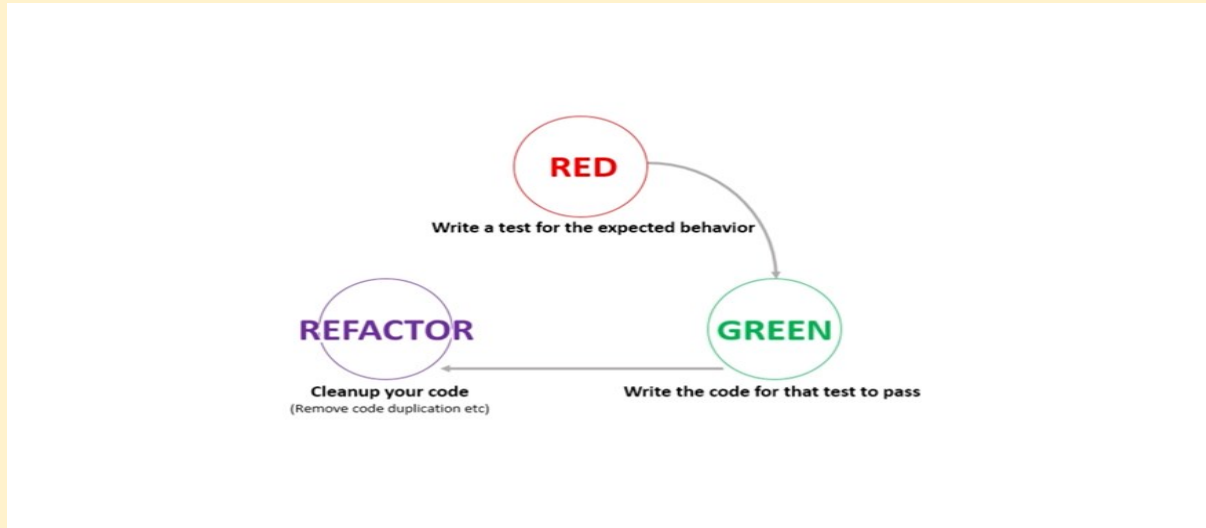


Test Driven Development Methodology

- Based on testing code before implenting requirements
- Allows for clean and reusable code

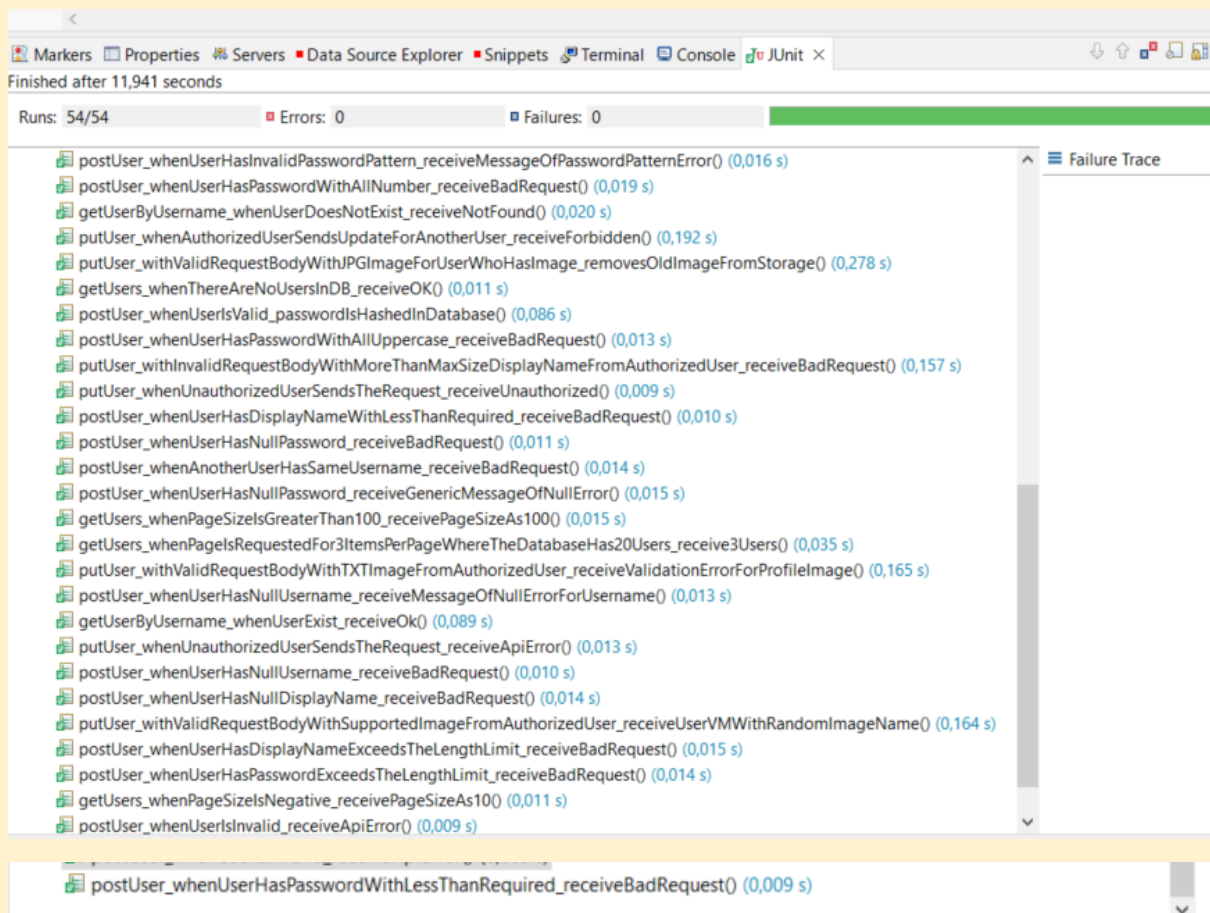


Backend

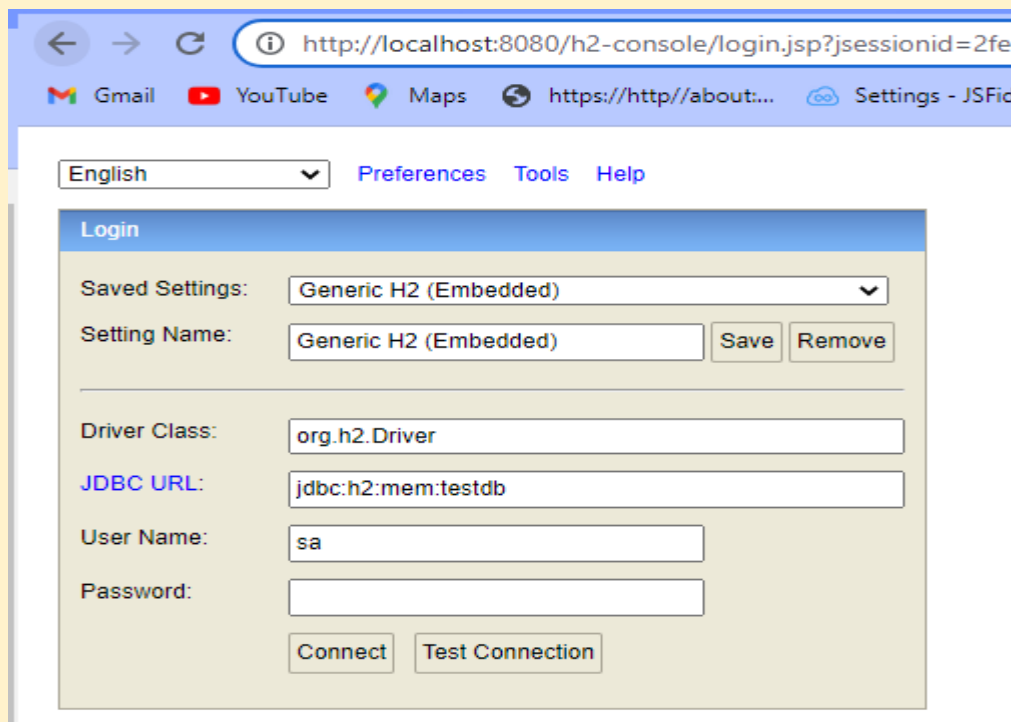
Integration test: UserControllerTest.java

Run as JUnit Test

The screenshot shows the IDE's JUnit test runner window. The test suite **UserControllerTest** [Runner: JUnit 5] (5,240 s) has completed successfully. The summary bar indicates **Runs: 54/54**, **Errors: 0**, and **Failures: 0**. The test results list shows 34 individual test cases, all of which passed. The tests include various scenarios for user registration, login, and profile management, such as `postUser_whenUserHasPasswordWithAllLowercase_receiveBadRequest()` and `putUser_withValidRequestBodyWithJPGImageFromAuthorizedUser_receiveOk()`. The **Failure Trace** pane on the right is empty, confirming that no tests failed.



H2 Console/Database



- JDBC URL---Mem: memory
- **H2 console available at '/h2-console'. Database available at 'jdbc:h2:mem:hoaxify-dev'**
 - o Repalace JDBC URL with this

User table

http://localhost:8080/h2-console/login.do?sessionId=5d98ea2692c312fbf69d8ff9e03f19d5

Auto commit ☒ Max rows: 1000 Auto complete Off Auto select On

jdbc:h2:mem:hoaxify-dev

FILE_ATTACHMENT
HOAX
USER
INFORMATION_SCHEMA
Sequences
Users
H2 1.4.200 (2019-10-14)

Run Run Selected Auto complete Clear SQL statement:

SELECT * FROM USER;

ID	DISPLAY_NAME	IMAGE	PASSWORD	USERNAME
1	display1	null	\$2a\$10\$f3OILftCp7whRpDO8/SY/upOVZ9o//ARVlbFQBnoefqd2od66.hyG	user1
2	display2	null	\$2a\$10\$2JRwxE3r21mIgnLdhixkvePoOYuUSaZTJa4R7qhYro9ooh5OAMYeu	user2
3	display3	null	\$2a\$10\$EjEm6eG5mEhnnM2OJoQnA.VseUk/rXafKUdglH/5B/M7OvKwcvV9q	user3
4	display4	null	\$2a\$10\$96t6SWE8afmCaguRdXtGREuPcWrmG8zhRv1jvt5BBikpoD9x9HIWW	user4
5	display5	null	\$2a\$10\$lgpEc5VMpytWoeCkjToNHeYLBmkMpH/8n3SqATm4.Ngw8mknptTsO	user5
6	display6	null	\$2a\$10\$Y5YLHYaq1KzpYDTCrL.GzOp01UWitKIA36GTDuXXayna747xSLVFK	user6
7	display7	null	\$2a\$10\$40fTdcQdGajeTWPNAa.kNepqNMrSuUUw5x0wyMlzlQRcxyxGaqDSy	user7
8	display8	null	\$2a\$10\$SAoSzPOUTuC.JYjL4hV582OX8F1Dzk3vqRCLBG8Fc3unj5iVFsaG	user8
9	display9	null	\$2a\$10\$g6QpHpQUd5J9vcJXkPNBaelLN43x4xGURPmCPVABvvaulfZC0tqsm	user9
10	display10	null	\$2a\$10\$2BVz1vaYyTsmUg76QQFs0uyXc5pX5hEQ6UW4epgLK0WfZWw6vPKay	user10
11	display11	null	\$2a\$10\$PfHT0aivGdAxVGPYU.vxnu4RDPUMh.F/LAMehEhhFXo..pQnso1ly	user11
12	display12	null	\$2a\$10\$rT3q/HU.jrEGPzoRz8lUn.Ta8zdOi64.k/oe.C2LyDwVboNJ6qA3u	user12
13	display13	null	\$2a\$10\$ssYSbgbyIKGjJD8mg1vuAwON7Oqq1Ach5Bp7ylgUUJv3ccAsiynLAa	user13
14	display14	null	\$2a\$10\$/HekfU/FLejVcRdLo58utehxwaU8o1rWUCQzYMP5.GVIKfFXPbS6y	user14
15	display15	null	\$2a\$10\$PA/aw1sUuuC3SnAQSD1XO8bln6EKfOzxNWLxXq/lfCIV/CakWSYy	user15

(15 rows, 4 ms)

Edit

File attachments Table

Auto commit ☒ Max rows: 1000 Auto complete Off Auto select On

jdbc:h2:mem:hoaxify-dev

FILE_ATTACHMENT
HOAX
USER
INFORMATION_SCHEMA
Sequences
Users
H2 1.4.200 (2019-10-14)

Run Run Selected Auto complete Clear SQL statement:

SELECT * FROM FILE_ATTACHMENT;

ID	DATE	FILE_TYPE	NAME	HOAX_ID
17	2022-12-07 13:35:43.085	image/png	e69030f98901457d96f1d509777f7a75	18

(1 row, 2 ms)

Edit

Hoax Table

The screenshot shows the H2 console interface. On the left, a tree view displays the database structure: jdbc:h2:mem:hoaxify-dev, FILE_ATTACHMENT, HOAX, USER, INFORMATION_SCHEMA, Sequences, Users, and H2 1.4.200 (2019-10-14). The main area shows a SQL statement: `SELECT * FROM FILE_ATTACHMENT HOAX;`. Below the statement, the results are displayed in a table with 5 columns: ID, DATE, FILE_TYPE, NAME, and HOAX_ID. The first row contains the values 17, 2022-12-07 13:35:43.085, image/png, e69030f98901457d96f1d50977f7a75, and 18. The status bar indicates (1 row, 2 ms). An 'Edit' button is located below the table.

ID	DATE	FILE_TYPE	NAME	HOAX_ID
17	2022-12-07 13:35:43.085	image/png	e69030f98901457d96f1d50977f7a75	18

Postman tests

password hashing

The screenshot shows the Postman interface. A new POST request is configured for the endpoint `http://localhost:8080/api/1.0/users`. The body is set to raw JSON with the following content: `{ "username": "John", "displayName": "John Doe", "password": "JohnDoe01" }`. The response is displayed in the bottom panel, showing a 200 OK status with a response time of 103 ms and a body of `{ "message": "User saved" }`.

19	John Doe	null	\$2a\$10\$SidNBzGpro14Fttf7ObZVObnPNjtsu1/EkJwfQnrZaOR0y.3.uAfC	John
----	----------	------	---	------

(17 rows, 1 ms)

Edit

Get Users

The screenshot shows the Hoaxify 'New Request' interface. The request method is GET and the URL is `http://localhost:8080/api/1.0/users`. The 'Body' tab is selected, showing a JSON payload: `{ "username": "John", "displayName": "John Doe", "password": "JohnDoe01" }`. The response status is 200 OK, with a response time of 33 ms and a size of 1.12 KB. The response body is displayed in the 'Body' tab, showing a JSON array of user objects: `{ "content": [{ "id": 1, "username": "user1", "displayName": "display1", "image": null }, { "id": 2, "username": "user2", "displayName": "display2", "image": null }, { "id": 3, ... }] }`.

Running tests on Frontend

- Run npm test
 - o Tests run in watchmode, meaning whenever we update code and build out tests, our application will be refreshed.

The terminal window shows the following text:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

No tests found related to files changed since last commit.
Press `a` to run all tests, or run Jest with `--watchAll`.

Watch Usage
  > Press a to run all tests.
  > Press f to run only failed tests.
  > Press q to quit watch mode.
  > Press p to filter by a filename regex pattern.
  > Press t to filter by a test name regex pattern.
  > Press Enter to trigger a test run.
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

PASS  src/components/HoaxSubmit.spec.js (9.345 s)
PASS  src/pages/UserSignupPage.spec.js (9.929 s)
PASS  src/pages/UserPage.spec.js (12.102 s)
PASS  src/components/HoaxFeed.spec.js (12.431 s)
PASS  src/pages/LoginPage.spec.js
PASS  src/containers/App.spec.js
PASS  src/api/apiCalls.spec.js
PASS  src/components/UserList.spec.js
PASS  src/components/HoaxView.spec.js
PASS  src/components/TopBar.spec.js
PASS  src/components/ProfileCard.spec.js
PASS  src/components/Input.spec.js
PASS  src/components/Modal.spec.js
PASS  src/pages/HomePage.spec.js
PASS  src/components/ProfileImageWithDefault.spec.js
PASS  src/components/UserListItem.spec.js

Test Suites: 16 passed, 16 total
Tests:       278 passed, 278 total
Snapshots:   0 total
Time:        21.606 s
Ran all test suites.

Watch Usage: Press w to show more.
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

No failed test found.
Run Jest without `--onlyFailures` or with `--all` to run all tests.

Watch Usage: Press w to show more.
```

Integration test: LoginControllerTest.java

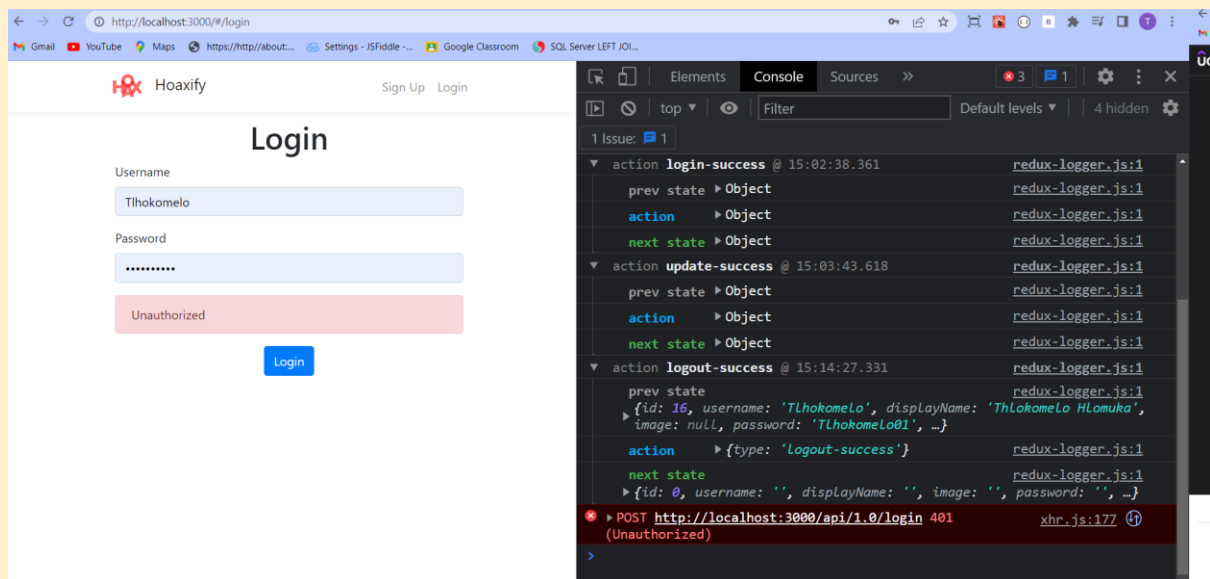
Run as JUnit Test

```
Markers  Properties  Servers  Data Source Explorer  Snippets  Terminal  Console  JUnit x
Finished after 11,448 seconds

Runs: 11/11  Errors: 0  Failures: 0

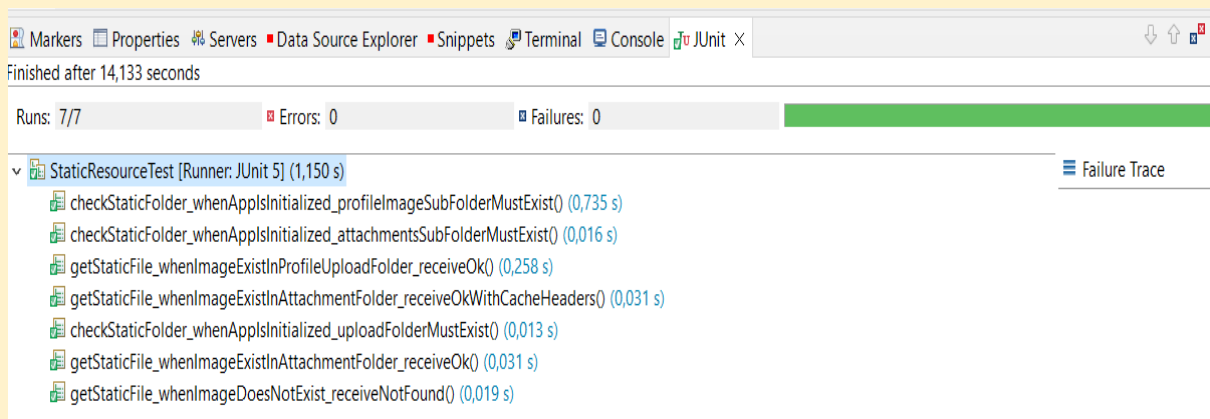
LoginControllerTest [Runner: JUnit 5] (2,469 s)
  postLogin_withValidCredentials_notReceiveLoggedInUsersPassword() (1,304 s)
  postLogin_withoutUserCredentials_receiveUnauthorized() (0,050 s)
  postLogin_withoutUserCredentials_receiveApiError() (0,039 s)
  postLogin_withValidCredentials_receiveLoggedInUserId() (0,178 s)
  postLogin_withValidCredentials_receiveLoggedInUsersUsername() (0,168 s)
  postLogin_withValidCredentials_receiveOk() (0,183 s)
  postLogin_withValidCredentials_receiveLoggedInUsersDisplayName() (0,162 s)
  postLogin_withIncorrectCredentials_receiveUnauthorizedWithoutWWWAuthenticationHeader() (0,092 s)
  postLogin_withIncorrectCredentials_receiveUnauthorized() (0,095 s)
  postLogin_withoutUserCredentials_receiveApiErrorWithoutValidationErrors() (0,014 s)
  postLogin_withValidCredentials_receiveLoggedInUsersImage() (0,175 s)
```

Redux Connection Test



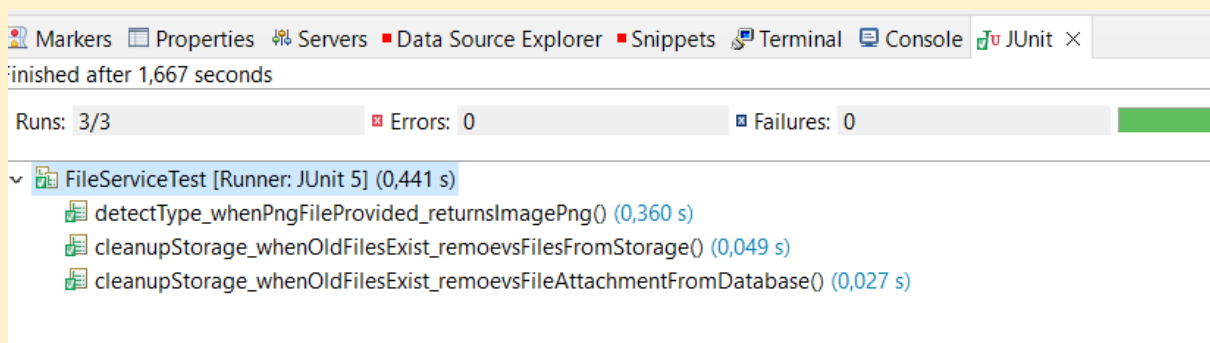
Integration Test: StaticResourceTest.java

Run as JUnit Test



Integration Test: FileServiceTest.java

Run as JUnit Test



Integration Test: HoaxControllerTest.java

Run as JUnit Test

Markers Properties Servers Data Source Explorer Snippets Terminal Console JUnit x

Finished after 18,544 seconds

Runs: 51/51 Errors: 0 Failures: 0

HoaxControllerTest [Runner: JUnit 5] (8,729 s)


- deleteHoax_whenUserIsAuthorized_hoaxRemovedFromDatabase() (1,182 s)
- getHoaxes_whenThereAreHoaxes_receivePageWithHoaxVM() (0,200 s)
- getOldHoaxesOfUser_whenUserExistsAndThereAreHoaxes_receivePageWithItemsBeforeProvidedId() (0,174 s)
- getHoaxesOfUser_whenUserExistsWithMultipleHoaxes_receivePageWithMatchingHoaxesCount() (0,141 s)
- postHoax_whenHoaxIsValidAndUserIsAuthorized_receiveOk() (0,311 s)
- postHoax_whenHoaxContentLessThan10CharactersAndUserIsAuthorized_receiveBadRequest() (0,211 s)
- postHoax_whenHoaxIsValidAndUserIsUnauthorized_receiveApiError() (0,029 s)
- getHoaxes_whenThereAreNoHoaxes_receivePageWithZeroItems() (0,017 s)
- postHoax_whenHoaxContentNullAndUserIsAuthorized_receiveApiErrorWithValidationErrors() (0,155 s)
- getHoaxesOfUser_whenUserExists_receivePageWithZeroHoaxes() (0,103 s)
- getOldHoaxesOfUser_whenUserDoesNotExistThereAreNoHoaxes_receiveNotFound() (0,032 s)
- postHoax_whenHoaxContentNullAndUserIsAuthorized_receiveBadRequest() (0,213 s)
- deleteHoax_whenUserIsUnauthorized_receiveUnauthorized() (0,016 s)
- deleteHoax_whenHoaxNotExist_receiveForbidden() (0,181 s)
- getHoaxesOfUser_whenUserExistsWithHoax_receivePageWithHoaxVM() (0,093 s)
- getNewHoaxCountOfUser_whenThereAreHoaxes_receiveCountAfterProvidedId() (0,107 s)
- getOldHoaxesOfUser_whenUserExistsThereAreNoHoaxes_receiveOk() (0,091 s)
- getNewHoaxesOfUser_whenUserDoesNotExistThereAreNoHoaxes_receiveNotFound() (0,015 s)
- getHoaxesOfUser_whenUserDoesNotExist_receiveNotFound() (0,015 s)
- postHoax_whenHoaxContentIs5000CharactersAndUserIsAuthorized_receiveOk() (0,165 s)
- deleteHoax_whenUserIsAuthorized_receiveOk() (0,184 s)
- postHoax_whenHoaxHasFileAttachmentAndUserIsAuthorized_receiveHoaxVMWithAttachment() (0,365 s)
- postHoax_whenHoaxIsValidAndUserIsUnauthorized_receiveUnauthorized() (0,020 s)
- getHoaxes_whenThereAreNoHoaxes_receiveOk() (0,015 s)
- deleteHoax_whenUserIsAuthorized_receiveGenericResponse() (0,175 s)

Loaded Hoaxes


← → ↺ http://localhost:3000/#/ Gmail YouTube Maps https://http://about... Settings - JSFiddle ... Google Classroom SQL Server LEFT JOI...

Hoaxify


Zandile@Zandile - 2 minutes ago
Hello Hello Hello



Thlokemelo Hlomuka@Thlokemelo - 35 minutes ago
Hello Hi Hello Hi Hello Hi!



John Doe@John - 36 minutes ago
My name is John Doe and i am happy!



Users

Thlokemelo Hlomuka@Thlokemelo

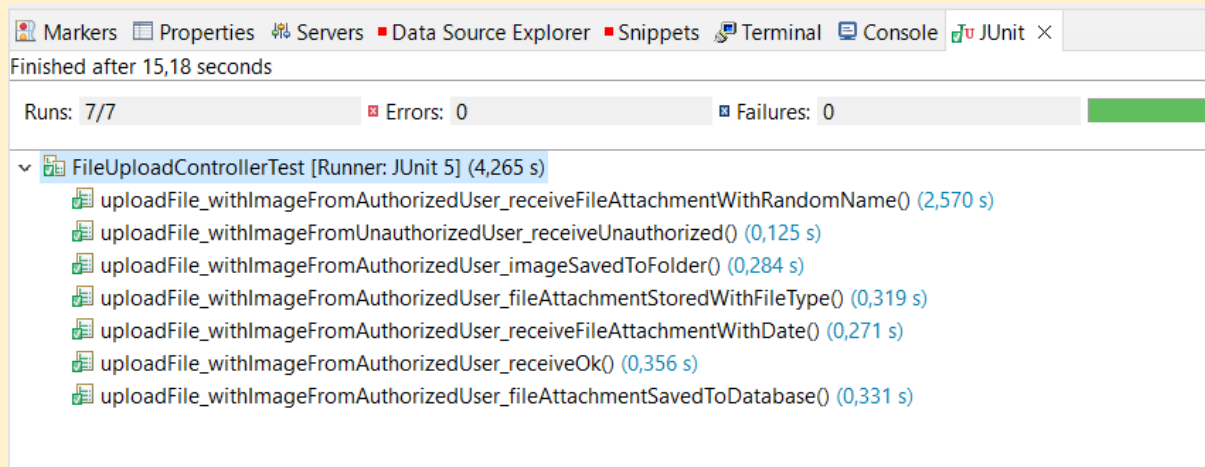
John Doe@John

Mary Sing@Mary

< previous

Integration Test: FileUploadControllerTest.java

Run as JUnit Test



Upgrades

Frontend

- To see which dependencies are outdated
 - o Run npm outdated

```
PS C:\Users\thlok\Documents\11. Bootcamp Final Project\Repo\Bootcamp-Project\Test Driven Development with Spring and React\frontend> npm outdated
npm WARN config global '--global', '--local' are deprecated. Use '--location=global' instead.
Package      Current      Wanted   Latest  Location      Depended by
@testing-library/jest-dom  5.11.6      5.16.5   5.16.5   node_modules/@testing-library/jest-dom frontend
@testing-library/react     11.2.2      11.2.7   13.4.0   node_modules/@testing-library/react frontend
axios                   0.21.0      0.21.4   1.2.1    node_modules/axios frontend
react                   17.0.1      17.0.2   18.2.0   node_modules/react frontend
react-dom               17.0.1      17.0.2   18.2.0   node_modules/react-dom frontend
react-redux              7.2.2       7.2.9    8.0.5    node_modules/react-redux frontend
react-router-dom         5.2.0       5.3.4    6.4.4    node_modules/react-router-dom frontend
react-scripts            4.0.1       4.0.3    5.0.1    node_modules/react-scripts frontend
redux                    4.0.5       4.2.0    4.2.0    node_modules/redux frontend
redux-thunk              2.3.0       2.4.2    2.4.2    node_modules/redux-thunk frontend
```

- To update outdated dependencies
 - o Run npm update

```
PS C:\Users\thlok\Documents\11. Bootcamp Final Project\Repo\Bootcamp-Project\Test Driven Development with Spring and React\frontend> npm update
npm WARN config global '--global', '--local' are deprecated. Use '--location=global' instead.
npm WARN deprecated @npmcli/move-file@1.1.2: This functionality has been moved to @npmcli/fs
npm WARN deprecated source-map-url@0.4.1: See https://github.com/lydell/source-map-url#deprecated
npm WARN deprecated urix@0.1.0: Please see https://github.com/lydell/urix#deprecated
npm WARN deprecated source-map-resolve@0.5.3: See https://github.com/lydell/source-map-resolve#deprecated
npm WARN deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecated
npm WARN deprecated querystring@0.2.1: The querystring API is considered Legacy. new code should use the URLSearchParams API instead.
npm WARN deprecated querystring@0.2.0: The querystring API is considered Legacy. new code should use the URLSearchParams API instead.

added 361 packages, removed 276 packages, changed 839 packages, and audited 1974 packages in 5m

178 packages are looking for funding
  run `npm fund` for details

31 vulnerabilities (2 moderate, 20 high, 9 critical)

To address issues that do not require attention, run:
  npm audit fix

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.
```

Running tests in Coverage mode

- Makes it possible to spot untested paths in our code. It is an important metric for determining the health of a project.
- Run `npm test -- --coverage --watchAll=false`

```
C:\Users\thlok\Documents\11. Bootcamp Final Project\Repo\Bootcamp-Project\Test Driven Development with Spring and React\frontend>npm test -- --coverage --watchAll=false
npm WARN config global '--global', '--local' are deprecated. Use '--location=global' instead.
```

```
> frontend@0.1.0 test
> react-scripts test --coverage --watchAll=false
```

```
PASS src/components/HoaxView.spec.js (17.034 s)
PASS src/components/HoaxSubmit.spec.js (18.019 s)
PASS src/pages/LoginPage.spec.js (18.191 s)
PASS src/pages/UserSignupPage.spec.js (19.491 s)
PASS src/containers/App.spec.js (21.177 s)
PASS src/components/UserList.spec.js
PASS src/components/ProfileCard.spec.js
PASS src/pages/HomePage.spec.js
PASS src/components/TopBar.spec.js
PASS src/components/HoaxFeed.spec.js (23.207 s)
PASS src/components/UserListItem.spec.js
PASS src/components/ProfileImageWithDefault.spec.js
PASS src/components/Modal.spec.js
PASS src/components/Input.spec.js
PASS src/pages/UserPage.spec.js (25.519 s)
PASS src/api/apiCalls.spec.js
```

PASS	src/components/Input.spec.js				
PASS	src/pages/UserPage.spec.js (25.519 s)				
PASS	src/api/apiCalls.spec.js				
File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	90.27	82.64	88.03	90.18	
src	0	0	0	0	
index.js	0	100	100	0	10-24
serviceWorker.js	0	0	0	0	13-132
src/api	100	100	100	100	
apiCalls.js	100	100	100	100	
src/components	98.92	96.19	98.28	98.91	
ButtonWithProgress.js	100	100	100	100	
HoaxFeed.js	98.57	94.12	100	98.51	50
HoaxSubmit.js	97.3	87.5	100	97.3	26
HoaxView.js	100	100	100	100	
Input.js	100	100	50	100	
Modal.js	100	100	100	100	
ProfileCard.js	100	100	100	100	
ProfileImageWithDefault.js	100	100	100	100	
Spinner.js	100	100	100	100	
TopBar.js	100	100	100	100	
UserList.js	100	100	100	100	
UserListItem.js	100	100	100	100	
src/containers	100	100	100	100	
App.js	100	100	100	100	
src/pages	99.29	95.83	97.56	99.29	
HomePage.js	100	100	100	100	
LoginPage.js	100	100	91.67	100	
UserPage.js	98.73	92.11	100	98.73	96
UserSignupPage.js	100	100	100	100	
src/redux	100	75	100	100	
authActions.js	100	100	100	100	
authReducer.js	100	85.71	100	100	10
configureStore.js	100	60	100	100	7,25
src/shared	100	100	100	100	
useClickTracker.js	100	100	100	100	

```
Test Suites: 16 passed, 16 total
Tests:       278 passed, 278 total
Snapshots:   0 total
Time:        34.37 s
Ran all test suites.
```