

# Testing and Code Review

## 1. Change History

Change Date Modified Sections Rationale

Nothing to show

## 2. Back-end Test Specification: APIs

### 2.1. Locations of Back-end Tests and Instructions to Run Them

#### 2.1.1. Tests

Notes API

Interface	Describe Group Location, No Mocks	Describe Group Location, With Mocks
POST /api/notes	backend/src/__tests__/unmocked/notes.normal.test.ts#L40	backend/src/__tests__/mocked/notes.mocked.test.ts#L51
PUT /api/notes/:id	#L282	#L202
DELETE /api/notes/:id	#L398	#L298
GET /api/notes/:id	#L462	#L253
GET /api/notes	#L528	#L343
GET /api/notes/:id/workspaces	#L893	#L620
POST /api/notes/:id/share	#L662	#L665
POST /api/notes/:id/copy	#L784	#L764

Workspaces API

Interface	Describe Group Location, No Mocks	Describe Group Location, With Mocks
POST /api/workspace	backend/src/__tests__/unmocked/workspace.normal.test.ts#L45	backend/src/__tests__/mocked/workspace.m
GET /api/workspace/personal	#L167	#L277
GET /api/workspace/user	#L290	#L330
GET /api/workspace/:id	#L352	#L364
GET /api/workspace/:id/members	#L410	#L398
GET /api/workspace/:id/tags	#L454	#L448
GET /api/workspace/:id/membership/:userId	#L536	#L482
POST /api/workspace/:id/members	#L619	#L516
POST /api/workspace/:id/leave	#L847	#L694
PUT /api/workspace/:id	#L959	#L712
PUT /api/workspace/:id/picture	#L1051	#L748
DELETE /api/workspace/:id/members/:userId	#L1156	#L784
DELETE /api/workspace/:id	#L1323	#L818
GET /api/workspace/:id/poll	#L1429	#L852

Authentication API

Interface	Describe Group Location, No Mocks	Describe Group Location, With Mocks	Mocked Com
POST /api/auth/signup	backend/src/__tests__/unmocked/auth.normal.test.ts#L123	backend/src/__tests__/mocked/auth.mocked.test.ts#L74	authService. token workspaceServ
POST /api/auth/signin	#L151	#L290	authService. login
POST /api/auth/dev-login	#L68	#L394	authService. login

User API

Interface	Describe Group Location, No Mocks	Describe Group Location, With Mocks	Mock
GET /api/users/profile	backend/src/__tests__/unmocked/user.normal.test.ts#L39	—	—
PUT /api/users/profile	#L57	backend/src/__tests__/mocked/user.mocked.test.ts#L48	userMock workspace notification
DELETE /api/users/profile	#L166	#L104	userMock workspace notification
POST /api/users/fcm-token	#L230	#L155	userMock
GET /api/users/:id	#L273	#L209	userMock

Interface	Describe Group Location, No Mocks	Describe Group Location, With Mocks	Mock
GET /api/users/email/:email	#L318	#L260	userManager
<b>Message API</b>			
Interface	Describe Group Location, No Mocks	Describe Group Location, With Mock	
GET /api/messages/workspace/:workspaceId	backend/src/__tests__/unmocked/message.normal.test.ts#L61	backend/src/__tests__/mocked/message.mocked	
POST /api/messages/workspace/:workspaceId	#L188	#L91	
DELETE /api/messages/:messageId	#L261	#L134	
<b>Media API</b>			
Interface	Describe Group Location, No Mocks	Describe Group Location, With Mocks	Mocked Configuration
POST /api/media/upload	backend/src/__tests__/unmocked/media.normal.test.ts#L56	backend/src/__tests__/mocked/media.mocked.test.ts#L155	storage.uploadFile system stub

### 2.1.2. Commit Hash Where Tests Run

c5f46d61177b82ff74c9c30dfd32a5e24de5d683

### 2.1.3. How to Run the Tests

1. cd backend
2. npm install
3. npm test

### 2.2. GitHub Actions Configuration Location

~/.github/workflows/backend-tests.yml

### 2.3. Jest Coverage Report Screenshots (Without Mocking)

File	% Stmt	% Branch	% Funcs	% Lines	Uncovered Line
All files	81.78	61.56	88.35	81.9	
asyncHandler.util.ts	100	100	100	100	
auth.controller.ts	43.18	23.07	66.66	43.18	23-38,47,53,59,68
auth.middleware.ts	98.14	100	100	98.07	68
auth.routes.ts	100	100	100	100	
auth.service.ts	43.63	11.11	50	43.63	17-40,47,53,59-61
auth.types.ts	100	100	100	100	
constants.ts	100	100	100	100	
database.ts	0	0	0	0	1-44
errorHandler.middleware.ts	100	100	100	100	
logger.util.ts	100	50	100	100	7-11
media.controller.ts	94.11	80	100	94.11	48
media.routes.ts	100	100	100	100	
media.service.ts	89.28	78.26	100	89.09	72,81,104-105,111
message.model.ts	100	100	100	100	
message.routes.ts	86.95	76.92	100	86.95	18,53-54,64,98-100
message.types.ts	100	100	100	100	
note.model.ts	100	100	100	100	
notes.controller.ts	82.11	50	100	82.11	...6-27,35-36,61,62
notes.routes.ts	100	100	100	100	
notes.service.ts	73.45	65.9	76.47	76.69	40,146,161,221,222
notes.types.ts	100	100	100	100	
notification.service.ts	65	33.33	50	65	7,46-63
routes.ts	100	100	100	100	
sanitizeInput.util.ts	100	100	100	100	
storage.ts	94.73	66.66	100	94.73	13
user.controller.ts	65.43	12	100	65.43	15-16,33,39,49-50
user.model.ts	75.4	80	90	75.4	113-114,122-123
user.routes.ts	100	100	100	100	
user.types.ts	100	100	100	100	
validation.middleware.ts	91.66	100	100	90.9	23
workspace.controller.ts	82.95	54.44	100	82.95	...-286,321,329
workspace.model.ts	100	100	100	100	
workspace.routes.ts	100	100	100	100	
workspace.service.ts	99.46	97.91	100	99.42	50
workspace.types.ts	100	100	100	100	

```

Test Suites: 6 passed, 6 total
Tests:    218 passed, 218 total
Snapshots: 0 total
Time:     8.724 s, estimated 15 s
Ran all test suites matching /__tests__\unmocked/i.

```

image info

#### 2.4. Jest Coverage Report Screenshots (With Mocking)

File	% Stmt	% Branch	% Funcs	% Lines	Uncovered Line
All files	71.61	57.22	69.17	71.99	
asyncHandler.util.ts	75	100	66.66	100	
auth.controller.ts	100	92.3	100	100	112
auth.middleware.ts	38.88	0	50	36.53	18-22,27-31,41-
auth.routes.ts	100	100	100	100	
auth.service.ts	92.72	88.88	100	92.72	108-109,126-127
auth.types.ts	100	100	100	100	
constants.ts	100	100	100	100	
database.ts	100	100	100	100	
errorHandler.middleware.ts	90.9	100	50	88.88	6
logger.util.ts	100	100	100	100	
media.controller.ts	88.23	60	100	88.23	16,24
media.routes.ts	100	100	100	100	
media.service.ts	80.35	65.21	80	81.81	22,34,45,96,102
message.model.ts	100	100	100	100	
message.routes.ts	81.15	23.07	100	81.15	24,31,35,41,51,
message.types.ts	100	100	100	100	
note.model.ts	100	100	100	100	
notes.controller.ts	79.67	75	100	79.67	...121,129-130,
notes.routes.ts	100	100	100	100	
notes.service.ts	67.25	56.81	64.7	66.01	58,70-107,122,1
notes.types.ts	100	100	100	100	
notification.service.ts	100	100	100	100	
routes.ts	100	100	100	100	
sanitizeInput.util.ts	88.88	0	100	83.33	7
storage.ts	94.73	66.66	100	94.73	39
user.controller.ts	75.3	88	100	75.3	19,44,70-86,120
user.model.ts	73.77	20	90	73.77	85-90,102-111,1
user.routes.ts	100	100	100	100	
user.types.ts	100	100	100	100	
validation.middleware.ts	83.33	0	66.66	81.81	13-16
workspace.controller.ts	71.59	65.55	100	71.59	...404-405,431,
workspace.model.ts	100	100	100	100	
workspace.routes.ts	100	100	100	100	
workspace.service.ts	21.5	10.41	15.78	21.96	13-38,53-118,13
workspace.types.ts	100	100	100	100	

```

Test Suites: 6 passed, 6 total
Tests:      184 passed, 184 total
Snapshots:  0 total
Time:      17.137 s, estimated 27 s
Ran all test suites matching /_tests_\mocked/i.

```

image info

## 2.5. Combined Jest Coverage Reports (With & Without Mocking)

File	% Stmt	% Branch	% Funcs	% Lines	Unc
All files	100	100	100	100	
asyncHandler.util.ts	100	100	100	100	
auth.controller.ts	100	100	100	100	
auth.middleware.ts	100	100	100	100	
auth.routes.ts	100	100	100	100	
auth.service.ts	100	100	100	100	
auth.types.ts	100	100	100	100	
constants.ts	100	100	100	100	
database.ts	100	100	100	100	
errorHandler.middleware.ts	100	100	100	100	
logger.util.ts	100	100	100	100	
media.controller.ts	100	100	100	100	
media.routes.ts	100	100	100	100	
media.service.ts	100	100	100	100	
message.model.ts	100	100	100	100	
message.routes.ts	100	100	100	100	
message.types.ts	100	100	100	100	
note.model.ts	100	100	100	100	
notes.controller.ts	100	100	100	100	
notes.routes.ts	100	100	100	100	
notes.service.ts	100	100	100	100	
notes.types.ts	100	100	100	100	
notification.service.ts	100	100	100	100	
routes.ts	100	100	100	100	
sanitizeInput.util.ts	100	100	100	100	
storage.ts	100	100	100	100	
user.controller.ts	100	100	100	100	
user.model.ts	100	100	100	100	
user.routes.ts	100	100	100	100	
user.types.ts	100	100	100	100	
validation.middleware.ts	100	100	100	100	
workspace.controller.ts	100	100	100	100	
workspace.model.ts	100	100	100	100	
workspace.routes.ts	100	100	100	100	
workspace.service.ts	100	100	100	100	
workspace.types.ts	100	100	100	100	

**Test Suites:** 13 passed, 13 total  
**Tests:** 403 passed, 403 total  
**Snapshots:** 0 total  
**Time:** 35.87 s  
**Ran all test suites.**

image info

### 3. Back-end Non-functional Requirements

#### 3.1. Test Locations

Non-Functional Requirement	Location in Git
Backend – Search Speed	ThingSpace.ts/backend/src/_tests_/notes.latency.test.ts
Frontend – Two-Click Navigation	frontend/app/src/androidTest/java/com/copen321/usermanagement/TestReachWithTwoClicks.kt

#### Backend – Search Speed (notes.latency.test.ts)

- **How to run:** cd backend && npm test -- \_tests\_/non-func-tests
- **What it checks:** Seeds 400 notes, issues three representative search queries, and reports the mean latency. Latest runs average ~1.1s/query, comfortably under the 5s budget.

#### Frontend – Two-Click Navigation (TestReachWithTwoClicks.kt)

- **How to run:** cd frontend && ./gradlew connectedAndroidTest -Pandroid.testInstrumentationRunnerArguments.class=com.copen321.usermanagement.TestReachWithTwoClicks
- **What it checks:** Starting from the main workspace screen, the test traverses to note, template, and chat views—both within the current workspace and across other workspaces—counting taps to confirm every note-bearing screen is reachable in ≤2 clicks.

### 3.2. Test Verification and Logs

#### Performance: Search Speed

- Creates 400 notes, runs 3 queries, average ~1.1s (<5s target)
- Logs:

#### Chat Data Security

- Verification:
- Logs:

## 4. Front-end Test Specification

This includes the non-functional requirement that every note/message containing screen must be reachable from the main screen within two clicks. This non-functional requirement can only be verified via frontend tests, hence it is included here as `TestReachWith2Clicks.kt`.

### 4.1. Location in Git

`./frontend/app/src/androidTest/java/com.cpen321.usermanagement`

### 4.2. Tests Included

#### TestCollaborate.kt – Collaborate Feature

- Prerequisites**
  - Two user accounts: a workspace manager and a workspace member
  - The manager account must have a workspace named `Test`
  - The manager account must not have access to workspaces named `Study` or `Study v2`

#### Create Workspace

##### Scenario steps

- The user opens the “Create Workspace” screen.
- The app shows input fields for title and a “Create Workspace” button that is disabled.
- a. The user inputs a workspace title that is already taken
- a1. The app displays an error message telling user that the creation failed
- The user enters valid information.
- The user clicks the “Create” button.

##### Test case steps

- Open the “Create Workspace” screen.  
Check that the “Pick a workspace name” field is visible. Check that button labelled “Create Workspace” is present and disabled.  
Before the test, a separate workspace called “Test” should be created. Then, open the “Create Workspace” screen and input “Test” in the title field. Click “Create”.  
Check the dialog shows: “Failed to create workspace.”  
Input “Studies” in the title field. Check that button labelled “Create” is now enabled.  
Click “Create”. Verify system shows “Manage Workspace Profile” for user to make edits and that the “Save” button is disabled until a workspace bio is inputted. Verify workspace “Studies” appears in the workspace list.

#### Update Workspace (Manager)

##### Scenario steps

- The manager navigates to the “Edit Workspace” icon.
- The manager edits the title and bio.

##### Test case steps

- As the workspace manager account, navigate to the workspace screen. Click the “Pencil” icon next to the “Studies” workspace.  
Change title to “Studies v2” and the bio to “Study group” and click the “Save” button.  
Check the confirmation message: “Profile updated successfully.”

#### Invite to Workspace

##### Scenario steps

- A workspace member selects “Invite User”.
- The app shows an input field for email and a “Invite to the Workspace” button.
- a. The inviter inputs invalid email.
- a1. The app displays an error message about no user with the email existing
- The inviter inputs a valid email
- b. The invitee is already in the workspace.
- b1. The app displays an error message indicating that the invitee is already in the workspace.

##### Test case steps

- Click “Studies” workspace’s “Manage Workspace” icon (pencil icon). Click the “Invite User” icon on the bottom navbar (icon with person and cogwheel).  
Check input field and “Invite to the Workspace” button are visible.  
Input “invalidemail” and click “Invite to the workspace”.  
Check message: “Could not retrieve profile matching the given email!”  
Input the email of another account (your teammate’s account on the app). Click the “Invite to the Workspace” button. Check the confirmation message: “The user got added to the workspace.”  
Input the email of the teammate already in the workspace and click “Invite to the workspace”.  
Check message: “The user is already a member!”

#### Send Chat Message

##### Scenario steps

- The user opens workspace chat.
- a. The message is empty.
- The user types a valid message and presses send.

##### Test case steps

- Go to Workspaces Screen. Click the “Chat” icon next to the “Studies” workspace.  
Check that the system displays the workspace chat screen.  
Leave input blank or simply spaces and click the “Send” icon. Check that nothing occurs in the chat screen.  
Input “Hello team!” in the chat box and click the “Send” icon. Check the chat log shows “Hello team!” with the sender’s profile picture and timestamp.

#### Update Workspace (Non-Manager)

Scenario steps	Test case steps
10a. A non-manager user attempts to update the workspace.	Log in as a non-manager user and navigate to the “Edit Workspace” icon. Check that the input fields are greyed out.

### Leave Workspace (Non-Manager)

Scenario steps	Test case steps
12. The user (non-manager) selects “Leave Workspace”. 13. App removes user from the workspace	Open “Studies” manage workspace screen (pencil icon) using your non-manager account and click “Leave Workspace” (door icon). Check that the “Studies” workspace doesn’t show up in the workspace list screen.

### Ban Users

Scenario steps	Test case steps
14. The manager opens the Members screen (Profile icon in manage workspace screen). 15. Manager chooses the user to ban 16. App bans user from the workspace permanently	“Studies” workspace → Manage Workspace → Members screen (profile icon). Click the trash bin icon next to the user. Verify the banned user doesn’t show up in the Members screen anymore. Verify the user cannot be invited anymore and system shows an error message: “This user is banned.”

### Delete Workspace (Manager)

Scenario steps	Test case steps
17. The manager selects “Delete Workspace”. 18. App deletes the workspace	Open “Studies” settings and click “Delete Workspace” (trash bin icon). Verify the workspace “Studies” doesn’t show up in the workspace list screen. Verify the workspace “Studies” can be created.

Logs:

Test of the non-functional requirement that every note-containing screen is reachable from the main screen within two clicks or fewer (`TestReachWith2Clicks.kt`). Starting at the main content screen in a workspace, the test navigates to templates or chat screens in the current workspace, as well as content, templates, or chat in other workspaces. Each route tracks the number of taps performed and asserts that the destination is reached in two clicks or less.

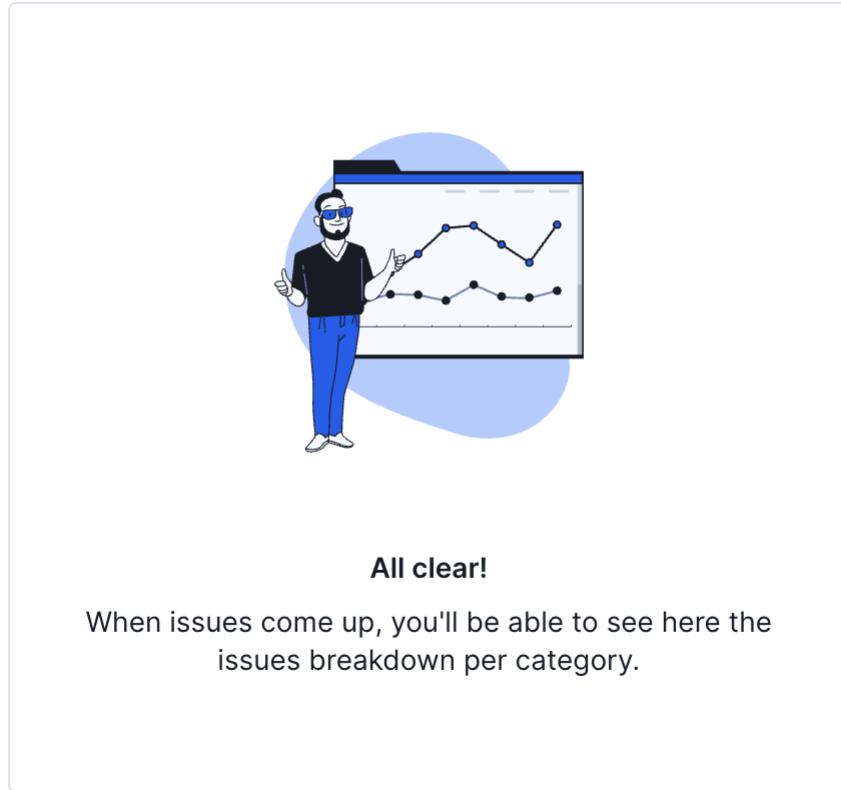
## 5. Automated Code Review Results

### 5.1. Commit Hash Where Codacy Ran

`c5f46d61177b82ff74c9c30dfd32a5e24de5d683`

### 5.2. Unfixed Issues per Codacy Category

## Issues breakdown



All clear!

When issues come up, you'll be able to see here the issues breakdown per category.

[image info](#)

### 5.3. Unfixed Issues per Codacy Code Pattern

## Issues

ⓘ Current 0  ⓘ Ignored 0

Filter by Languages ▾ Severities ▾ Categori

All issues

0

[image info](#)

### 5.4. Justifications for Unfixed Issues

- Usage of Deprecated Modules
  - Location: src/services/chatService.js#L31
  - Justification: