings



Recordings

#	Start time	End time	Resolution	Frame rate
Recording02_2021-04-14	07:18:59.643	07:33:59.058173	1280x450	60
Recording01_2021-04-14	07:19:00.843845	07:33:59.058173	1280x960	60

Figure 4.2 Non-admin account with access to some of the recordings



Recordings

#	Start time	End time	Resolution	Frame rate

Figure 4.3 Non-admin account without access to any of the recordings

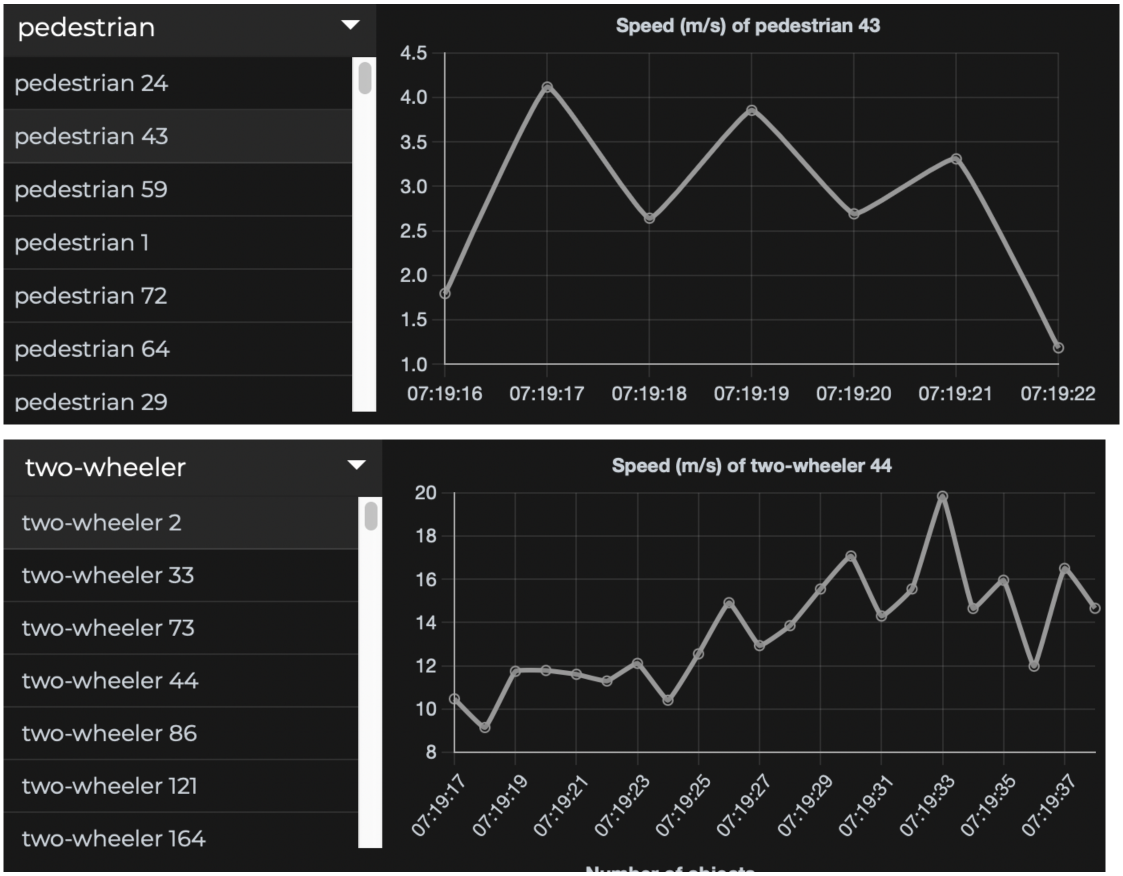
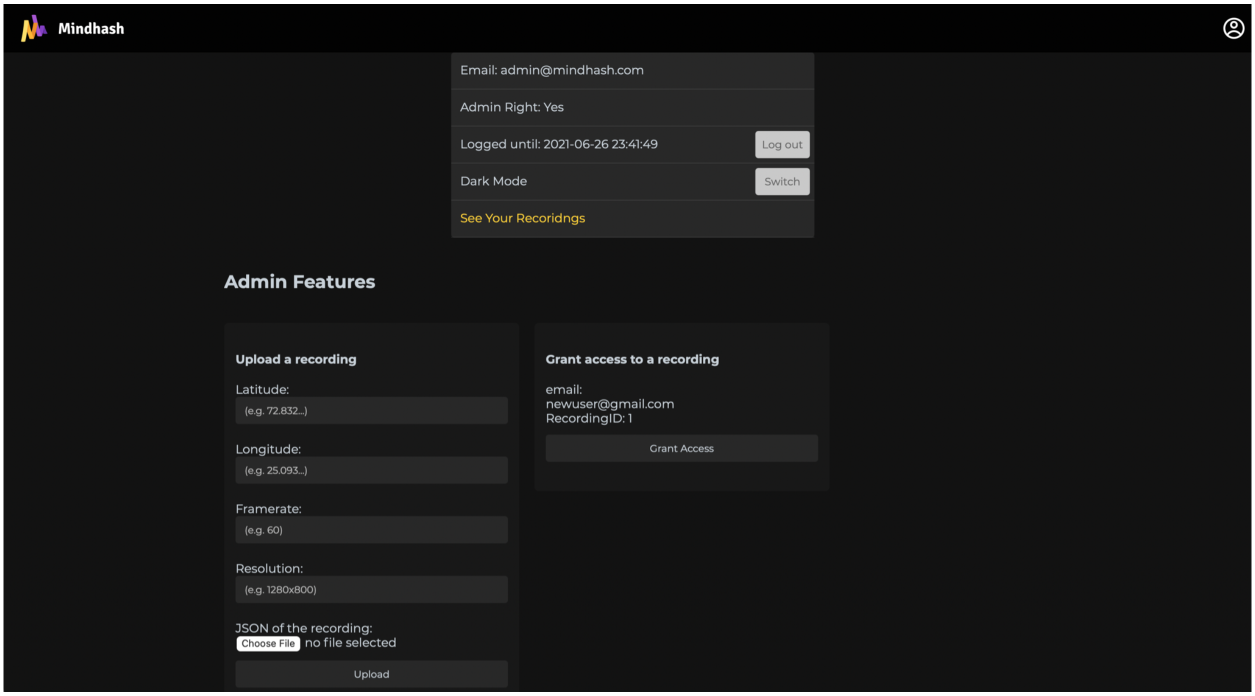


Figure 5. List of objects with speed-time graphs



Email: admin@mindhash.com

Admin Right: Yes

Logged until: 2021-06-26 23:41:49

Dark Mode

Admin Features

Upload a recording

Latitude: (e.g. 72.832...)

Longitude: (e.g. 25.093...)

Framerate: (e.g. 60)

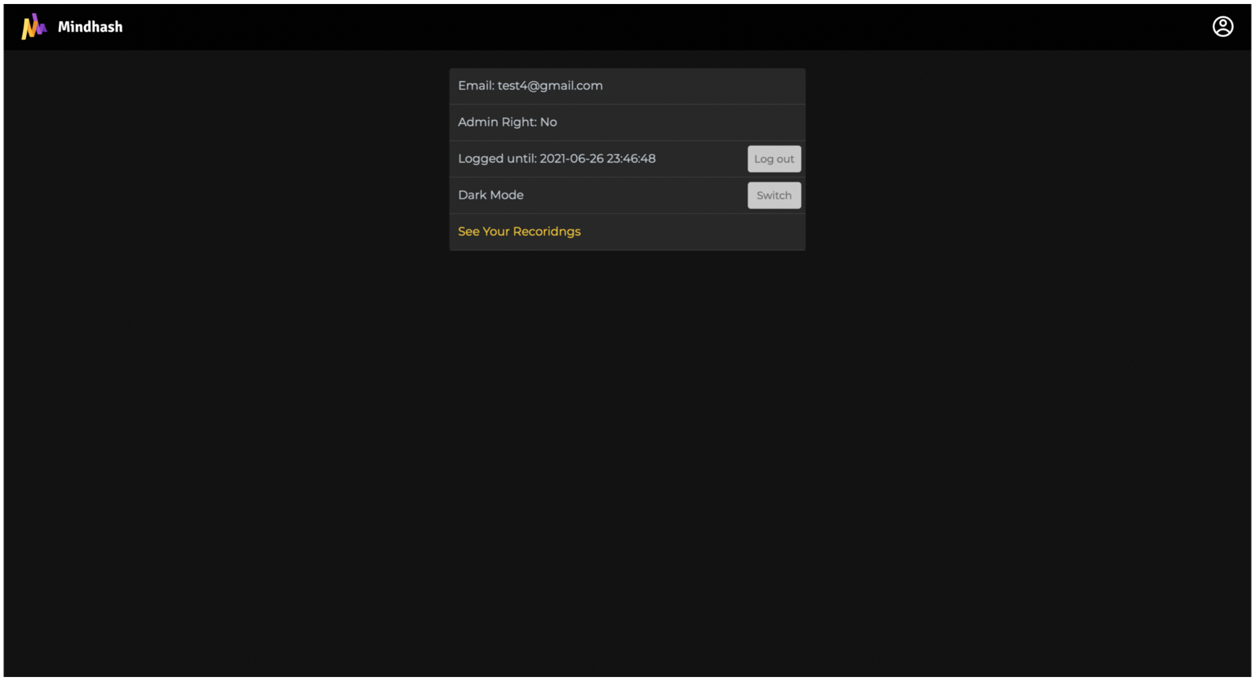
Resolution: (e.g. 1280x800)

JSON of the recording: no file selected

Grant access to a recording

email: newuser@gmail.com
RecordingID: 1

Figure 6.1 Admin profile page with JSON upload option.



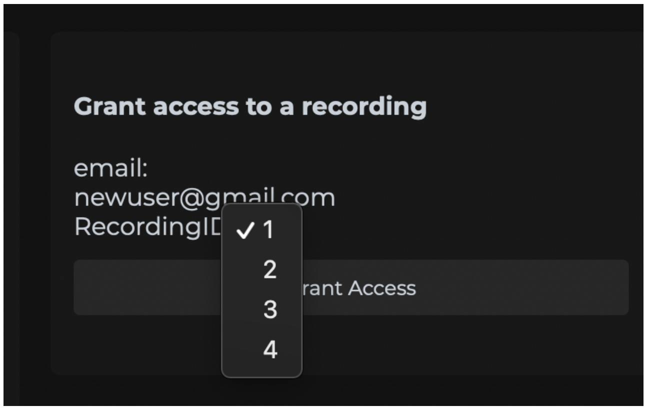
Email: test4@gmail.com

Admin Right: No

Logged until: 2021-06-26 23:46:48

Dark Mode

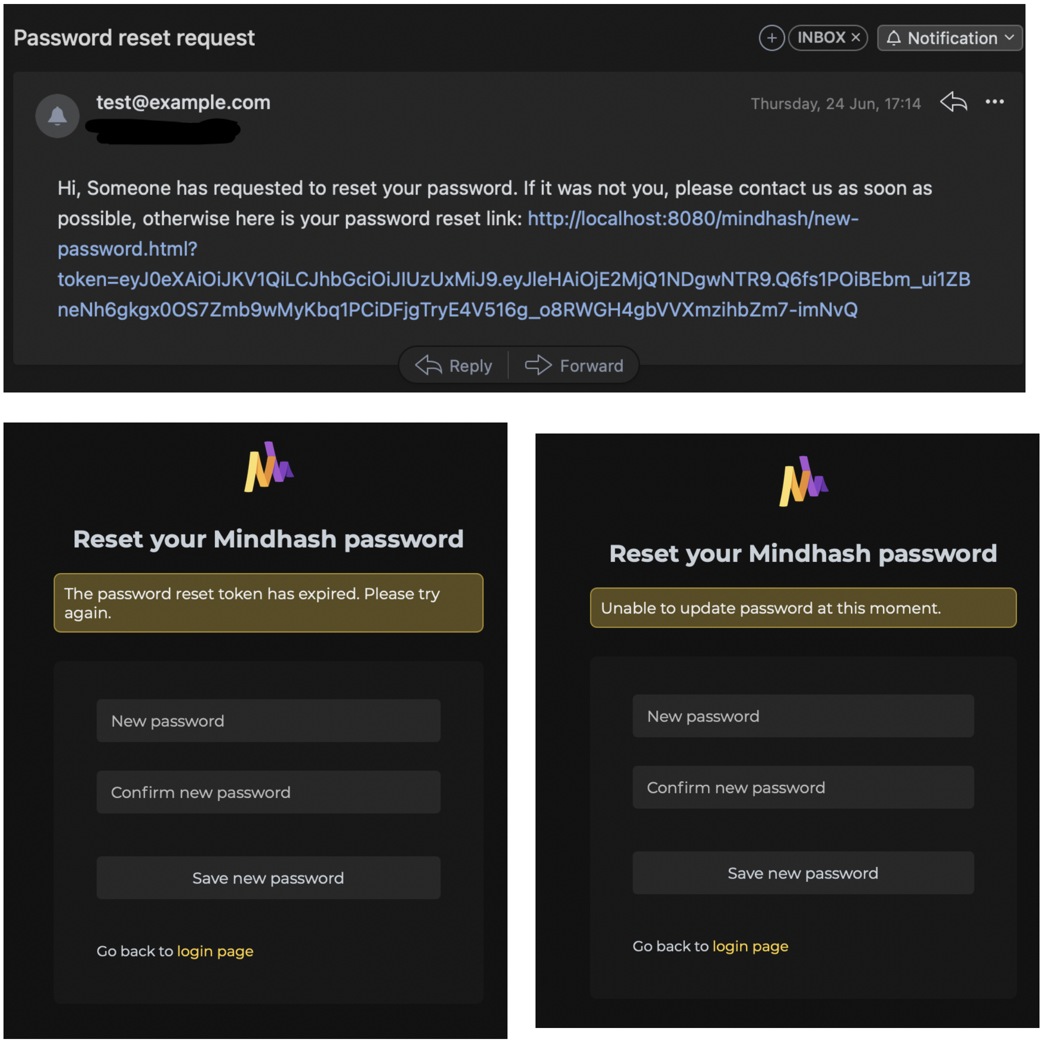
Figure 6.2. Non-admin page with non-existent JSON upload option and grant access option



Grant access to a recording

email:
newuser@gmail.com
RecordingID

Figure 7.1. Admin page with grant access option.



Password reset request

test@example.com
[redacted]

Thursday, 24 Jun, 17:14

Hi, Someone has requested to reset your password. If it was not you, please contact us as soon as possible, otherwise here is your password reset link: http://localhost:8080/mindhash/new-password.html?token=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzUxMiJ9.eyJleHAiOjE2MjQ1NDgwNTR9.Q6fs1POiBEbm_ui1ZBneNh6gkgx0OS7Zmb9wMyKbq1PCiDFjgTryE4V516g_o8RWGH4gbVVXmzihbZm7-imNvQ

Reset your Mindhash password

The password reset token has expired. Please try again.

Go back to login page

Reset your Mindhash password

Unable to update password at this moment.

Go back to login page

Fig.8.Password reset. Err message for expired password reset token(2), non-existent token(3)