M.A.C.K.
Memory Leak
Testing Documentation

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CIS4595: Capstone Project

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1. Introduction

This document will describe the extent of our automated tests along with the final results of our end-to-end test. We have incorporated Jest for Unit Test Automation. For our end-to-end test, we performed a manual assessment using the Gherkin style tests from our use cases in order to assess our success.

2. Unit Tests

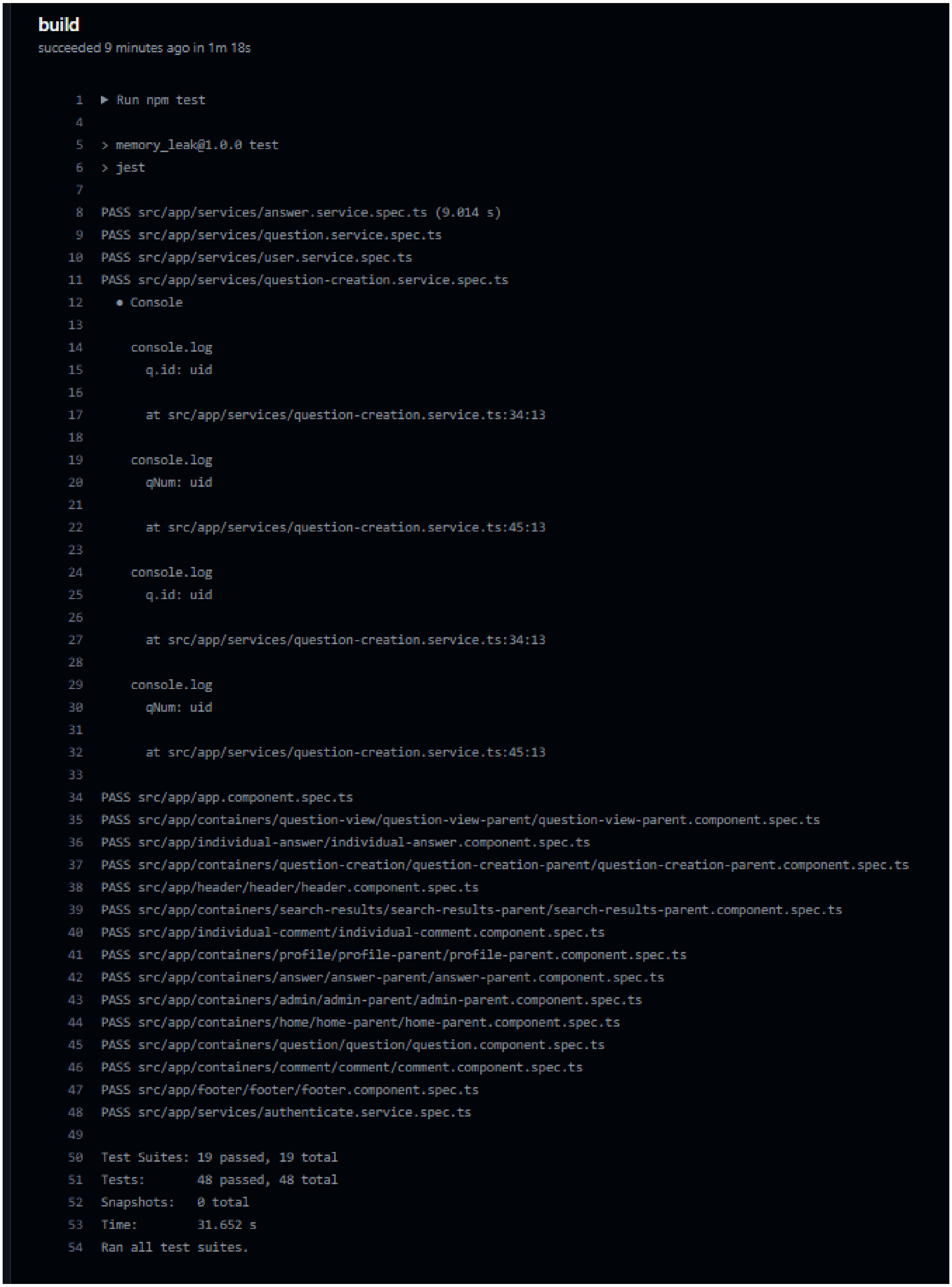
For our automated unit tests, we have developed a total of 48 individual tests across 19 test suites. These test suites rigorously check every aspect of our project.

For components, each test ensures that the component can be created without errors.

For services, each service has every function individually tested with mocking in order to ensure it does what is intended. There is only one aspect of a service's function that is not tested, removing an answer with the answer service and ensuring that the accepted answer id of a question is updated. This could not be tested as there was no way to access the mocked questions from the answer service.

To test these, we set up a test command via "npm test" that would automatically run the tests. In addition, we set up continuous integration that would run these same tests via GitHub Actions for every push.

Below is the test output from the aforementioned action which shows all the tests passing successfully:



build

succeeded 9 minutes ago in 1m 18s

```
▶ Run npm test

> memory_leak@1.0.0 test
> jest

PASS src/app/services/answer.service.spec.ts (9.014 s)
PASS src/app/services/question.service.spec.ts
PASS src/app/services/user.service.spec.ts
PASS src/app/services/question-creation.service.spec.ts
  ● Console

    console.log
      q.id: uid

      at src/app/services/question-creation.service.ts:34:13

    console.log
      qNum: uid

      at src/app/services/question-creation.service.ts:45:13

    console.log
      q.id: uid

      at src/app/services/question-creation.service.ts:34:13

    console.log
      qNum: uid

      at src/app/services/question-creation.service.ts:45:13

PASS src/app/app.component.spec.ts
PASS src/app/containers/question-view/question-view-parent/question-view-parent.component.spec.ts
PASS src/app/individual-answer/individual-answer.component.spec.ts
PASS src/app/containers/question-creation/question-creation-parent/question-creation-parent.component.spec.ts
PASS src/app/header/header/header.component.spec.ts
PASS src/app/containers/search-results/search-results-parent/search-results-parent.component.spec.ts
PASS src/app/individual-comment/individual-comment.component.spec.ts
PASS src/app/containers/profile/profile-parent/profile-parent.component.spec.ts
PASS src/app/containers/answer/answer-parent/answer-parent.component.spec.ts
PASS src/app/containers/admin/admin-parent/admin-parent.component.spec.ts
PASS src/app/containers/home/home-parent/home-parent.component.spec.ts
PASS src/app/containers/question/question/question.component.spec.ts
PASS src/app/containers/comment/comment/comment.component.spec.ts
PASS src/app/footer/footer/footer.component.spec.ts
PASS src/app/services/authenticate.service.spec.ts

Test Suites: 19 passed, 19 total
Tests:       48 passed, 48 total
Snapshots:   0 total
Time:        31.652 s
Ran all test suites.
```

3. End-to-End Tests

For our end-to-end test, we wanted to ensure that all of our initial use cases were being met. Thus, we individually assessed each one using the gherkin tests that we wrote. The ultimate outcomes of our final end-to-end test are in the table below.

A status of incomplete implies that the use case has not been addressed in any way. A status of partially complete implies that some aspects of the use case have been addressed, but not all of them. A status of complete implies that all aspects of the use case have been fully addressed.

Use Case Number	Name	Status
1	Moderator Remove Answers	**Complete**
2	Moderator Remove Questions	**Complete**
3	Account Login	**Complete**
4	Editing Profile Information	**Incomplete***
5	View Profile Information	**Complete**
6	Flagging Questions or Answers	**Complete**
7	Viewing Flagged Questions or Answers	**Complete**
8	Asking a Question	**Complete**
9	View Unanswered Questions	**Complete**
10	Search Through Questions	**Complete**
11	Comment on Question or Answer	**Complete**
12	View a Selected Question	**Complete**
13	Answer a Question	**Complete**
14	Marking Answered Questions	**Complete**

15	Site Navigation	**Complete**
16	Upvoting and Downvoting Answers	**Partially Complete***
17	Account Creation	**Partially Complete***

There are a few exceptions for the above use cases.

For use case 4, we realized that there was not really any information that the user would be able to edit, since their profile information is gathered from their Google account. Thus, we did not decide it was necessary to complete.

For use case 16, the Gherkin test specified that the user's selected vote would be visually displayed to the user. However, we decided against visually displaying their selected vote in order to make the interface less complicated.

For use case 17, we incorporated Google authentication for logging into accounts. As a result, users are not required to go through a separate process for account creation. Our system will handle the adjustment on our end without them having to do anything. The reason this is marked as partial is because the Gherkin test reflects a separate process for creating the account. An updated test would consider this complete.

Additionally, there are some tests that noted that a specific user would be notified. We decided against a notification system and instead decided to display a user's asked questions for them to check as they like. This decision eliminated many potential security concerns with no notable effect on the user experience.

Overall, we consider all of our use cases as complete, as these exceptions were simply a result of a different initial perspective.