Quiz Manager Submission:

Development Diary

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Prepared for: BCS, Digital Industries Apprenticeship
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DEVELOPMENT DIARY

Overview

- This document will serve as a development diary for the construction phase of the Quiz Manager project. This will contain informal dialogue and narrative as I progressed through the development of the website, including progress updates to granular detail of code snippets as I debug issues with the website.
- The structure of the development diary will change intermittently and will likely not be consistent as it is not a structured document.

Dates covered

Please note that this development diary predominantly covers the construction phase of the project. It may make reference to the following days of my project:

- Day 1 - 08/09/20
- Day 2 - 09/09/20
- Day 3 - 10/09/20
- Day 4 - 11/09/20
- Day 5 - 14/09/20
- Day 6 - 15/09/20
- Day 7 - 16/09/20

DAY 2 - 09/09/20

Lots to do to kick off the Application.

Firstly I need to get the scaffolding and infrastructure up first. In particular, set up:

1. Laravel Scaffold ✓

- Set up the Laravel generic framework, out of the box MVC template.
- Commit all vendor files to the project, around 8,000 files (the project has to be run offline)

2. Laravel Built-In Authentication ✓

- Decided to use built-in auth as I have experience with this in my job as an engineer at Paddle. Laravel offers authentication out of the box as part of the framework.

3. Bootstrap Library ✓

- I had to download the dependency using composer and then move the bootstrap files into the public resources directory. This is where public assets should be located in Laravel best practice.
- Did this using a script in the composer.json file, to automate the process.

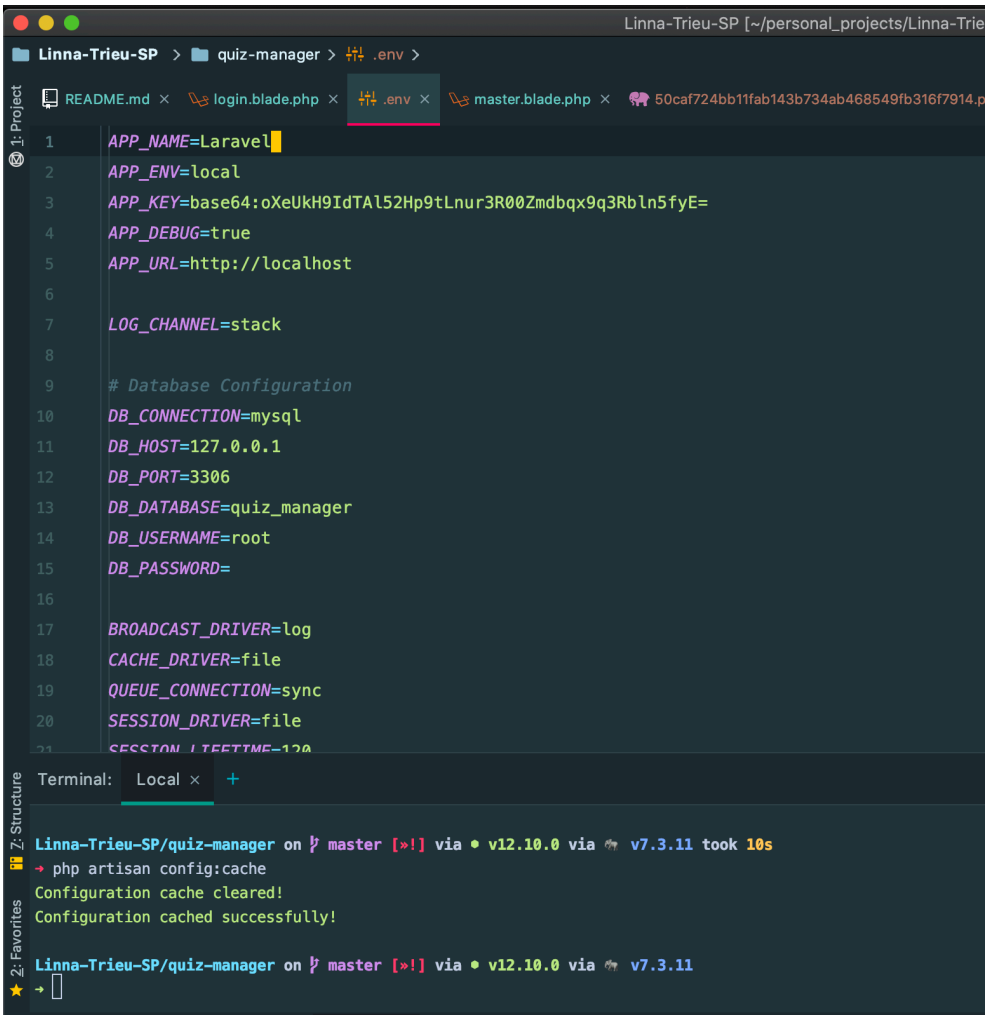
4. DB Config ✓

- Created a local database called 'quiz_manager' in mySQL client
- Set up the app config to connected the application to the new database

5. Making generic laravel scaffold bespoke ✓

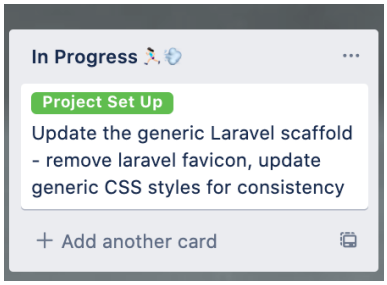
- I am renaming the generic template content for Quiz Manager - eg. update the HTML title, app name, favicon, and navbar.
- Issues replacing the `app.name` across the website. I have changes the env variables but nothing has changed on the front end. Why?
- Resolved: needed to look for further environment variables for the app name! Missed `APP_NAME`

- I also needed to clear the cache after changing environment variables, in order to see the changes updated on the front end!



6. CSS Styles Consistency and Favicon 🚫

- I couldn't figure out how to do this, so I timeboxed an investigation, though did not finish. I moved the ticket back to the bottom of the 'To-Do' column, so that if time permits at end of day I will look a it again. Moving onto the next Product feature….
  - Need consistency in CSS stylesheets
  - Need to remove the auth favicon on login page

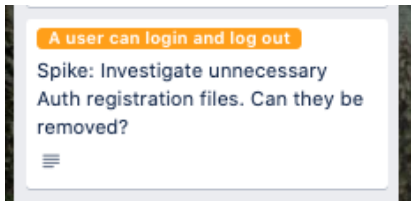


FEATURE: A user can login and log out

- I removed the User Registration aspects as this is out of scope for Quiz Manager.
- Disabled the registration, password reset, and email verification routes
- Run `php artisan route:list` to see a list of routes active

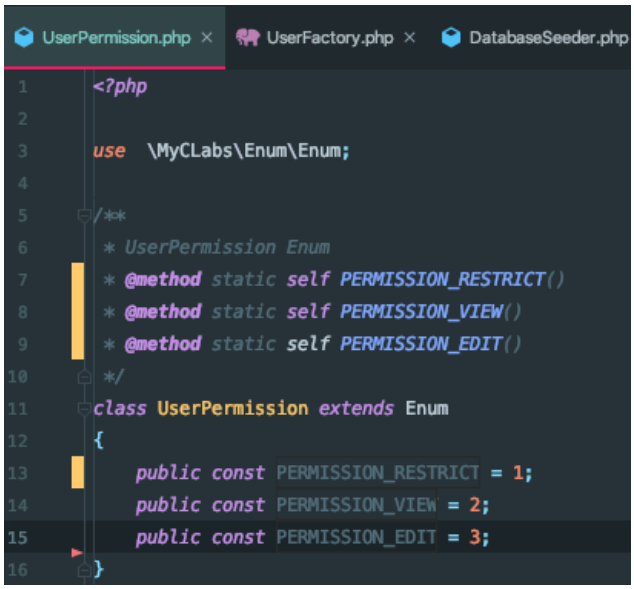
```
Linna-Trieu-SP/quiz-manager on  auth-login-and-logout [!] via ● v12.10.0 via  v7.3.11
➜ php artisan route:list
+--------+----------+-------------------+-------------------+-------------------------------------------------------------------------+--------------+
| Domain | Method   | URI               | Name              | Action                                                                  | Middleware   |
+--------+----------+-------------------+-------------------+-------------------------------------------------------------------------+--------------+
|        | GET|HEAD | /                 |                   | Closure                                                                 | web          |
|        | GET|HEAD | api/user          |                   | Closure                                                                 | api          |
|        |          |                   |                   |                                                                         | auth:api     |
|        | GET|HEAD | home              | home              | App\Http\Controllers\HomeController@index                               | web          |
|        |          |                   |                   |                                                                         | auth         |
|        | GET|HEAD | login             | login             | App\Http\Controllers\Auth\LoginController@showLoginForm                 | web          |
|        |          |                   |                   |                                                                         | guest        |
|        | POST     | login             |                   | App\Http\Controllers\Auth\LoginController@login                         | web          |
|        |          |                   |                   |                                                                         | guest        |
|        | POST     | logout            | logout            | App\Http\Controllers\Auth\LoginController@logout                        | web          |
|        | GET|HEAD | password/confirm  | password.confirm  | App\Http\Controllers\Auth\ConfirmPasswordController@showConfirmForm     | web          |
|        |          |                   |                   |                                                                         | auth         |
|        | POST     | password/confirm  |                   | App\Http\Controllers\Auth\ConfirmPasswordController@confirm             | web          |
|        |          |                   |                   |                                                                         | auth         |
+--------+----------+-------------------+-------------------+-------------------------------------------------------------------------+--------------+
```

- Considering if I should I remove the unnecessary files (incl. view and controllers)? Presumably in a later version of the application, registration will eventually be used on the Quiz Manager; so perhaps I shouldn't delete the files; and I can leave them in a 'disabled' state. I created a ticket in the backlog to investigate, and I moved ….

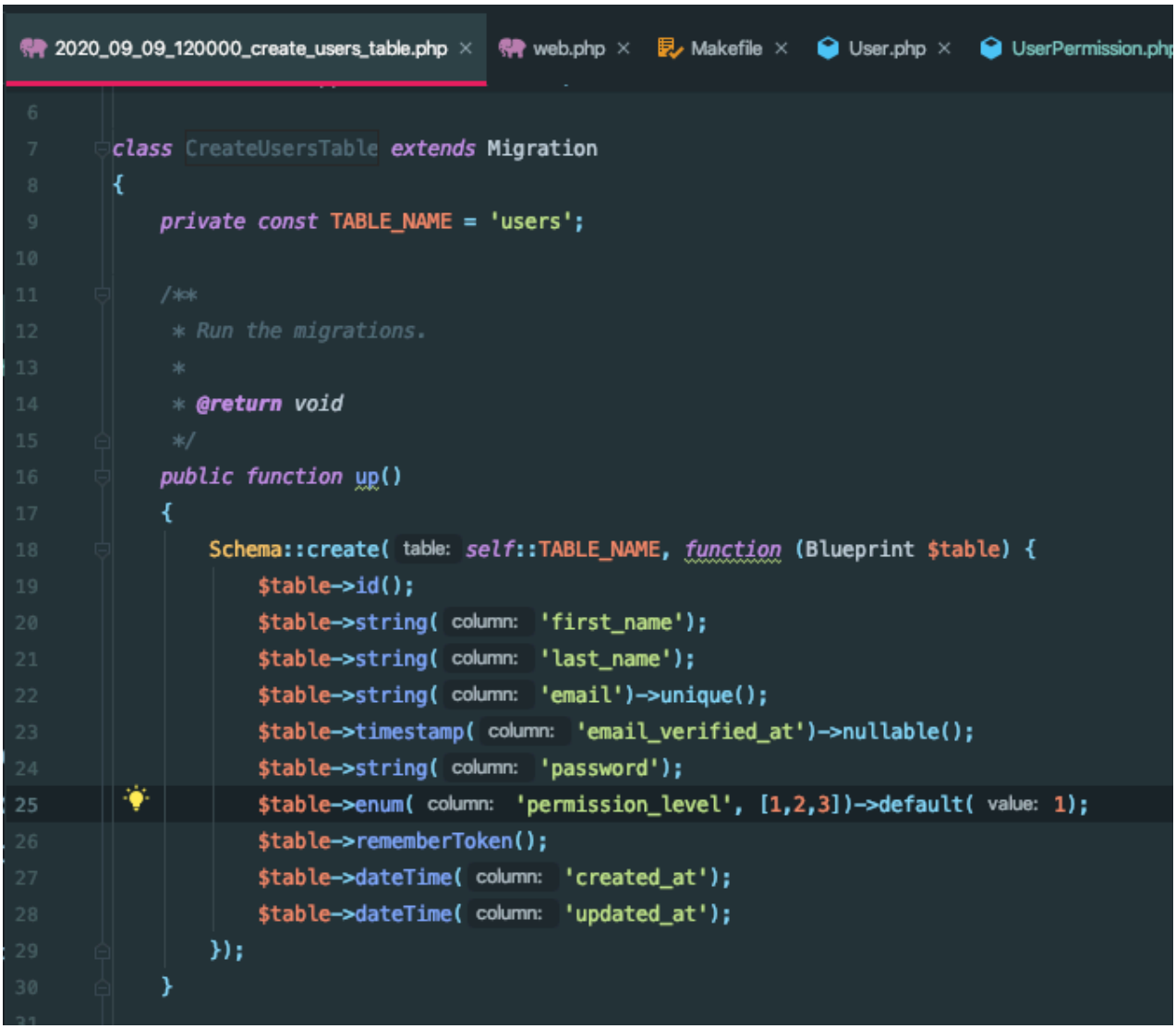


- Set up the Eloquent model class - User ✓
  - The Eloquent model class outlines the data stored in the User table associated
  - I decided to use the Enum data type for the user permission level
  - In the code, I created another class called UserPermission which represents the enum

- **What are Enums and Why use them for User Permission Levels?**
  - Enums are lists of constants like unchangeable variables.
  - It is best practice! When you need a predefined list of values which do represent some kind of numeric or textual data, you should typically use an enum.
  - You should always use enums when a variable (especially a method parameter) can only take one out of a small set of possible values.
  - In Quiz Manager, I have a pre-defined list of possible user permission levels “{Restrict, View, Edit}”. This is the ideal use case for an enum and best practice!
  - Using enums (instead of, say, a listing of strings) improve compile time, performance and reduce errors from passing in invalid arguments or constants (type hinting) .



- In the database migration, I set the type as ‘enum’.
- This field has a default value of 1 (RESTRICT). I defaulted to 1 as this is the lowest permission level for a known user, and therefore this is conservative.



Set up User Factory

- I created a factory class for users.
- Following the Laravel OOP Factory Pattern - which is to create objects like a factory by exposing some kind of interface to the outside world like createXYZ.
- With this, I can define a pattern to quickly generate fake models and build “dummy” data for use in seed data and in automated testing!
- I am using Faker for my factory class. This is a PHP library that generates fake data. By default the third-party package is included in composer dependencies - a reliable, and industry-used package)

```php
/*
|--------------------------------------------------------------------------
| Model Factories
|--------------------------------------------------------------------------
|
| This directory should contain each of the model factory definitions for
| your application. Factories provide a convenient way to generate new
| model instances for testing / seeding your application's database.
|
*/

$factory->define( class: User::class, function (Faker $faker) {
    return [
        'first_name' => $faker->firstName,
        'last_name' => $faker->lastName,
        'email' => $faker->unique()->safeEmail,
        'email_verified_at' => now(),
        'password' => '$2y$10$92IXUNpkjO0rOQ5byMi.Ye4oKoEa3Ro9llC/.og/at2.uheWG/igi',
        'remember_token' => Str::random( length: 10),
        'permission_level' => random_int(1, 3),
    ];
});

```

Run User seeder

- Generated db data by running a seeder command. This created an arbitrary amount of users => 10 in the users table.

Created the UserController

- Added an Exception handler in case a user tries to be registered.

Testing: A User can login and log out

- Through manual testing - I discovered I cannot log out of the Website. Once logged in, there is no option listed in the navbar.

Debugging

HYPOTHESIS APPROACH - This could be due to a few potential issues. Let's go through them (in order of what is most likely the problem):

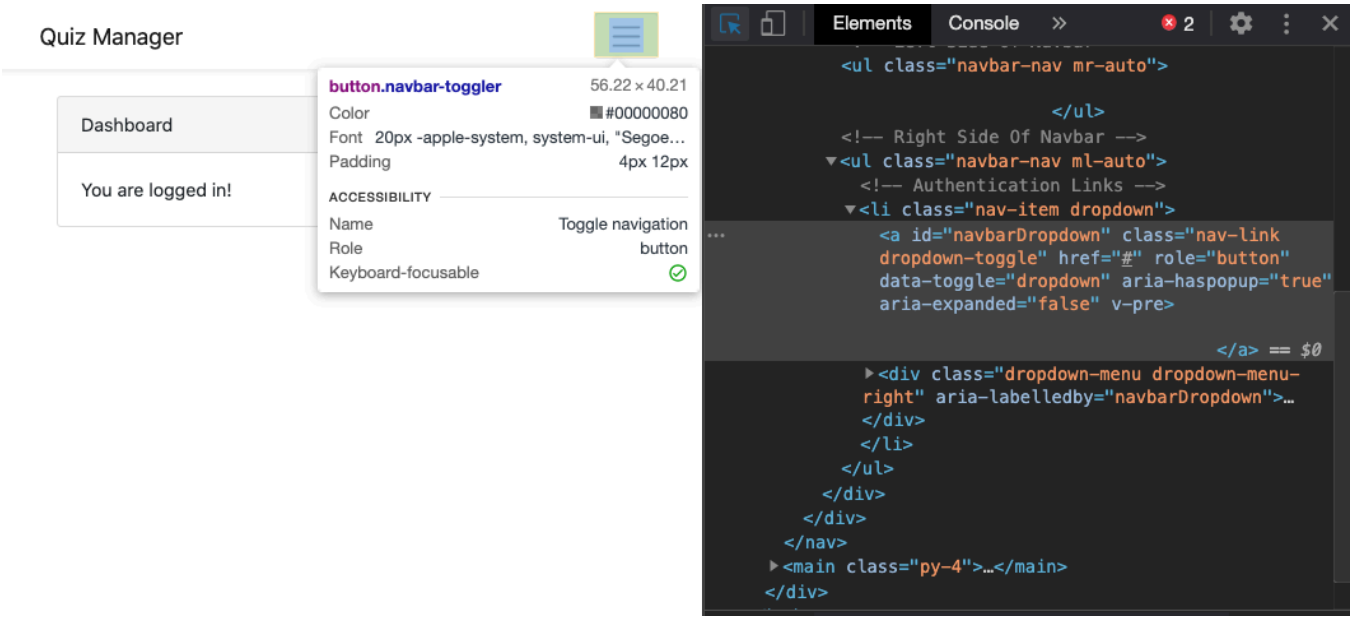
1. The Navbar toggler does not work. The logout option is there... But perhaps I just can't expand the navbar dropdown list to see it.

2. There is something wrong with the Auth logout route - maybe it does not exist? Did something happen in one of the Auth controllers?

3. The logout hyperlink is not appearing due to a HTML issue on the front end

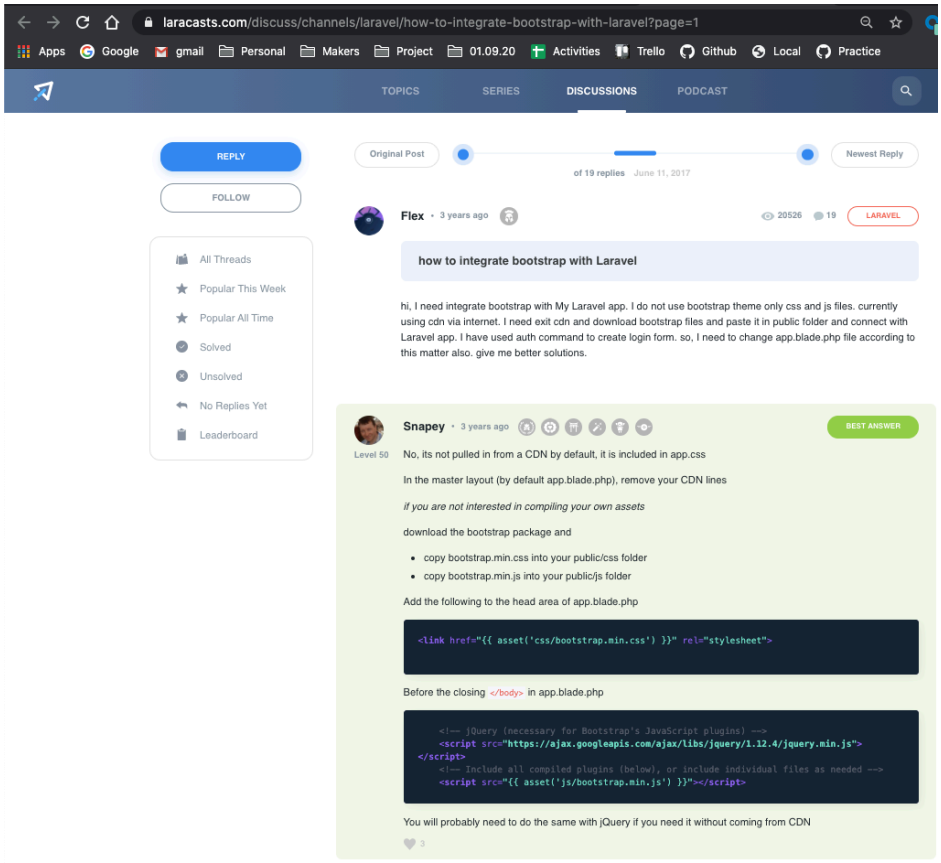
4. Not an exhaustive list of hypotheses. Search for more if none of the above hypotheses are found true.

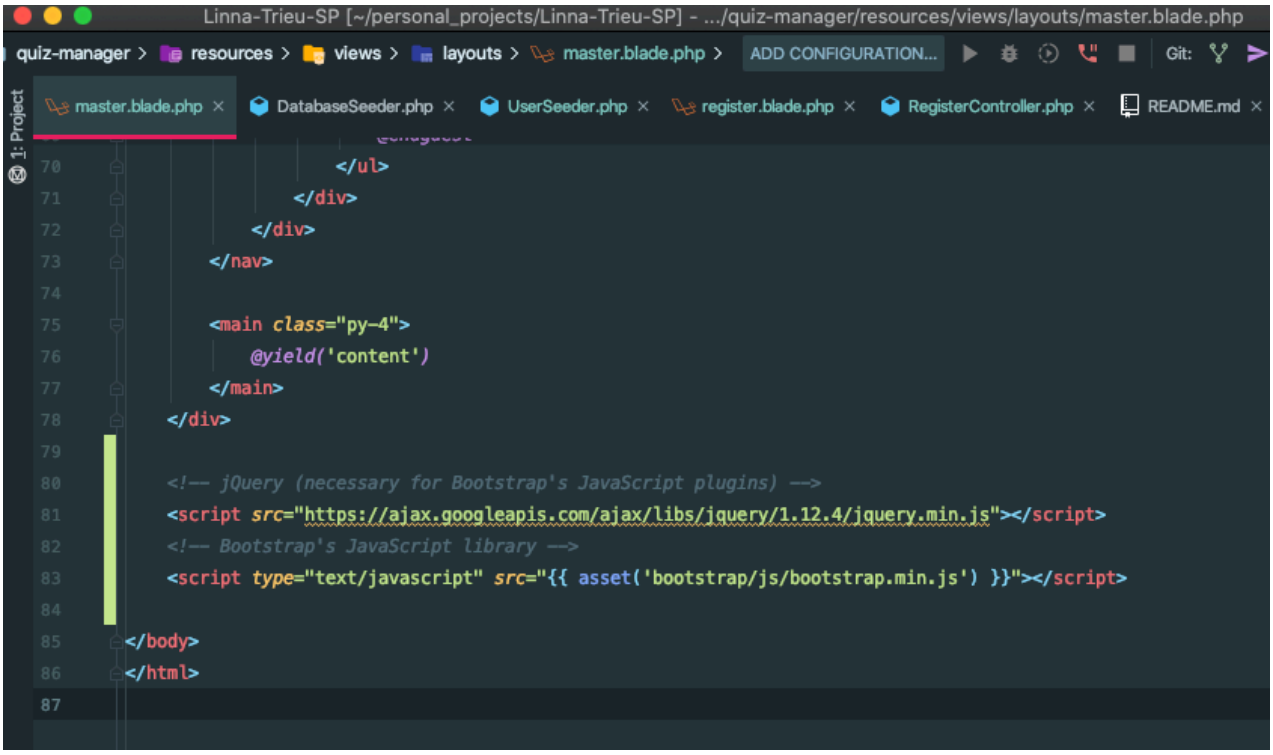
Outcome: Hypothesis #1 = TRUE ✔ This was identified as cause of the Logout issue.

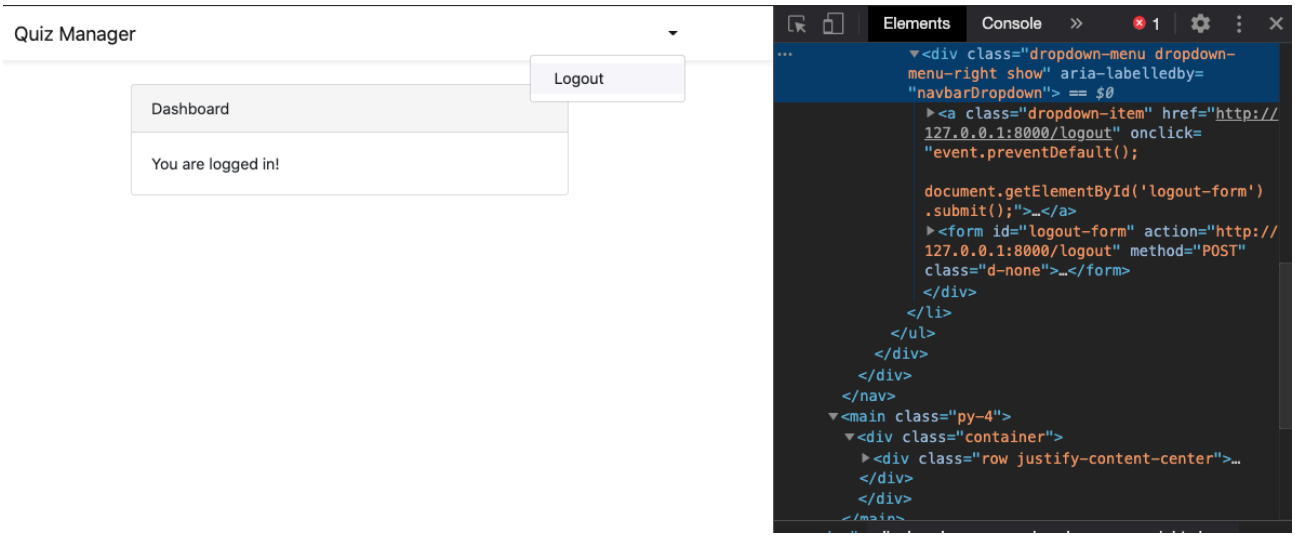


Investigating Hypothesis #1 - Process

- There is no interactivity with the HTML element called *'button navbar toggler'*.
- Why? This led me to think it could be a JavaScript issue; also it is the first time I've looked into JS on this project scaffold so far, so it could be likely not implemented correctly…. let's look into this further.
- I identified where the Bootstrap JavaScript files are referenced in the master blade layouts file. It seems to include the Bootstrap JS file, and looks ok - no errors in the syntax.
- But I realised the HTML file was missing a reference to the jQuery library (I had assumed it was included by default)!
  - Determined through internet investigation and troubleshooting
  - I added a reference to the jQuery CDN (see line 81) = FIXED the issue 🎉 The drop down list now appears when the navbar toggler is selected!
  - As I have now determined the cause of the issue - I can now refactor!
  - I cannot reference the jQuery CDN, as it hosted externally on cloud. I need to download so I can reference files locally! 💪🏽
  - Added a Trello ticket to the backlog so I can move on to higher priority tickets!! 🏃🏻‍♀️




Linna-Trieu-SP [~/personal_projects/Linna-Trieu-SP] - .../quiz-manager/resources/views/layouts/master.blade.php
quiz-manager > resources > views > layouts > master.blade.php >
ADD CONFIGURATION...
Git:
master.blade.php
DatabaseSeeder.php
UserSeeder.php
register.blade.php
RegisterController.php
README.md
1: Project
70
71
72
73 </nav>
74
75 <main class="py-4">
76 @yield('content')
77 </main>
78
79
80 <!-- jQuery (necessary for Bootstrap's JavaScript plugins) -->
81 <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.4/jquery.min.js"></script>
82 <!-- Bootstrap's JavaScript library -->
83 <script type="text/javascript" src="{{ asset('bootstrap/js/bootstrap.min.js') }}"></script>
84
85 </body>
86 </html>
87


Quiz Manager
Logout
Dashboard
You are logged in!
Elements
Console
1
 == $0
<a class="dropdown-item" href="http://127.0.0.1:8000/logout" onclick="event.preventDefault();
document.getElementById('logout-form').submit();">…
<form id="logout-form" action="http://127.0.0.1:8000/logout" method="POST" class="d-none">…</form>

</nav>
<main class="py-4">

…

Login Feature Tests

- Created file 'LoginTest.php'
- Enable DB config for tests in phpunit.xml
  - Using an sqlite in-memory database (rationale explained in file ref: *3.1. Testing Document.*

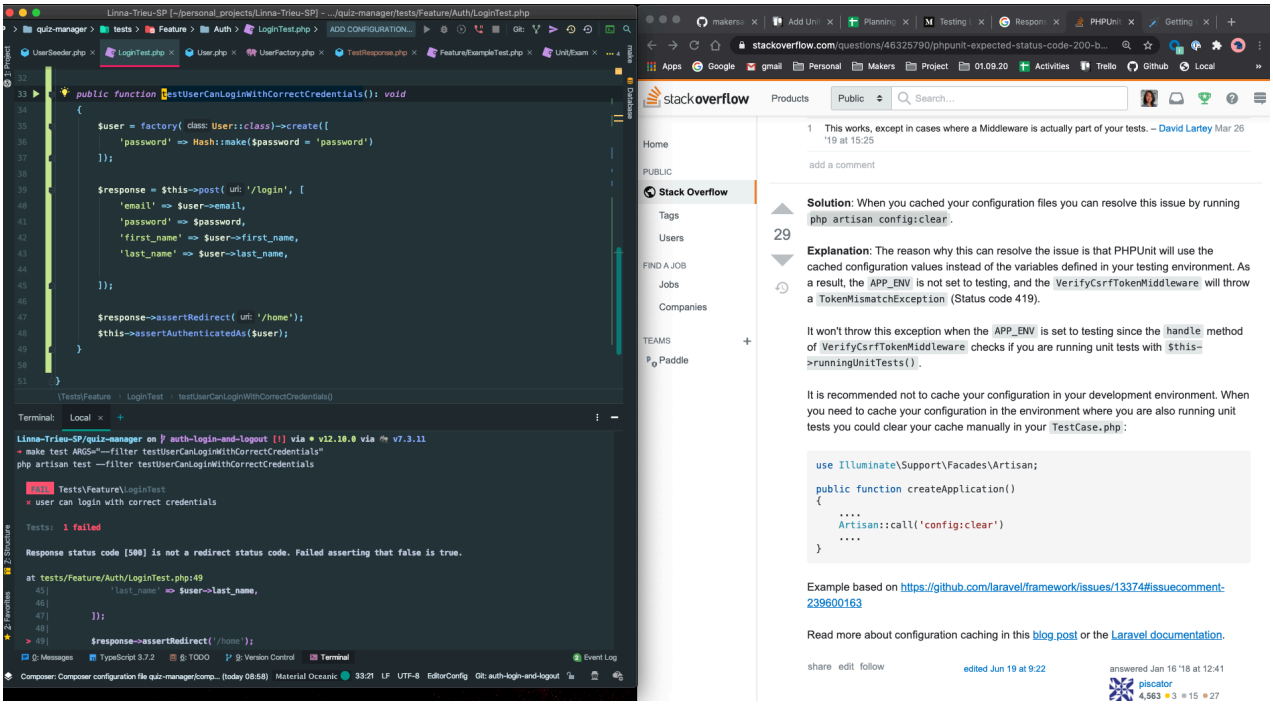
- Before writing any test code, I plan out the testing approach by pseudo-coding. What are the aspects of functionality I want to validate and test are working correctly? For example, these are the 'Login' test features I thought I could test out.

Testing login features

- user can view the login form
- user cannot view the login form when already signed in to the website
- user can login with correct user credentials
- user cannot login with a non-existent email
- user cannot login with incorrect user credentials
- user can logout, when already signed in to the website
- user has the remember-me cookie, if elects to be remembered

PHP and Testing Conventions

- Per PHPUnit manual and PSR-12 standard: "*Method names MUST be declared in camelCase*".
- I have followed Test naming conventions in naming my tests in camelCase.
- There was an issue with one Feature test failing, which I was not expecting to fail… why? I researched the unexpected behaviour on stack overflow - reason: the config was cached.



```
public function testUserCanLoginWithCorrectCredentials(): void
{
    $user = factory( class: User::class)->create([
        'password' => Hash::make($password = 'password')
    ]);

    $response = $this->post( uri: '/login', [
        'email' => $user->email,
        'password' => $password,
        'first_name' => $user->first_name,
        'last_name' => $user->last_name,

    ]);

    $response->assertRedirect( uri: '/home');
    $this->assertAuthenticatedAs($user);
}
```

```
Linna-Trieu-SP/quiz-manager on  auth-login-and-logout [!] via ● v12.10.0 via  v7.3.11
➜ make test ARGS="--filter testUserCanLoginWithCorrectCredentials"
php artisan test --filter testUserCanLoginWithCorrectCredentials

  FAIL  Tests\Feature\LoginTest
  ✕ user can login with correct credentials

  Tests:  1 failed

  Response status code [500] is not a redirect status code. Failed asserting that false is true.

  at tests/Feature/Auth/LoginTest.php:49
     45|             'last_name' => $user->last_name,
     46|
     47|         ]);
     48|
  >  49|         $response->assertRedirect('/home');
```

stackoverflow.com/questions/46325790/phpunit-expected-status-code-200-b...

1 This works, except in cases where a Middleware is actually part of your tests. – David Lartey Mar 26 '19 at 15:25

add a comment

29

Solution: When you cached your configuration files you can resolve this issue by running `php artisan config:clear`.

Explanation: The reason why this can resolve the issue is that PHPUnit will use the cached configuration values instead of the variables defined in your testing environment. As a result, the `APP_ENV` is not set to testing, and the `VerifyCsrfTokenMiddleware` will throw a `TokenMismatchException` (Status code 419).

It won't throw this exception when the `APP_ENV` is set to testing since the `handle` method of `VerifyCsrfTokenMiddleware` checks if you are running unit tests with `$this->runningUnitTests()`.

It is recommended not to cache your configuration in your development environment. When you need to cache your configuration in the environment where you are also running unit tests you could clear your cache manually in your `TestCase.php`:

```
use Illuminate\Support\Facades\Artisan;

public function createApplication()
{
    ....
    Artisan::call('config:clear')
    ....
}
```

Example based on https://github.com/laravel/framework/issues/13374#issuecomment-239600163

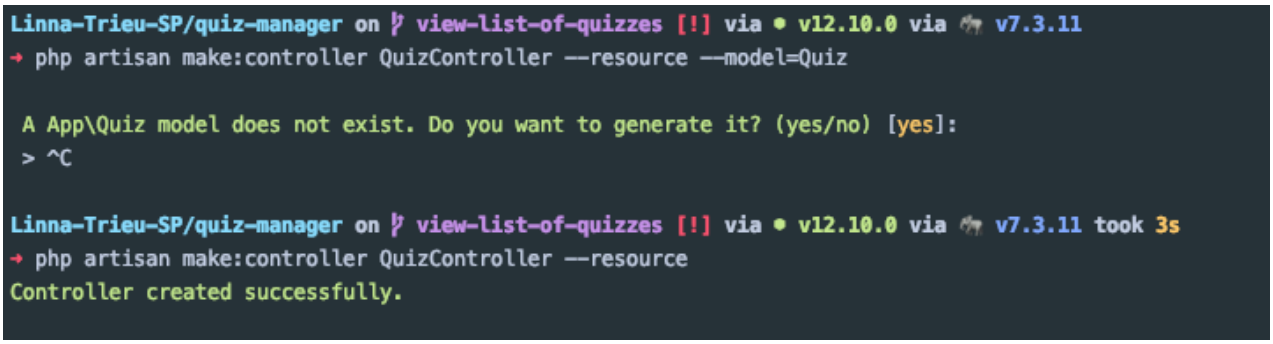
Read more about configuration caching in this blog post or the Laravel documentation.

share edit follow edited Jun 19 at 9:22 answered Jan 16 '18 at 12:41 piscator 4,563 ● 3 ● 15 ● 27

FEATURE: A user can view the list of quizzes

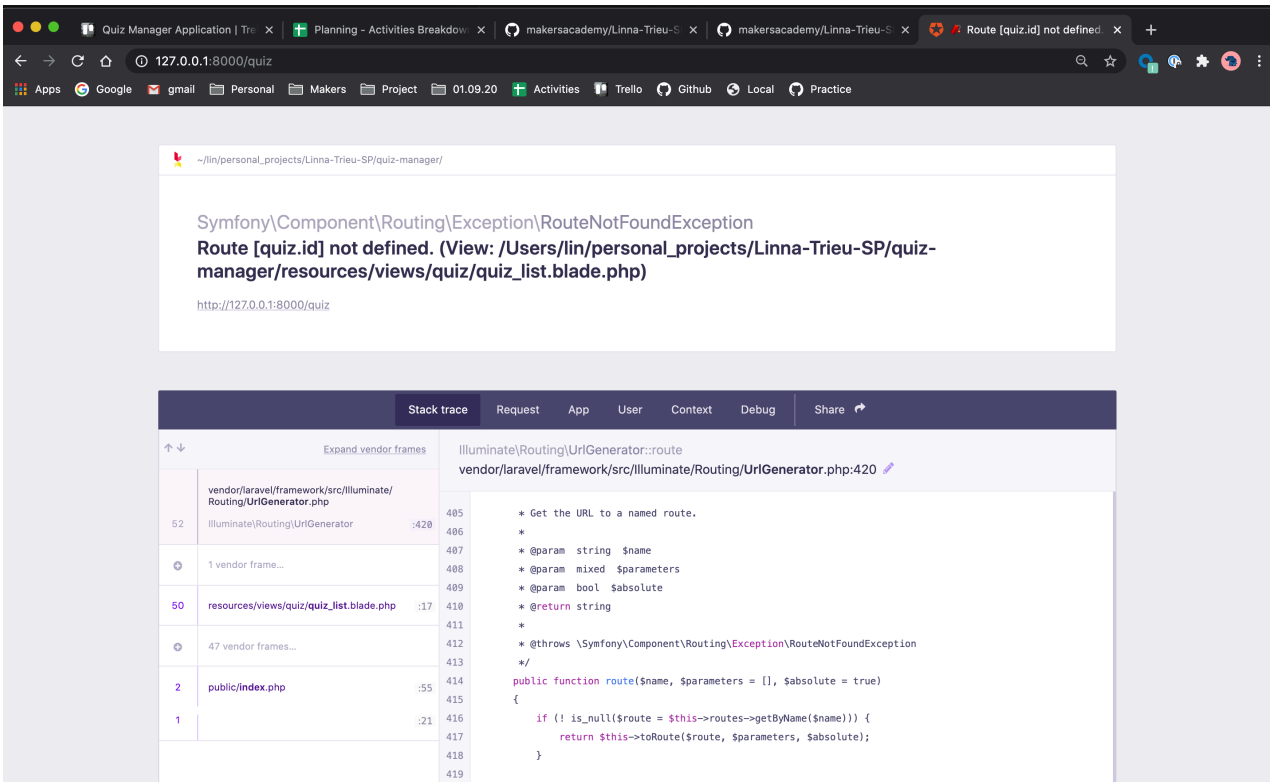
- **Create Quiz table**
- Migration to create new Quiz table.
- It's good practice to ensure consistency in naming conventions.
  - I made the decision to keep singular names for my Objects, instead of plurals. E.g. Quiz instead of Quizzes, User instead of Users
  - This should be consistent in naming convention across the code, between model objects and the db table name!
  - Ensures maintainability and easier to code with - make a code decision and stick with it.

- **Added Quiz model**
- Added Quiz factory
- Added Quiz seeders
- Create Quiz controller
- For some reason php artisan cli tool (or the Application) does not recognise my model Quiz as a valid model….. concerning. Moving on from the issue (but noting this) as I am not 100% if this is an issue yet.



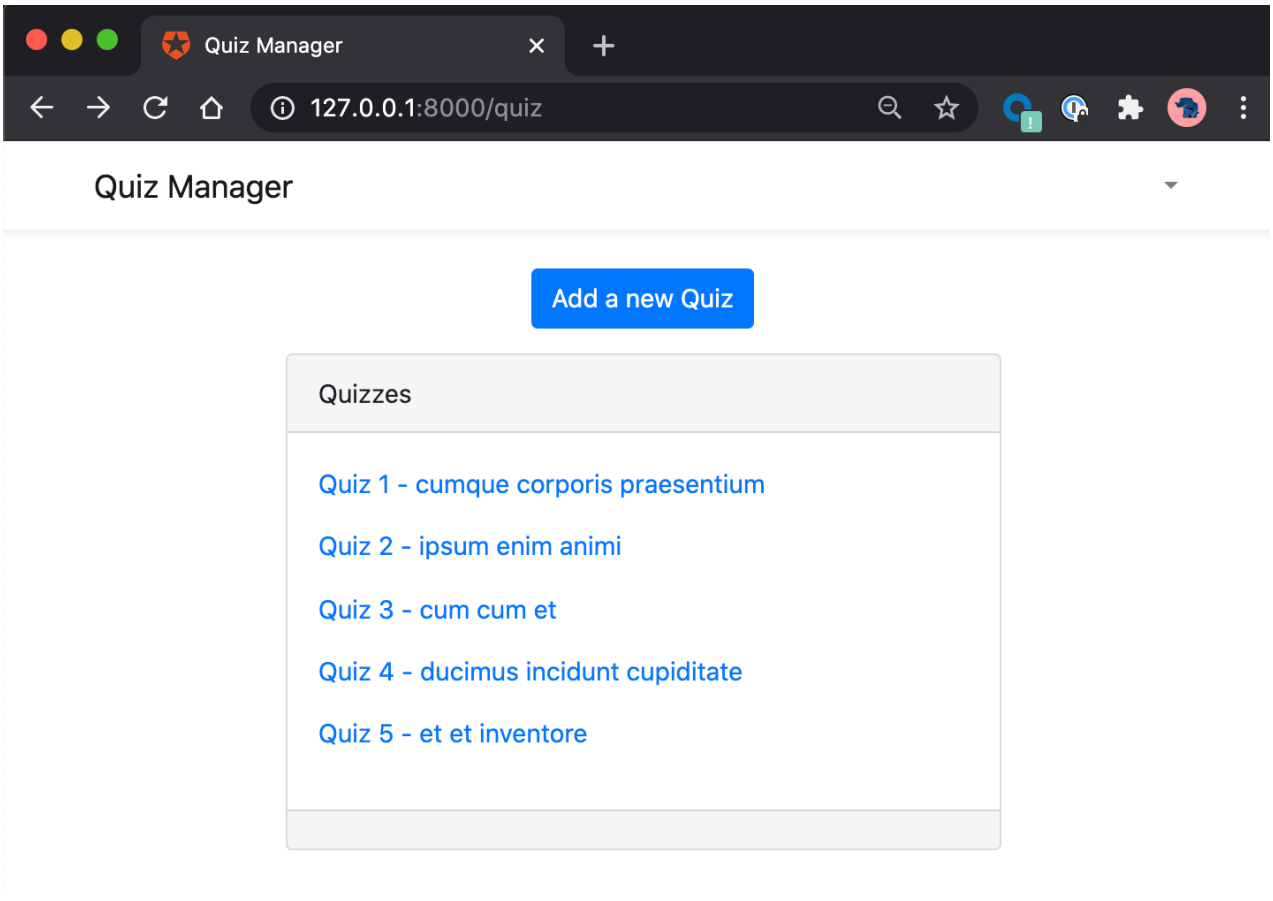
- Created the Quiz List page with BLADE 🎉
- Added new HTTP GET route for the Quiz List page

- Troubleshooting the connection with view-route-controller…issue with the variable name. Think it is just a typo.



- Fixed 🎉 I can now see a View of the Quiz List page!!

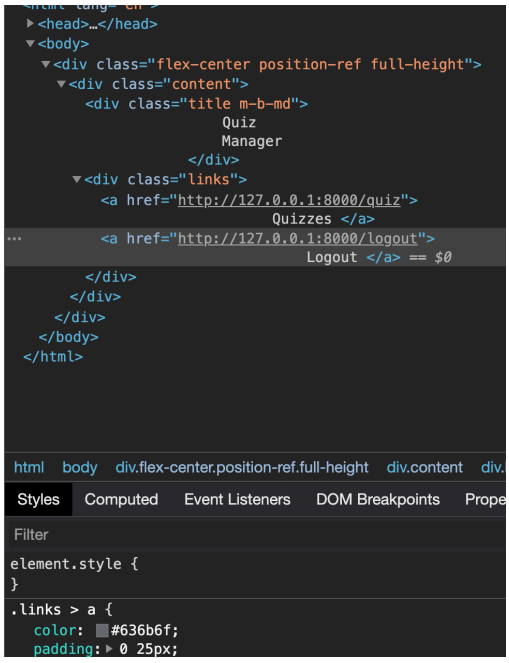
- End of day 2 progress!! ✅
- Website so far

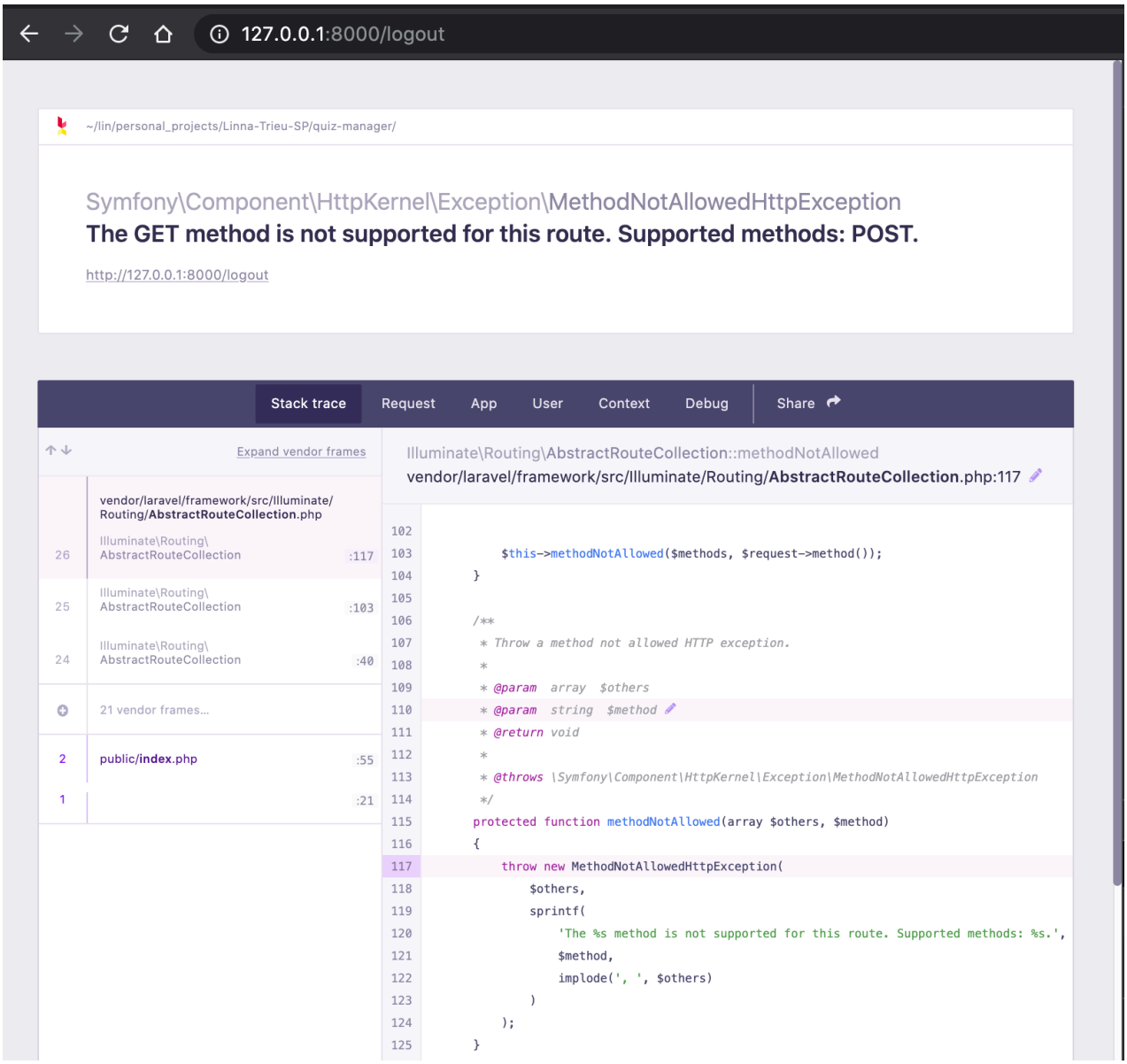


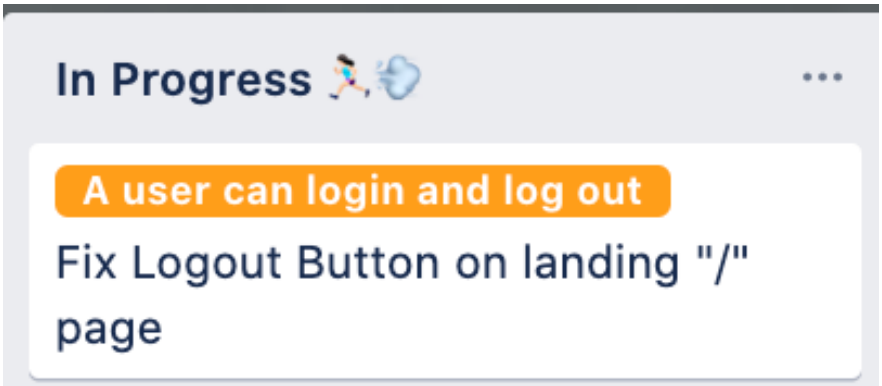
START OF DAY 3 - 10/09/20

- **Agile Ways of Working - Sprint Planning**
- * Reviewed the Trello board, pulled new tickets from backlog into the current sprint, and identified the overarching Goals & Objectives for the Sprint.
- * Thoughts & Observations: there is lots of tickets in the 'Ready for Testing' column. Immediate focus is to move tickets from 'left to right' of the board as quickly as possible.
- * Will spend time this morning focused on testing and moving tickets into 'Done'
- * Then will move onto the tickets currently In Progress, and finally pick up new tickets in the To Do column.

- Testing 🔬
- **Feature: A user can log-in and log-out**
- Bugs identified:
    1. Logout button on the landing page "/' does not work. When selected the user is taken to the correct endpoint "logout" but shown an error page. => this should be fixed, blocking issue




127.0.0.1:8000/logout
~/lin/personal_projects/Linna-Trieu-SP/quiz-manager/
Symfony\Component\HttpKernel\Exception\MethodNotAllowedHttpException
The GET method is not supported for this route. Supported methods: POST.
http://127.0.0.1:8000/logout
Stack trace
Request
App
User
Context
Debug
Share
Expand vendor frames
vendor/laravel/framework/src/Illuminate/Routing/AbstractRouteCollection.php
26 Illuminate\Routing\AbstractRouteCollection :117
25 Illuminate\Routing\AbstractRouteCollection :103
24 Illuminate\Routing\AbstractRouteCollection :40
21 vendor frames...
2 public/index.php :55
1 :21
Illuminate\Routing\AbstractRouteCollection::methodNotAllowed
vendor/laravel/framework/src/Illuminate/Routing/AbstractRouteCollection.php:117
$this->methodNotAllowed($methods, $request->method());
}
/**
* Throw a method not allowed HTTP exception.
*
* @param array $others
* @param string $method
* @return void
*
* @throws \Symfony\Component\HttpKernel\Exception\MethodNotAllowedHttpException
*/
protected function methodNotAllowed(array $others, $method)
{
throw new MethodNotAllowedHttpException(
$others,
sprintf(
'The %s method is not supported for this route. Supported methods: %s.',
$method,
implode(', ', $others)
)
);
}

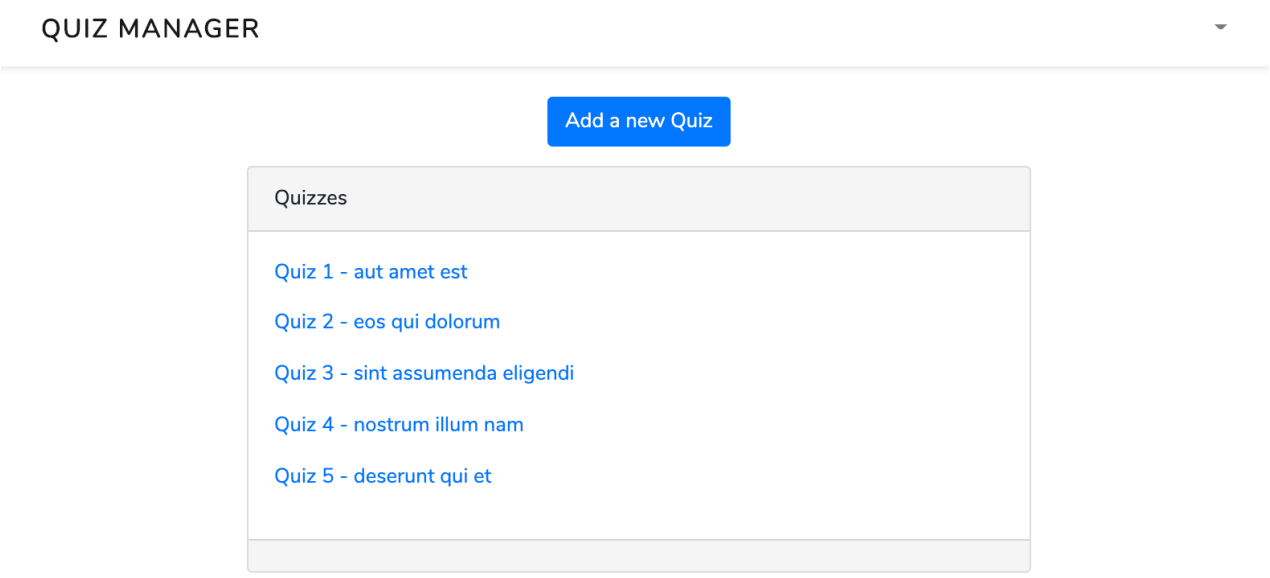


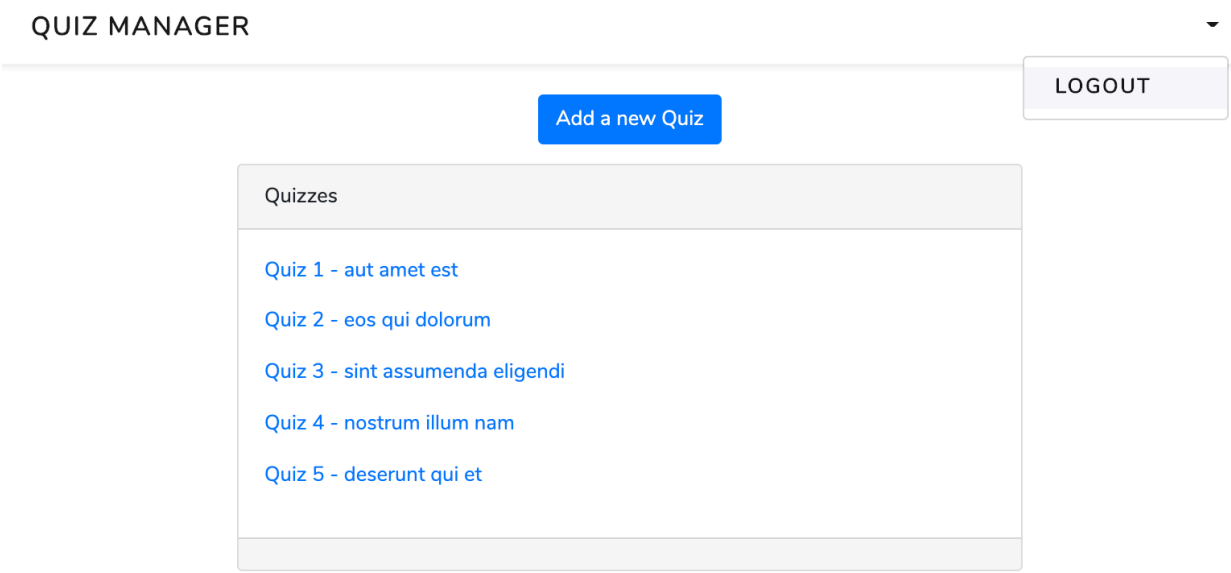
- Fixed Issue and moved ticket into ‘Done’.
  - I googled the error message
  - I submitted a GET request on the ‘logout’ route instead of a POST request.
  - To fix, I used jQuery to submit an on click event for when the logout button is clicked, make a POST action to the logout route
  - Fixed Logout functionality on the landing page🎉

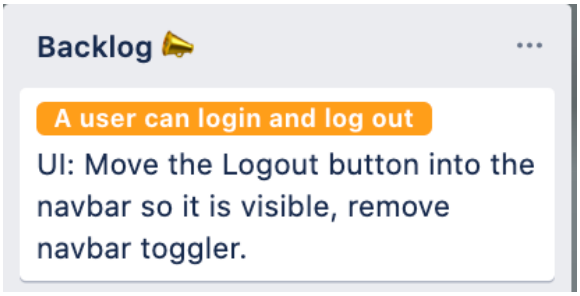
```
            @auth
                <a href="{{ url('quiz') }}"> View Quizzes </a>
                <a href="{{ route('logout') }}" onclick="event.preventDefault();document.getElementById('logout-form').submit();">{{ __('Logout') }}</a>
                <form id="logout-form" action="{{ route('logout') }}" method="POST" class="d-none">@csrf</form>
            @endauth
        </div>
    </div>
</div>
```

2. On other pages, the Logout option is functional and works. But it is difficult for a user to find - bad UX design. The Logout option is within a navbar drop down list - but this provides no value and can confuse the UX. Not immediately apparent where a user can go to logout themselves out.
    - This should be fixed, but is not a priority as the logout button is still working. Front end and UX needs to be updated. Created a new ticket in backlog.

- **Outcome: Feature "A user can log-in and log-out" = Done** ✅🎉




QUIZ MANAGER
LOGOUT
Add a new Quiz
Quizzes
Quiz 1 - aut amet est
Quiz 2 - eos qui dolorum
Quiz 3 - sint assumenda eligendi
Quiz 4 - nostrum illum nam
Quiz 5 - deserunt qui et


Backlog
A user can login and log out
UI: Move the Logout button into the navbar so it is visible, remove navbar toggler.

- ## Feature: A user can view answers to questions

- This feature requires planning and coding decisions: The logic is more complex with this feature. Previous to this the website has been static, and only using HTML and CSS on the front-end.
- Option: Server side code or Client Side Code ?

- **Desired Behaviour**
- NOTE: this is not a matter of security. As all edit and view users have 'permission' to see answers anyway. This is merely a matter of the default behaviour (for either user!) They both can access the answers so it is not a issue to have the answer still visible in the DOM (ie. if the page is inspected - the user will be able to see the answer key). Thus jQuery option seems good to proceed with!
- With this, I need to handle logic that deals with 'events' and interactivity. i.e. by default the answers to the quiz will not be displayed on Quiz Manager. However if a user wishes to see the answer (and have the relevant permissions to do so - though this is not part of the MVP scope yet), they can choose to reveal the answers.

- Based on my initial wireframes my initial design decision was to hide answer by default with a button 'Reveal Answers'. If the button was clicked by a user, the answers would display on the same page, immediately below its corresponding question.

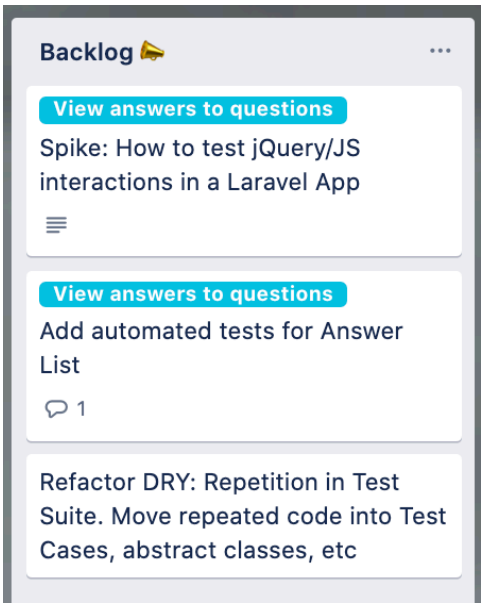
- **Outcome:**
- This requires interactivity, and therefore JavaScript. In my opinion, the easiest way to achieve the desired behaviour is using jQuery, a popular JS library. As I have previous experience with jQuery and under immediate project time constraints, using a javascript library (instead of vanilla javascript), would likely be faster to write code for.
- With jQuery I handled the logic to hide the answers by default, when a user visits the '/quiz' endpoint. But when requested, the answers are displayed.

- I could have otherwise proceeded with a number of other JavaScript libraries.
- Was there a SERVER-SIDE CODE option?
- > Future feature (if more time): Added a button which shows the Options? But would you want to hide the options by default? Perhaps not.

- **Tests**

- Couldn't figure out how to test jQuery / JS functionality - particularly as this feature is dependent on the user interactivity and the hide/show function.
- I created a new ticket to spike (investigate) how to test these types of features. It is likely that PHPUnit is not enough, I may need to find a PHP Test Suite Library that tests browser interactions, for example using Selenium Driver[. Dusk?](https://laravel.com/docs/7.x/dusk)

- I performed Manual testing on the browser to verify the work done. I am happy the Product Feature goal has been met.
- Automated testing needs to be added.
- To move on and proceed with developing the next product feature, I created the Spike ticket and added a note the Automated Test ticket is blocked by the spike. Moved these tickets from 'In Progress' into the 'Backlog' column, and moved on.



- **MVP => DONE** ✅

DAY 4 - 11/09/20

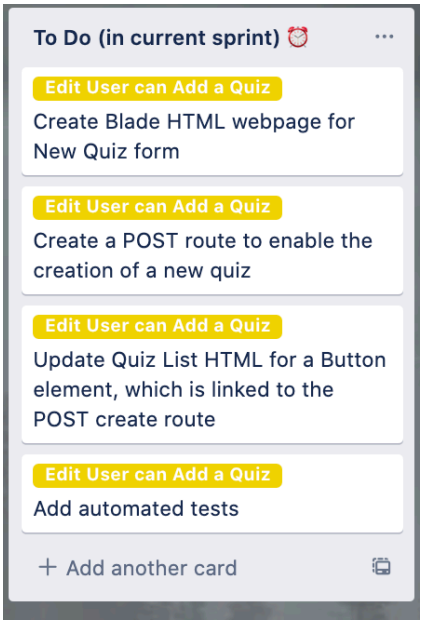
Feature: Implement restricted user permissions, so that a restricted user can only see quiz questions

- Add Seed Data for Users
- The application is configured with three test accounts, with varying levels of permissions.
- Where does the logic sits to determine what can/can't be showed to a restricted user - BE/FE, Server/Client, MVC?
- Logically it seems sensible to have this logic sit in the Back-End, specifically the controller.
- With SOLID and separation of concerns best practice, the front end ('View in MVC) should not be responsible for too much. This logic should sit in the back-end to determine the user permission (C in MVC).
- Additionally handling this logic on the client-side would be of higher security concern. It would be easy to manipulate the client-side logic, and bypass the user permissions.

- Considerations:
  - Implement user permission system/control flow in the back end controllers.
  - The views/front end should not have handle any user permission logic. The filtered information (post control flow, logic handling) should be only passed on to the views (for it to display).

Feature: An edit user can add a quiz

- Planned the user story, breaking down the feature into logical tickets.



- I am following RESTful best practice with naming conventions of resources. e.g. laravel docs & REST API

Laravel

Prologue
Getting Started
Architecture Concepts
The Basics
Routing
Middleware
CSRF Protection
Controllers
Requests
Responses
Views
Session

of these actions, including notes informing you of the HTTP verbs and URIs they handle.

Actions Handled By Resource Controller

Verb	URI	Action	Route Name
GET	`/photos`	index	photos.index
GET	`/photos/create`	create	photos.create
POST	`/photos`	store	photos.store
GET	`/photos/{photo}`	show	photos.show
GET	`/photos/{photo}/edit`	edit	photos.edit
PUT/PATCH	`/photos/{photo}`	update	photos.update
DELETE	`/photos/{photo}`	destroy	photos.destroy

Specifying The Resource Model

If you are using route model binding and would like the resource controller's methods

- Added a new route to create a Quiz = `/quiz/create`
- Created a new blade HTML template for the new quiz form.
- Added a button on the existing Quiz List page which would link to the new quiz form.
- Created a QuizController method ‘create’ to handling the creation of a new Quiz and save into the database. Once created, the user should be re-directed to the Quiz List page, with their new quiz displayed.
- Added auth checks as only an Edit user has the permissions to add a quiz
- Added automated tests to validate this.

Feature ✓

Feature: An edit user can delete a quiz

- Planned the product feature, breaking down the feature into logical tickets.

Context/background

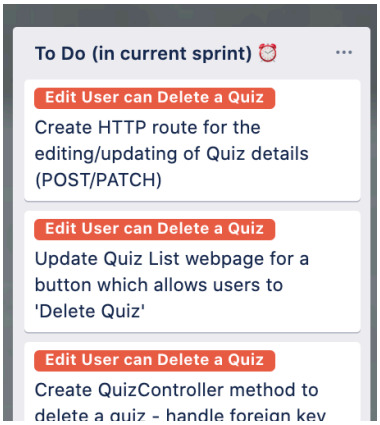
- As declared in my initial project design doc (business requirements and assumptions section), I made the assumption that when a user deletes a quiz, this also means they delete all of its corresponding questions and answers. This assumption seemed reasonable as I also made the assumption that every question belonged to a quiz (i.e. a single question couldn't exist by itself, it was always part of a quiz).
- This business assumption was already implemented during the database design phase of the project. In constructing the database and tables, the Questions table has a foreign key with the Quiz table in its quiz_id field, as a question has a many-to-one relationship with a quiz.

Options

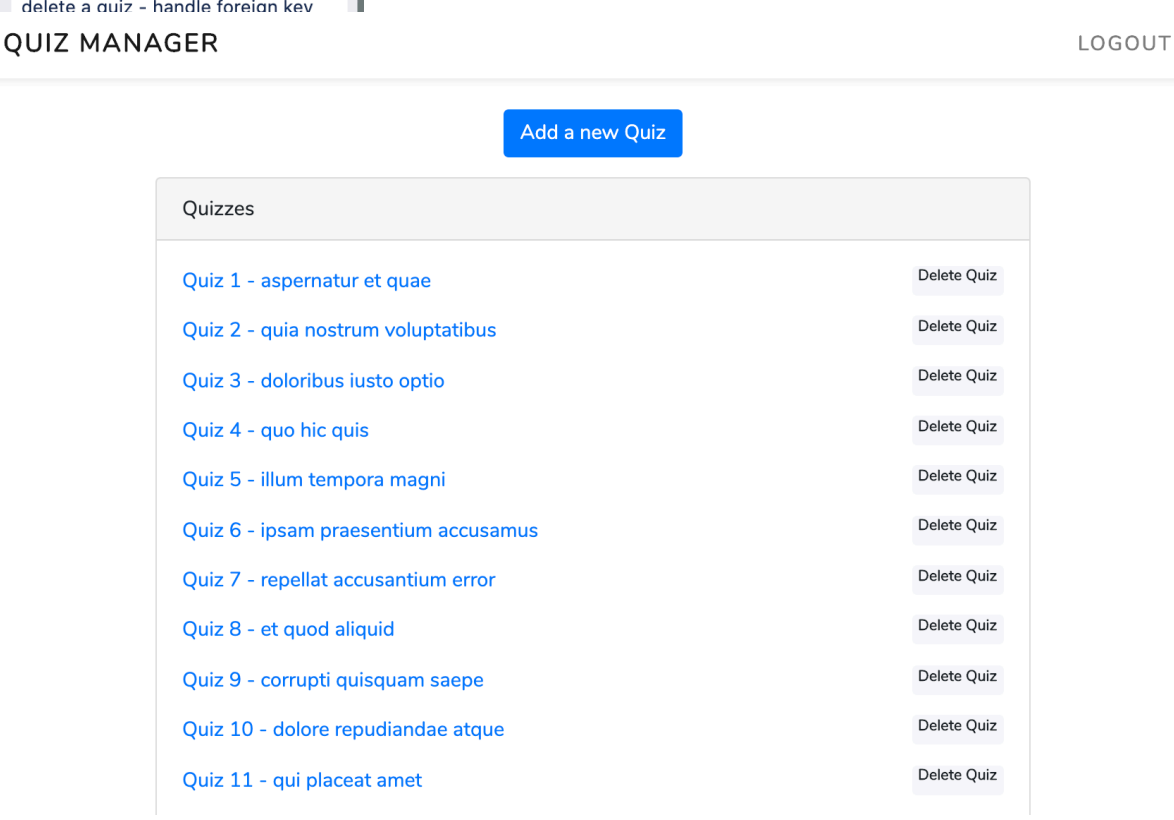
- Can delete a resource in many ways.
- Using jQuery as an onClick event or using the HTTP method verbs (delete), etc. Elected to go with HTTP verb in order to keep it simple as possible (and consistent with the other CRUD actions so far).

1. Implement front end design as with the initial wireframes

- Updated the Quiz List webpage for a button alongside the quiz itself to delete.
- The design of this UI gave me some doubt as for the UX. A user could accidentally click the button for an incorrect quiz, if they could not visually align the quiz to the correct button. And this also serves as bad UX as it makes the users' job difficult for them.

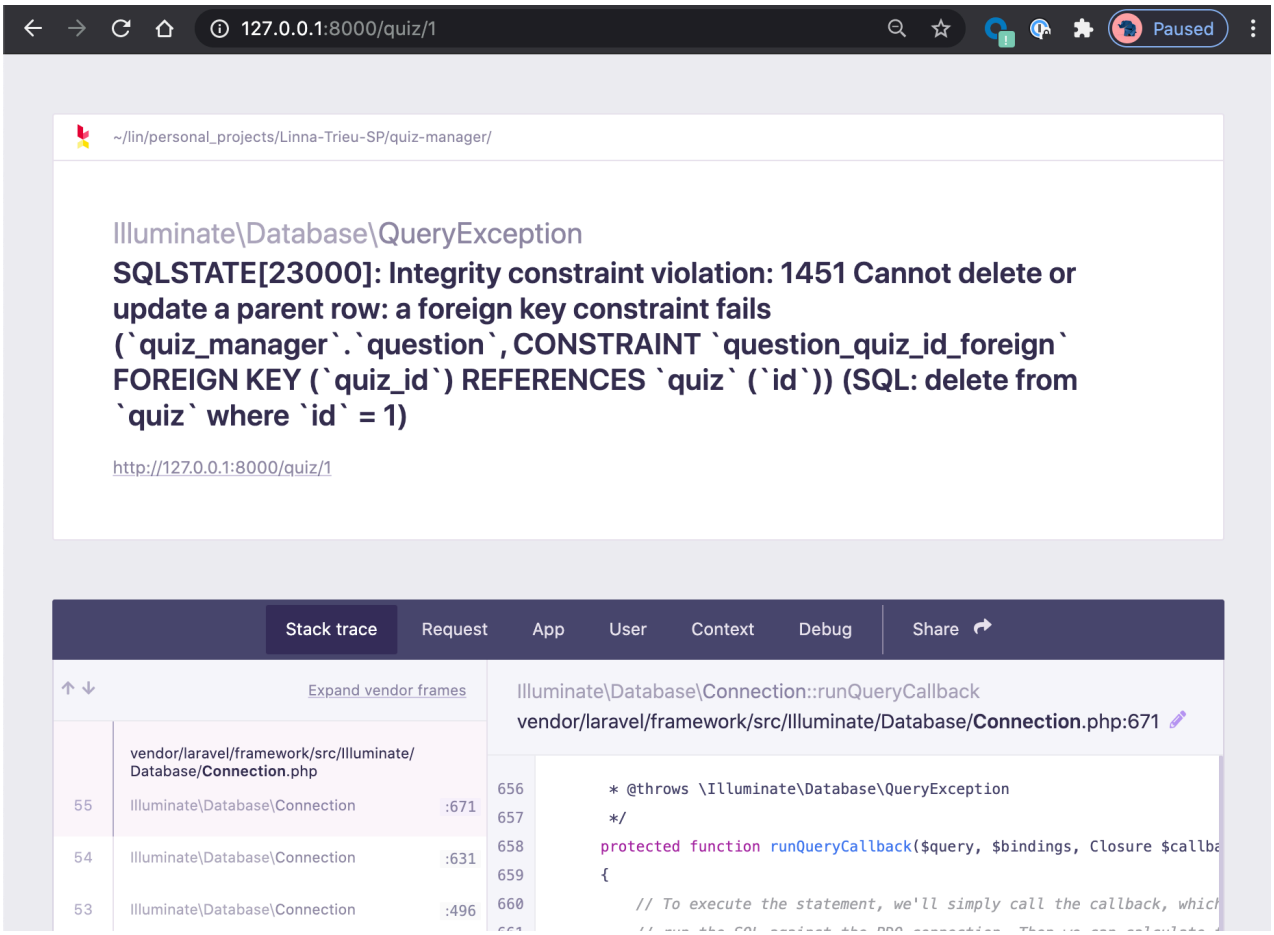


- Additionally, would a user want to delete a quiz off-the-bat from a cursory look at the title? They might want to. Though some users would likely also want to see the questions inside the quiz before they go ahead and delete the entire quiz (and therefore the corresponding questions).

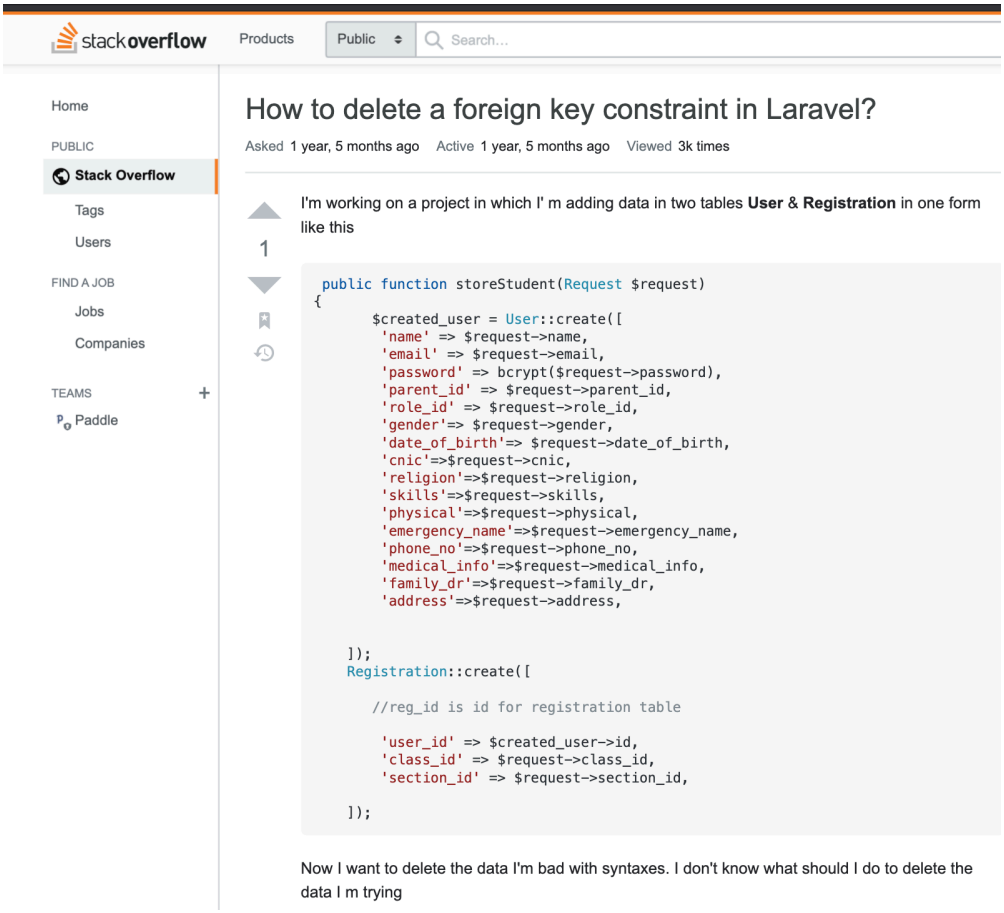


2. I created a new 'DELETE' route which was invoked when a user selected the 'Delete Quiz' button. This triggered a QuizController method 'destroy' to remove the quiz from the db.

- However when the button was selected an error occurred: "*integrity constraint violation foreign key constraint*"



- 3. Debugging….And a fix! 🎉
- I researched online for resources to debug. Example screenshot below.



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How to delete a foreign key constraint in Laravel?

Asked 1 year, 5 months ago Active 1 year, 5 months ago Viewed 3k times

1

I'm working on a project in which I' m adding data in two tables **User** & **Registration** in one form like this

```
 public function storeStudent(Request $request)
{
       $created_user = User::create([
        'name' => $request->name,
        'email' => $request->email,
        'password' => bcrypt($request->password),
        'parent_id' => $request->parent_id,
        'role_id' => $request->role_id,
        'gender'=> $request->gender,
        'date_of_birth'=> $request->date_of_birth,
        'cnic'=>$request->cnic,
        'religion'=>$request->religion,
        'skills'=>$request->skills,
        'physical'=>$request->physical,
        'emergency_name'=>$request->emergency_name,
        'phone_no'=>$request->phone_no,
        'medical_info'=>$request->medical_info,
        'family_dr'=>$request->family_dr,
        'address'=>$request->address,


    ]);
    Registration::create([

       //reg_id is id for registration table

        'user_id' => $created_user->id,
        'class_id' => $request->class_id,
        'section_id' => $request->section_id,

    ]);
```

Now I want to delete the data I'm bad with syntaxes. I don't know what should I do to delete the data I m trying

1 Answer

Active | Oldest | Votes

2

```
$table->integer('user_id')->unsigned();
$table->foreign('user_id')->references('id')->on('users')->onDelete('cascade');
```

Using ->onDelete('cascade') works for me :)

share edit follow

answered Apr 14 '19 at 18:39

Abdul Rehman

99 ● 1 ● 13

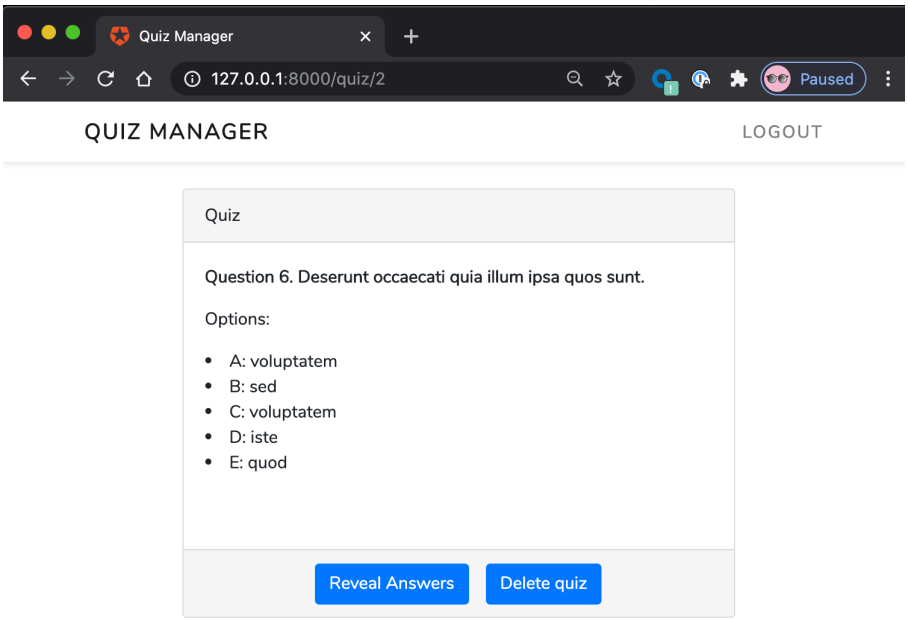
add a comment

- I updated the migration so that the foreign key deleted on cascade!
- Manually tested and the Quiz deleted!
- I checked the db to confirm the questions also deleted => the feature works! ☑️🎈

Now that the Delete feature is functional => time for refactoring and cleanup

- I don't like the Delete Quiz option on the Quiz List page. I think a better UX would be to move the button on the individual Quiz page.
- In this next iteration, I will move the Delete functionality to the Quiz page and see how it feels from a UX perspective.
- The functionality should not have changed at all.

- Experimented with design option and I preferred this design.
  - Decided to implement this approach instead, with the Delete Quiz option only available on the specific quiz page itself. e.g. at endpoint `/quiz/2' instead of '/quiz'. I removed the previous Delete code button from the Quiz List webpage.

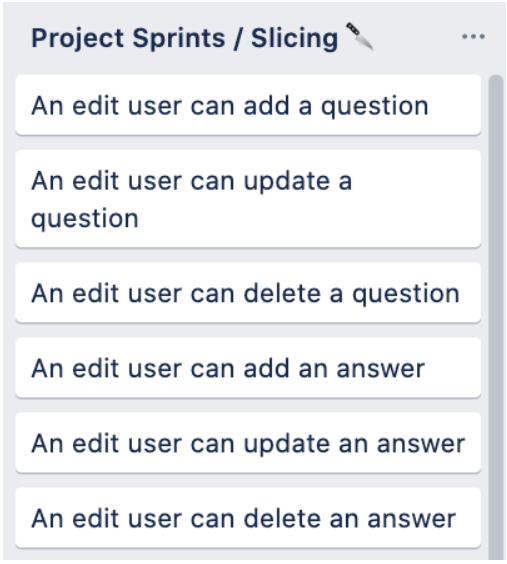


- Added automated tests
  - Relied on the `assertDatatbase` contains
  - Not sure if using the DB in a feature test is a code smell or best practice? Included for now as it seemed like a good way to validate if the delete was working or not.

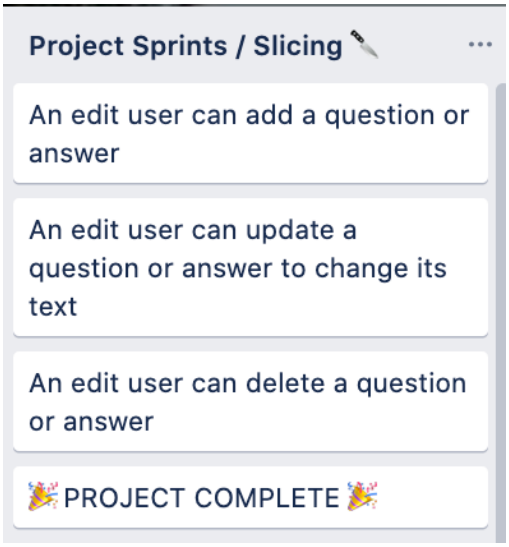
- Feature complete ✅🎉 Moving on ….

DAY 4, 14/09/20

- Re-slicing the remaining User Stories as I learn more about the implementation



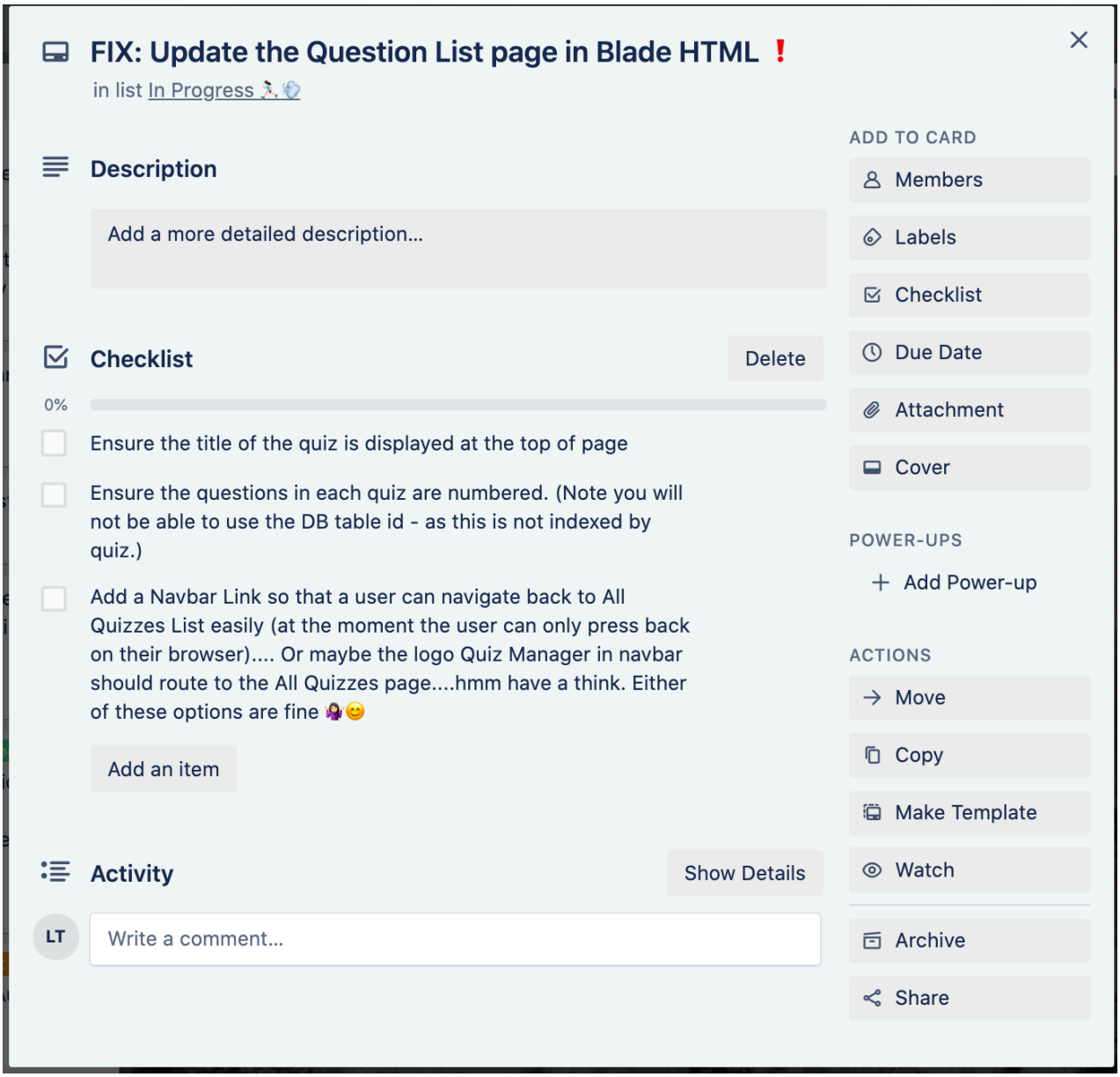
- There are 6 remaining user stories
- But with the current implementation, it doesn't make sense for me to use this arbitrary split between questions and answers.
- The user's functionality on editing either a question or an answer will likely be done in the same manner from a front end and back end perspective.
- I decided to re-evaluate these slices and compress them into 3 remaining slices.



- In the daily sprint planning session, I will create the tickets required in the backlog for these slices.
- Slow morning today. Yikes…. I need to get a kick on with the actual coding.
- This morning I've spent a lot of time in planning. I assessed the priorities of the 'Tech Debt' column and decide what tickets (if any) are blocking.
- Based on this, I decided to bring in a number of tickets into the current sprint as they were critical from a user requirement perspective. The remaining tickets were assessed as nice to have, so stayed in the tech debt column to be revisited if there's time.
- * Next - I continued with the planning theme to assess the next (and final 3) product features. These final slices needed to be planned and broken down into distinct tickets.
- * On the questions and answers side I am a bit unfamiliar with these so I need to revisit the User Requirements doc.

- Right…. I've gone through the user requirements doc. I have some concerns on implementation now…Especially on the re-indexation.
  - How can I re-index the answers?
  - Answers are currently part of the questions table field, so it'll be difficult to index these columns based on if someone deleted option D in the question…yikes. This might be something I might have to miss from the brief.
  - But at least re-reviewing the Requirements Doc has allowed me to prioritise a ticket from the Tech Debt column. I've now brought it into 'To Do'. Before this, I had put off the indexation as a thing to do later.

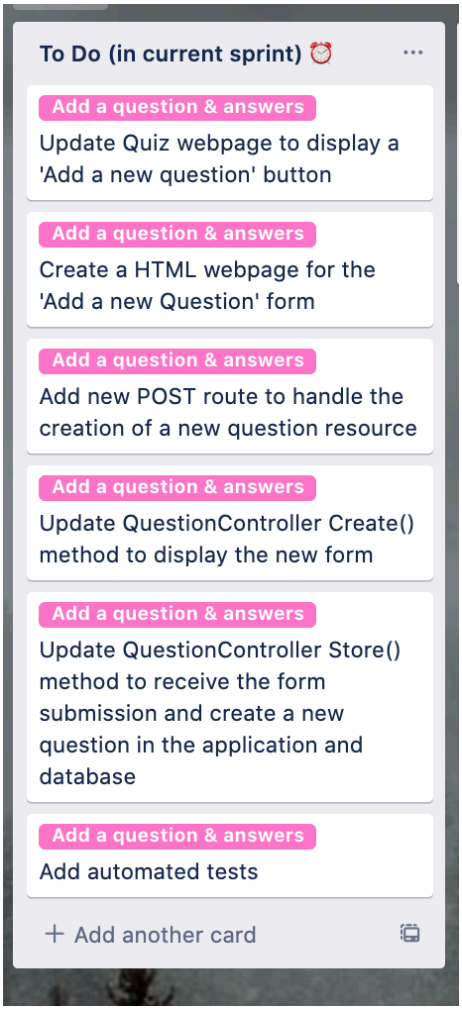
- Example ticket in the Tech Debt column: This one is a collection of bugs to fix on the front end noted through other manual testing as things to fix or consider.



- Other than this, from a re-read of the Brief and User Requirements, no other surprises. The CRUD actions on questions and answers seem ok - and I've broken this down into distinct tickets and added on the JIRA board to track. Ready to get on with the coding, finally (it's midday and I haven't started any coding yet)….

- Still a bit of a UI concern as to handle the creation of a quiz with the handling of a question/answer (the two will have to be separate screens to click through). But I just have to park that worry and get on with it. Otherwise I really won't finish this project in the time available.

- Not limited to these JIRA tickets, but it gives a good structure for me to start with:

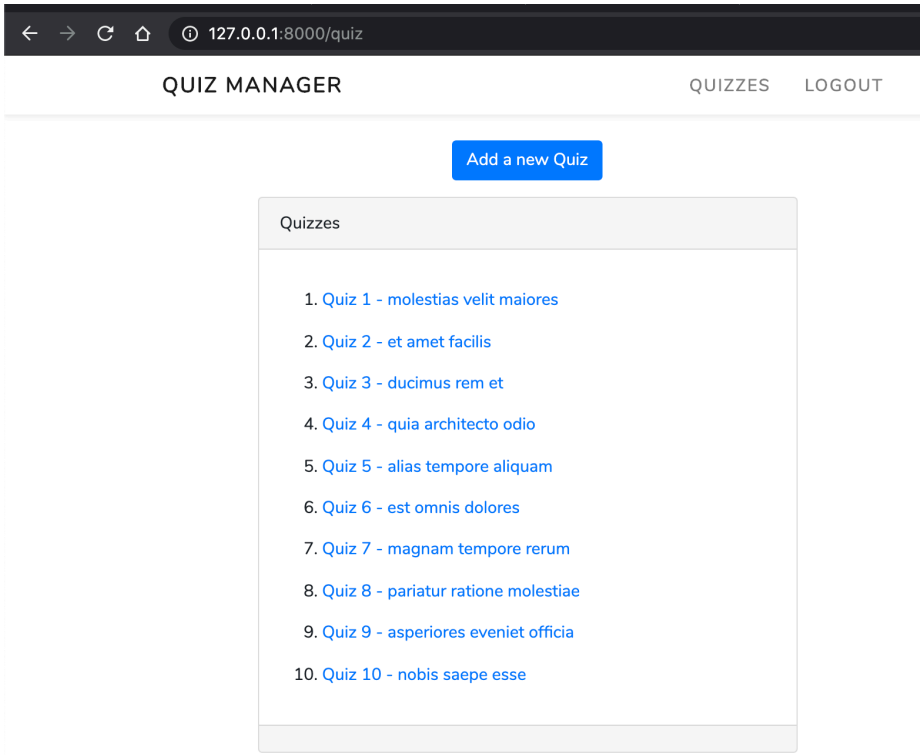


- ## Tech Debt and Issues

- ## Feature: The quizzes are listed

- I don't know much about the listing of quizzes or questions
- While reading through the project brief, I was unclear about the following;
  - "1. From the brief; "Add and delete questions at any point in the numerical sequence of a quiz (which may cause the questions to be re-numbered)""
  - The brief was vague and did not stipulate how it should be done - so I can choose however I want to implement this product feature.
  - The database IDs will be set by the DB and won't change, so they can't be used for ordering purposes.
  - Presumably each question has a specific index and order.
  - If the order is important, it'll need to be stored in the DB as a separate property presumably.

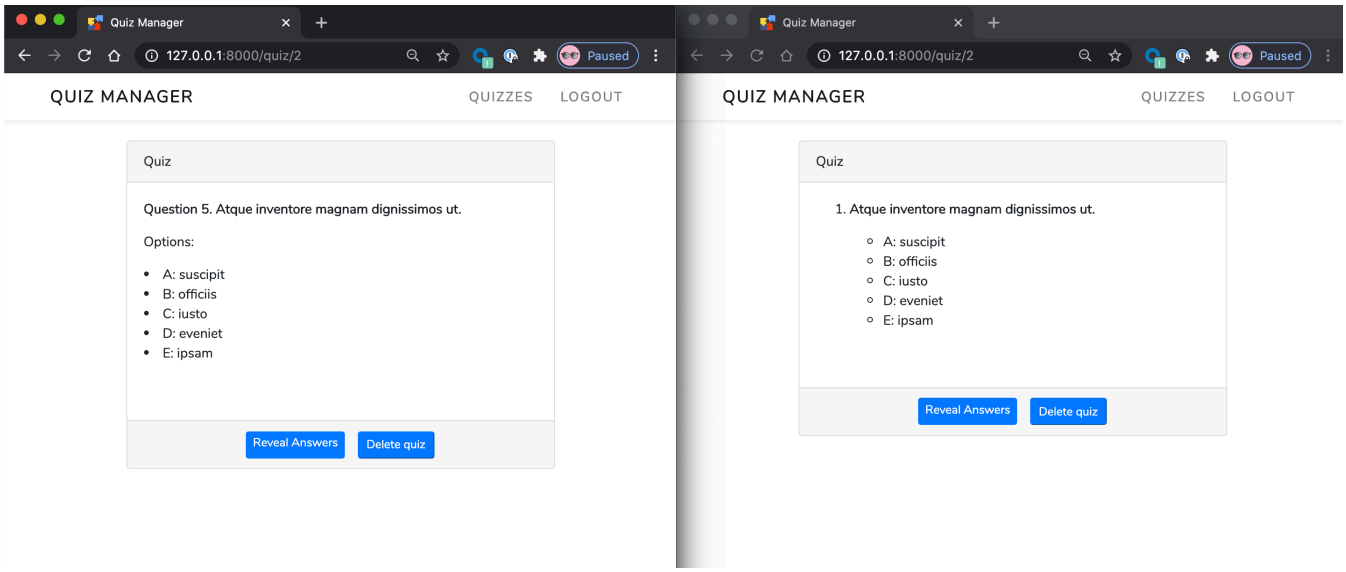
- **Starting with the Quiz List**
  - Initially starting with a simple option…can I do this indexation on the front end?
  - Using HTML ordered lists and lists tags ! Does this work….



- Looks like Success! So I'll look into this more if this actually works for my purpose and refactor….
- Removed the database id from the view - the user does not need to know the DB id of the quiz

- **Feature: The questions are listed**
- Going through design iterations now for UX…. changes:
  - Indexing the questions listed in a quiz
  - Removed the database id of question from the view
  - Removed the 'options' text - seemed explicit already so no need to state for the user.
  - Had to make the multiple-choice options as an unordered list (hence the default bullet points have changed to an outline). The indentation looks off…. something to hold and possible fix later.

- Before & After:

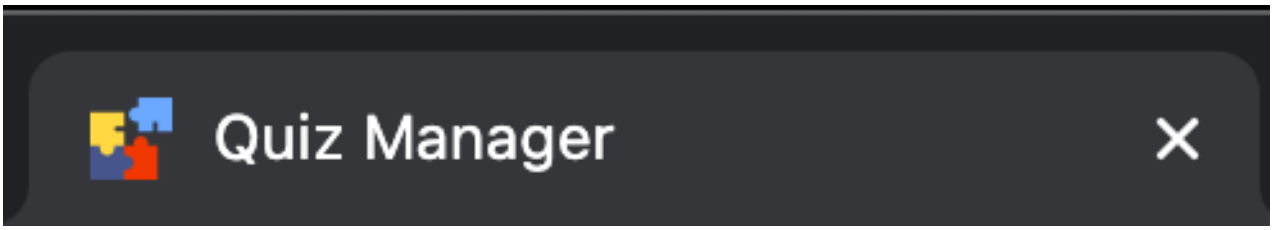


- For now, the indexation product feature is fixed on quizzes and questions 🎉 So I'm moving this ticket into Done.
- Happy with this solution as it was very fast to implement and simple. It did not involve any complex logic, which I believe is good as it keeps the application uncomplicated (if it doesn't need to be, the implementation should be as simple as possible for future engineers and development).
- I also discovered that the HTML 'ol' tag has a type attribute - which allows me to also order the list in other methods - ie. for the answers list, I have been able to list by alphabet 🎉
- Not sure about tests in this area; as not sure if the indexation is an important feature; or how I would test this. Arguably I think I don't need tests as this ordering purely relies on HTML and the ordered list `<ol>` element. I am happy to rely on the HTML ol element to correctly order the items, upon CRUD actions.

- **Feature done ✅**

Feature: Update the Favicon for the Application

- Not essential but current favicon was a generic one provided by the Laravel Scaffold
- Easier to update the favicon image than the remove it, so I found an appropriate (open source) image from online and saved the image in the public resources folder.
- Relinked the favicon in the master blade template as a puzzle piece icon - for use as the Quiz Manager logo (for now).

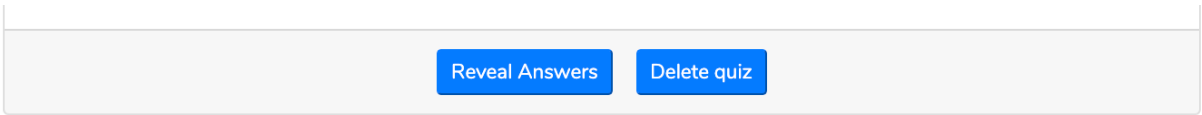


- **Inconsistency in UX and behaviour**. The 'Reveal Answers' option button was different to the 'Delete Quiz ' button.

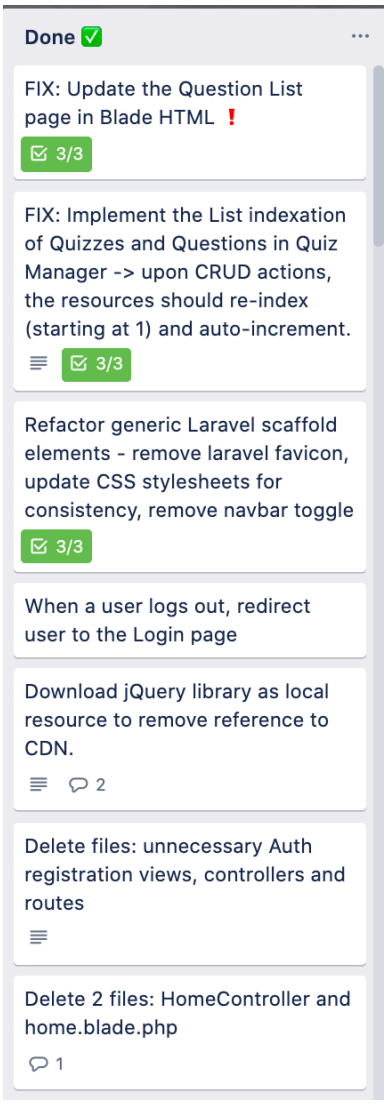
- The reveal answer button did not behave like a button. When the cursor was hovered over it, it becomes obvious the difference in behaviour between the two buttons in the footer.

- To be consistent, I investigated and noticed that one was a anchor tag and the other was a button tag. I converted both to be button tags for consistency.

- * As the quiz object has been passed from the Controller to the View, I can access the quiz['title] instead the blade template. Both now look and behave the same way for the end user.

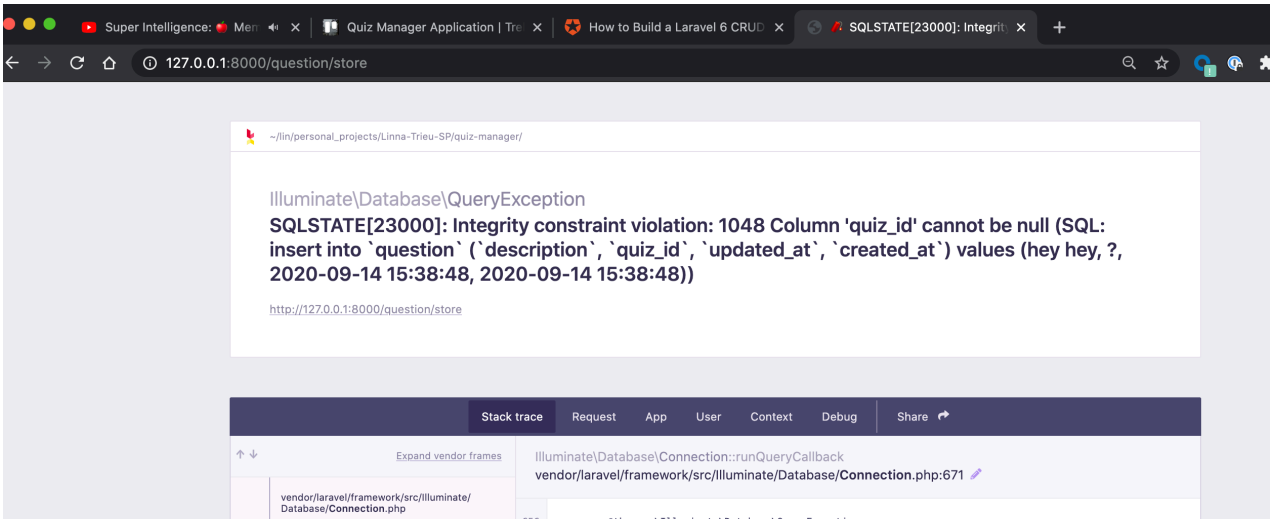


- **Observations:**
- Phew. That took much longer than anticipated…. It's 3PM on day 4, and I haven't worked on product features yet all day.
- I spent all day working on 'tech debt' tickets ; though I made good progress through a lot and crossed lots of items off (that needed to be done in any case). But I am a bit worried to have so much product features leftover….my aim was to have finished all product features asap, so I could have tomorrow for documentation. Doesn't look like it's going to happen at this rate but I will re-assess at the end of the day what that means for my plan.
- Need to spend the next 3 hours getting smashing through the last product features/user stories.
- Tickets that have been moved from 'TechDebt' into Done today…



Feature: An edit user can add a question and its answers

- **Context**: I made the assumption that a user cannot add a question without accompanying answers. Thus it stands to logic that a user must submit a question with its corresponding answers in order to create a question (in the application and db), otherwise it will fail.
- I added a 'Create Question' button on the Quiz webpage
- Ugh - running into foreign key issues and passing data back and forth between the controllers and views.
- I am trying to
  - Send quiz_id from Quiz page to controller@store method
  - Send quiz_id from controller@store method to Question page
- For some reason, somewhere in the MVC the chain breaks and the quiz id isn't being set/ passed along thus the database is throwing an error that the FK can't be null…. Why?! I need to go back to research and look into Laravel docs about passing info across two different controller and two views .



- In Logs:
  - *"[2020-09-14 15:38:48] local.ERROR: SQLSTATE[23000]: Integrity constraint violation: 1048 Column 'quiz_id' cannot be null (SQL: insert into `question` (`description`, `quiz_id`, `updated_at`, `created_at`) values (hey hey, ?, 2020-09-14 15:38:48, 2020-09-14 15:38:48))"*

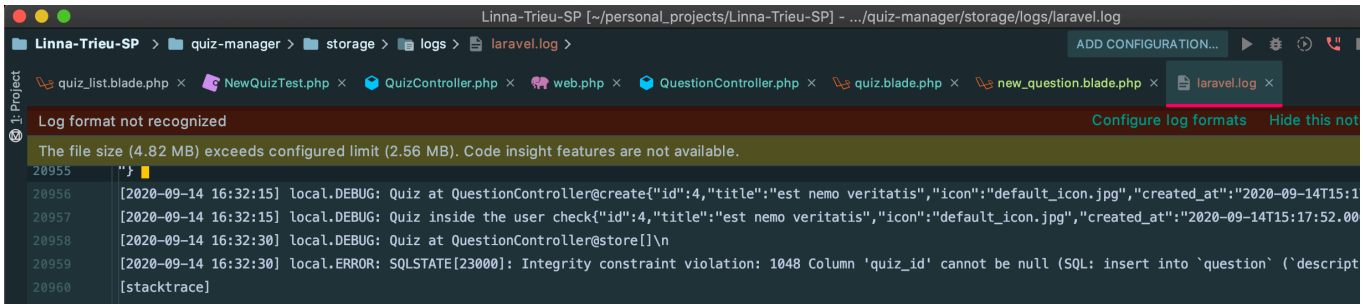
Debugging nightmare 😱 feeling in a pinch as I need to hack this and move on.

1. Check the application's routes - they look fine
2. Give dummy data to the missing FK. Validate that is the cause of the issue -> confirmed: it is. When quiz_id is given a value, the error is resolved.
3. Add logs to get an idea of the missing quiz_id data and why it's happening. quiz is a parameter passed into the store function, so log the argument to see what is actually coming back.
   - Aha! Logs prove that the Quiz object being passed in is empty and null
   - This means that my `store` method is not the cause of the issue.
   - The cause is upstream as the parameter $quiz object is empty.

- Yikes…. I'm still going and it's the last 30 mins of the day. Really haven't gotten far with this which is frustrating.

4. At what point in the chain does the Quiz object get lost?

- Create method looks good
- Why is the quiz object not getting passed to the store method?



- Oh no…. The cause was a mis-naming of the variable $quiz_id being passed in from the view to the controller as $quiz…. A very silly error. Glad I spotted it. But frustrated that it happened in the first place.
- Damn. It's still not solved the error. The request object in the Store method (question controller is still NULL, an empty object) ….🙈
- I need to move on otherwise I'll be stuck on this for the rest of the project, and I've already spent too long on this problem.
- I will stop and come back to this with a fresh pair of eyes.

- I figured out the issue was that there I wasn't sending enough arguments to the Store function. The store method expected both request and a quiz object parameters.
- However only one was working. I added a parameter variable in the route to explicitly pass in the quiz id…. fixed. Very hacky and bad naming from a RESTful perspective (inconsistent, not clear about resources, or what is being created).
- BUT it works. And something to refactor in in another ticket. I need to get the entire feature up, running and tested - as I'm quite behind today's schedule… yikes.

- In the interest of time, I finished the new question form with a very basic HTML design.
- All Question fields are free input boxes for the user to manually type. I've added some validation where I can e.g. input pattern regex validation on the answer key field, and making options A-C required, D-E not required.
- I would like to go back and improve the design of this - few points for improvement:
  - Hate the free input fields - esp for the answer key field. Maybe something like a radio button would do better, and the user can tick the radio button for one of the multiple choice options, instead of manually typing a letter.
  - Option D and E are not required fields but in this form they are given as much prominence as the other A-C required fields. Blur them out by default, and maybe give the user to expand with more options if they select 'add another option' etc?
  - A user can submit a form with an option_e without option_d populated. This looks odd… is there anyway I can prevent that?
  - A user can submit a form with a faulty answer key. By accident a user can submit an answer key of 'E', even if there was no option_e provided in the question. Validation required here - seems like an easy and likely mistake for users to make😬

- Overall though…phew! Finally I have a working Create Question and Answer form which saves the new question and its answers in the application and the database 🎉 At least that's progress. Better than nothing.There are flaws, that can be refactored and worked on later.

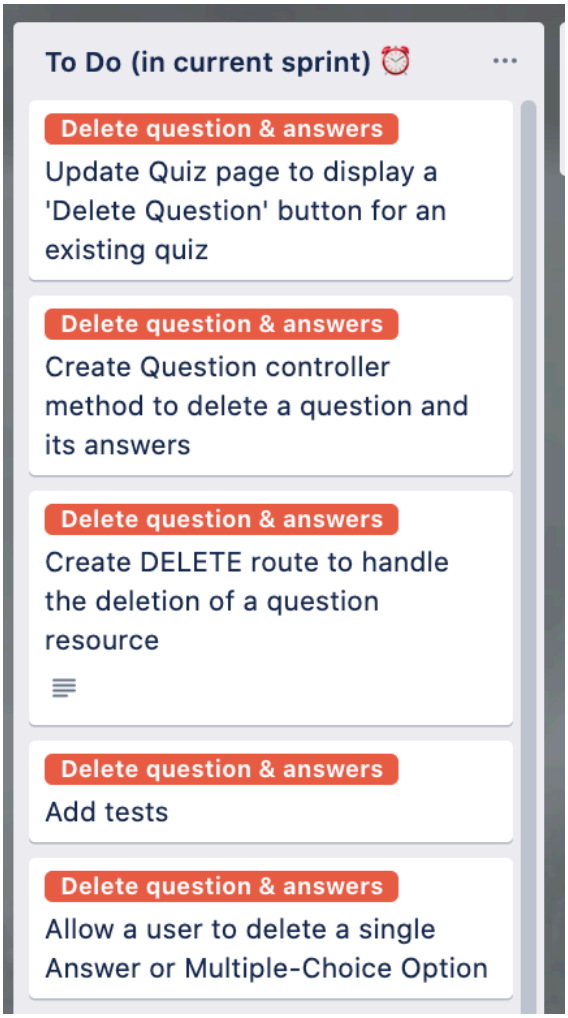
- Eugh. End of day. That was a manic, unplanned day. Felt like a lot of scrambling. I hit a roadblock and spent way too long troubleshooting. Not sure what I could have done to avoid that or do better. I will reflect and come back to it tomorrow.
- Realised I have forgotten about the logic required in adding new questions, along with a new quiz. In fairness, this feature does work; but there is painful user experience involved in doing so. A user needs to create a quiz. Gets redirected to homepage, Then needs to find and select the quiz before inputting the quiz questions one-by-one. I forgot about this user journey…added a ticket to the Trello board for now. Not sure on the prioritisation of it. I'm very tempted to leave it for this iteration, and forget about it until the remaining features have been implemented. But this is a very important point for the next iteration of the New Question feature…😱
- I have another 1-2 days left on the total project. But I have two full user stories remaining (edit user can delete or edit questions and answers). Time for the crunch period now… things are going to the wire.

- A re-prioritisation exercise has to be done first thing tomorrow morning in the Sprint Planning Session.

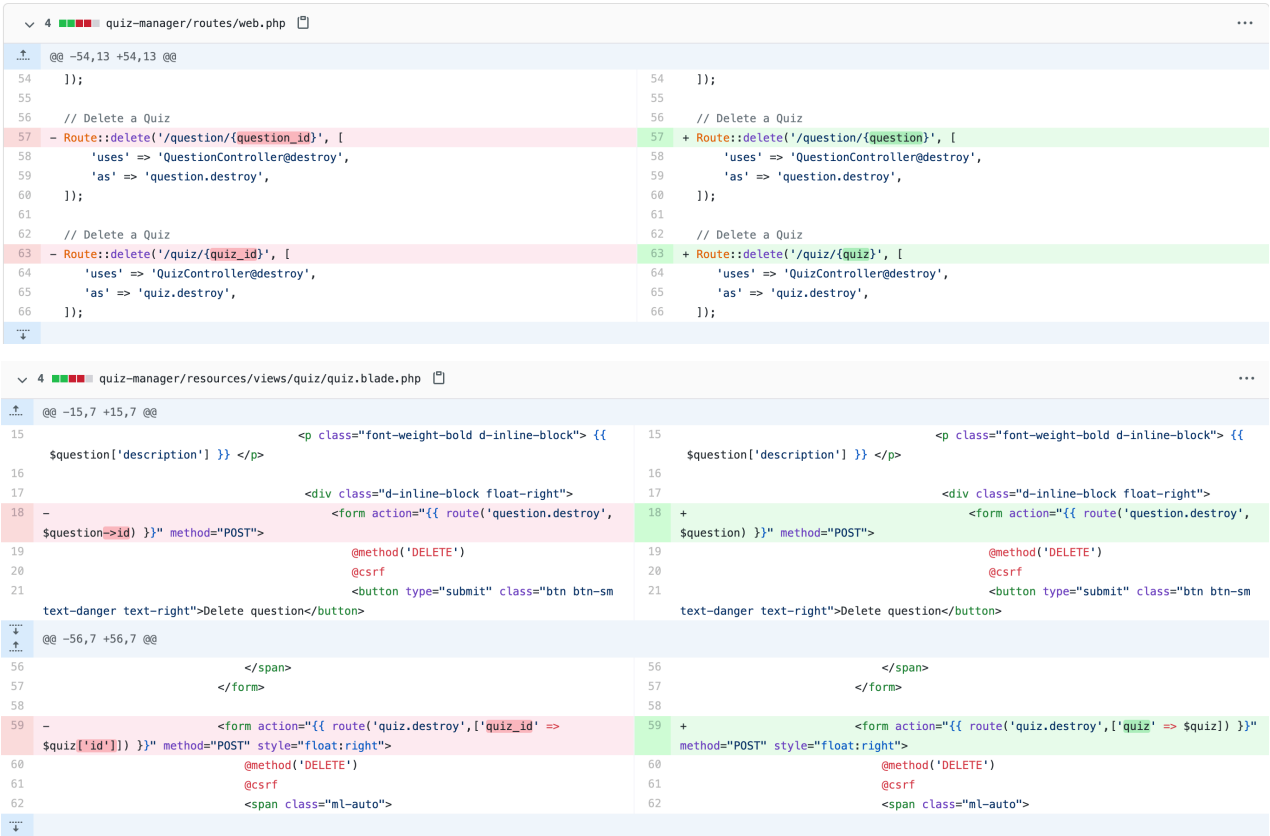
DAY 6, 15/09/20 (THE PENULTIMATE DAY)

- Phew. There is a a lot to get on with today….
- First: on the remaining tickets for the New Question feature - none of them are blocking. But they are causing me a headache in troubleshooting, and I don't want to get bogged down the entire morning trying to resolve those issues. As they are not critically important, I'm going to move them to the bottom of the To-Do column. I will start the day on adding the remaining product features.

Feature: An edit user can delete a question or an answer



- Broke the product feature into distinct Trello tickets.
- Deleted the question - seems straightforward, and I could follow the style I used earlier to delete a question. As stated with Business Assumptions, when a user deletes a question, the question and all of its associated answers are also deleted from the application and database.
- Have done some refactoring to change the quiz id parameters to the quiz object itself. This removes an entire DB call in the function itself, e.g. destroy. Where possible it makes sense to just pass in the object, rather than a specified id. In destroy, I was passing in the ID to then make an eloquent call to the db itself to find the object. In this example, that makes no sense - is detrimental for performance and inefficient. Avoid calls where you can, though it doesn't matter so much at this small size application, but for scaling up, it will.
- Refactoring - before and after



4 quiz-manager/routes/web.php

```
@@ -54,13 +54,13 @@
   ]);

   // Delete a Quiz
-  Route::delete('/question/{question_id}', [
+  Route::delete('/question/{question}', [
       'uses' => 'QuestionController@destroy',
       'as' => 'question.destroy',
   ]);

   // Delete a Quiz
-  Route::delete('/quiz/{quiz_id}', [
+  Route::delete('/quiz/{quiz}', [
      'uses' => 'QuizController@destroy',
      'as' => 'quiz.destroy',
   ]);
```

4 quiz-manager/resources/views/quiz/quiz.blade.php

```
@@ -15,7 +15,7 @@
                                    <p class="font-weight-bold d-inline-block"> {{ $question['description'] }} </p>

                                    <div class="d-inline-block float-right">
-                                       <form action="{{ route('question.destroy', $question->id) }}" method="POST">
+                                       <form action="{{ route('question.destroy', $question) }}" method="POST">
                                            @method('DELETE')
                                            @csrf
                                            <button type="submit" class="btn btn-sm text-danger text-right">Delete question</button>
@@ -56,7 +56,7 @@
                                </span>
                            </form>

-                           <form action="{{ route('quiz.destroy',['quiz_id' => $quiz['id']]) }}" method="POST" style="float:right">
+                           <form action="{{ route('quiz.destroy',['quiz' => $quiz]) }}" method="POST" style="float:right">
                                @method('DELETE')
                                @csrf
                                <span class="ml-auto">
```

- As a result, I can remove the Eloquent ‘find’ call on line 91, and 73 below.

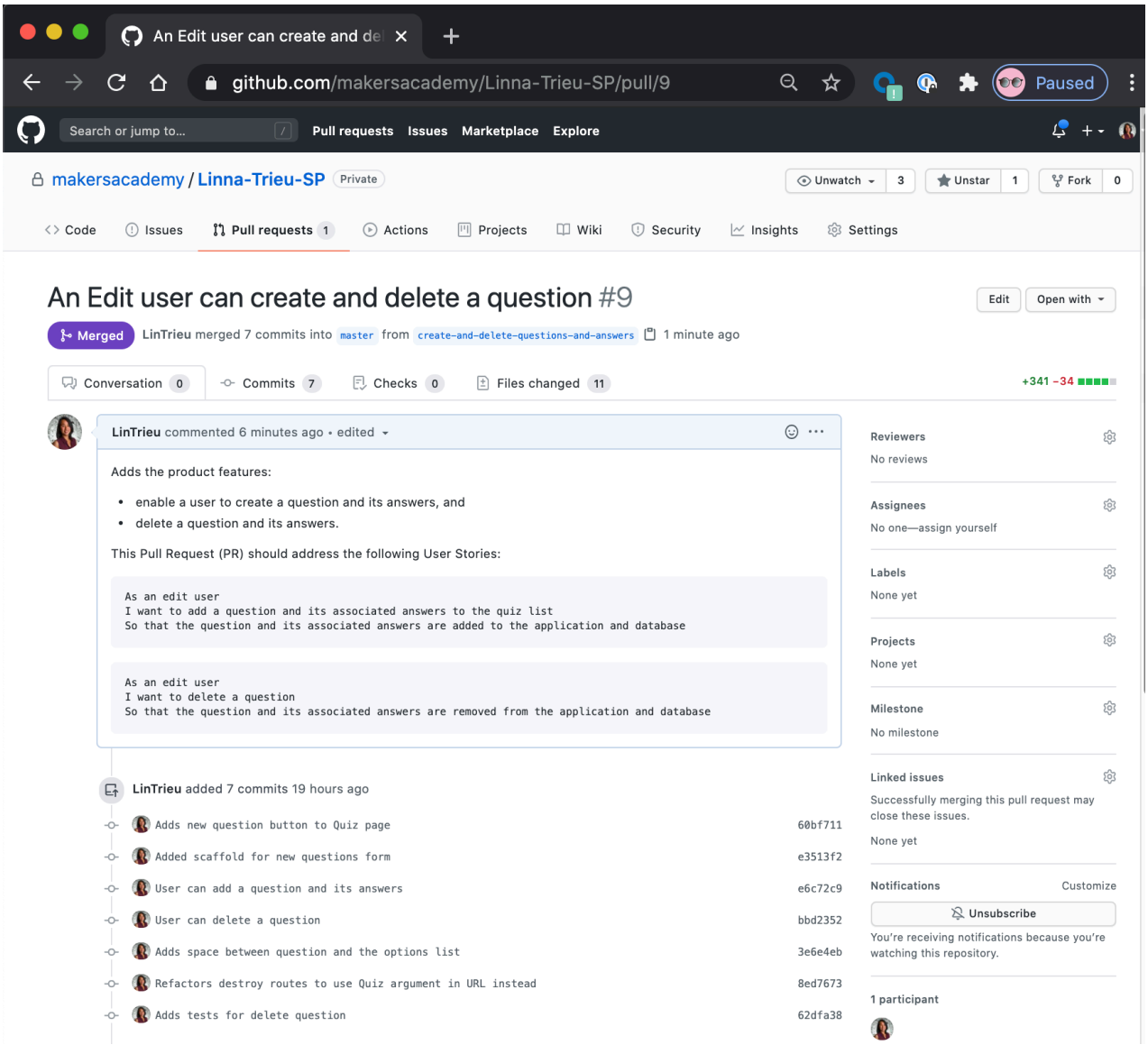
7 quiz-manager/app/Http/Controllers/QuestionController.php

```
@@ -5,6 +5,7 @@
 use App\Models\Question;
 use App\Models\Quiz;
 use App\Models\UserPermission;
+use Exception;
 use Illuminate\Http\RedirectResponse;
 use Illuminate\Http\Request;
 use Illuminate\Http\Response;
@@ -83,12 +84,12 @@ public function store(Request $request): RedirectResponse
     /**
      * Remove the specified resource from storage.
      *
-     * @param  int  $questionId
+     * @param Question $question
      * @return RedirectResponse
+     * @throws Exception
      */
-    public function destroy(int $questionId): RedirectResponse
+    public function destroy(Question $question): RedirectResponse
     {
-        $question = Question::find($questionId);
         $quizId = $question->quiz_id;
         $permissionLevel = Auth::user()->permission_level;
```

7 quiz-manager/app/Http/Controllers/QuizController.php

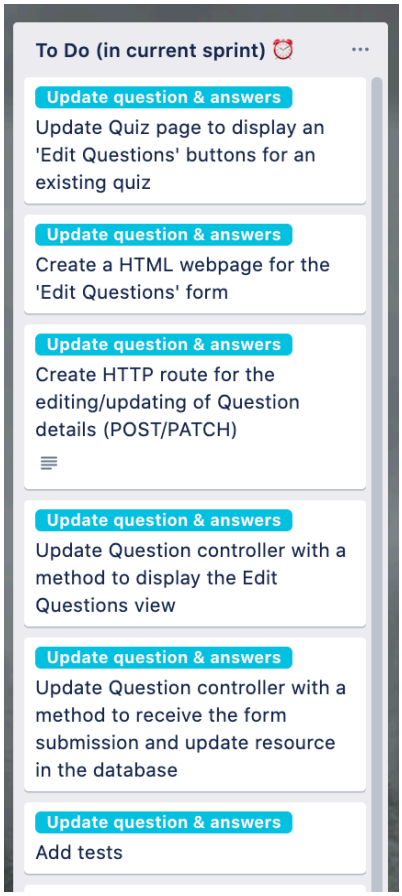
```
@@ -4,6 +4,7 @@

 use App\Models\Quiz;
 use App\Models\UserPermission;
+use Exception;
 use Illuminate\Http\RedirectResponse;
 use Illuminate\Http\Request;
 use Illuminate\Http\Response;
@@ -65,12 +66,12 @@ public function store(Request $request): RedirectResponse
     /**
      * Delete the specified Quiz from database.
      *
-     * @param int $quizId
+     * @param Quiz $quiz
      * @return RedirectResponse
+     * @throws Exception
      */
-    public function destroy(int $quizId): RedirectResponse
+    public function destroy(Quiz $quiz): RedirectResponse
     {
-        $quiz = Quiz::find($quizId);
         $permissionLevel = Auth::user()->permission_level;

         if ($permissionLevel == UserPermission::PERMISSION_EDIT) {
```

- Haven't dealt with if a user wants to delete a single answer yet though….so I have added a ticket and moved into the To Do column. When picking up this ticket, re-visit the User Requirements.
- New Ticket: "Allow a user to delete a single Answer or Multiple-Choice Option"
- Closed this feature. Created a PR and tested the features manually and in isolation. As testing met the acceptance criteria and user stories, merged the branch into Master, and moved the tickets from 'Ready for Testing' into the 'Done' column.



- ## Feature: An edit user can update question and answers

- Broke the product feature into distinct tickets and prioritised in order.

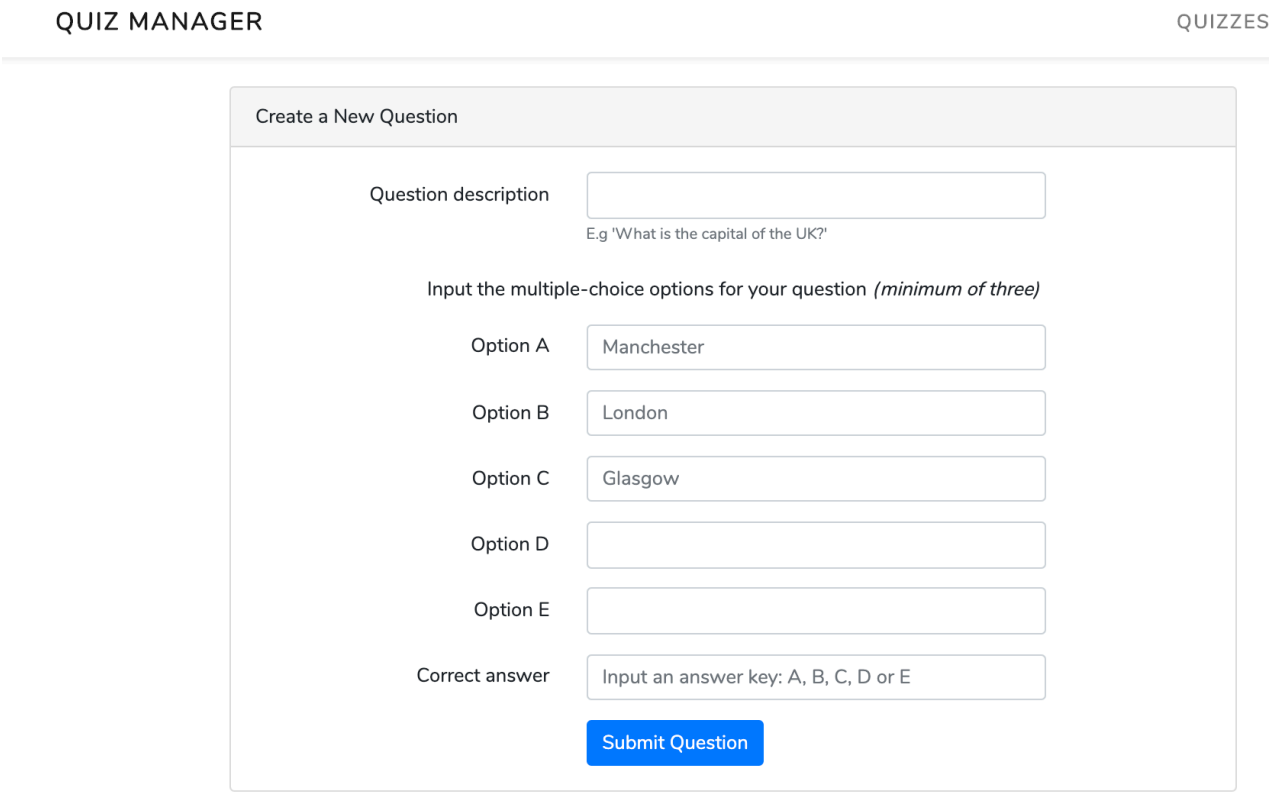


- **1. Firstly deal with ‘edit’ — Show the form to edit an existing question**
  - Button on the Quiz page✓
  - Route to get the controller method edit✓
  - Edit method to display the form to edit ✓
  - Done with not too much issues. Though the design of the View (Quiz Page) is not ideal… it’ll do for now.

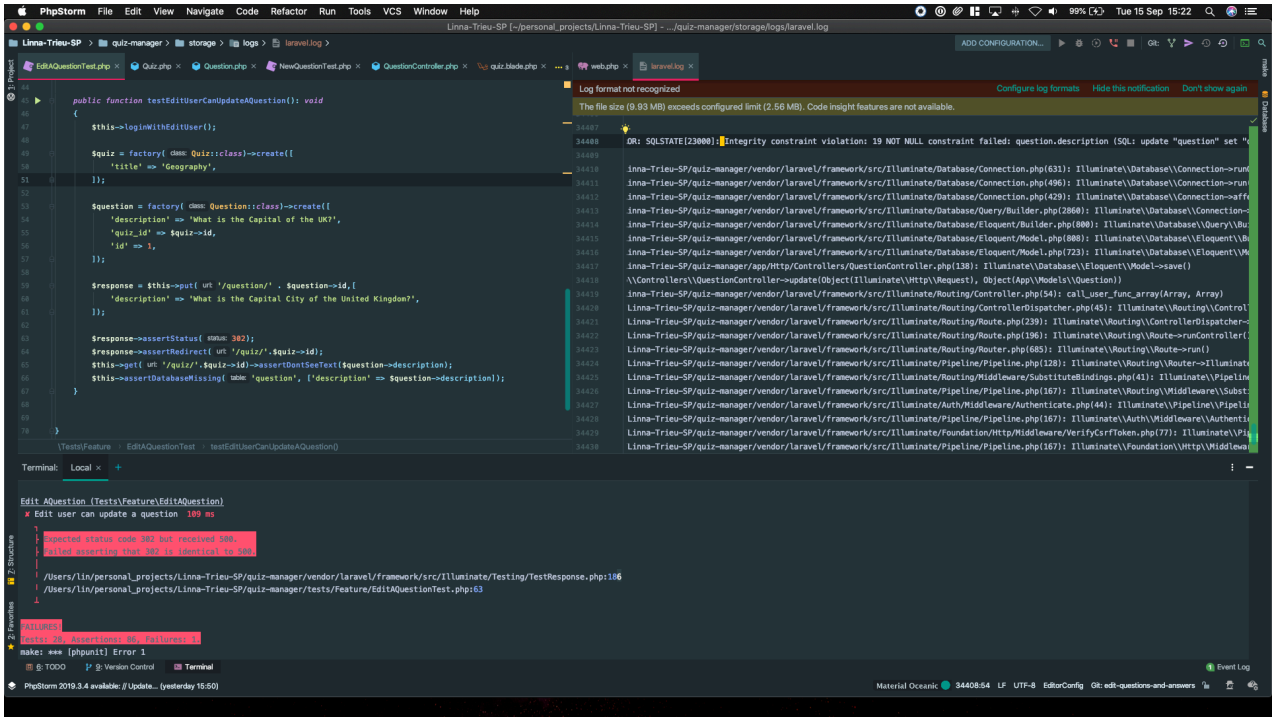
- Created a new View for the Edit Question form, though I could have re-used the New Question view and used conditionals. For now, it seemed faster to keep the views separate and distinct as to clearly indicate what view is displayed to the End User; instead of involving blade conditionals.

- **2. Next deal with 'update' - Update the edited question in the database**
- Created the form with the previous questions so the end user knows exactly what part of the Question they are updating. I was concerned about how to do that beforehand, but with some research I found the Laravel blade 'old' helper method. The old method lets me display the current value of the fields to the user and I passed in the question object so I could access all parts of the questions required for the Edit Question Form. = quick win, thankfully 🎉

- **3. Hmm… weirdly the form is allowing me to submit but it isn't actually updating** when I am re-directed to the list of Questions. And in checking the DB, the edited values aren't actually saving to the DB either. Looking into this, though it must be a bug in the logic that sits in the QuestionController@Update method ….👀
- Still can't seem to see why… hmm. A bit frustrating.
- After lunch I think I need to research, look up this online and try to debug!😡
- Solved ✔️
  - With a fresh pair of eyes, I realised I needed to access the new input fields of the question. For some reason I was accidentally accessing the previous (i.e. old) version of the question object.
  - Now retrieving and saving the new values in the Edit Question form.
- Very relieved to have completed the first iteration of that feature. - happy to have done that.
- Now going through a round of manual testing as I know I will have missed a lot of edge cases and validation is required.
- Getting distracted with design choices… bad habit. For example improving the new question form. At the moment it is too similar to the edit questions form and it is easy to get the two mixed up.
- So I changed the HTML form 'placeholder' text to the 'small' element instead, which lists the information below the input box, rather than a placeholder in itself (which is the behaviour for the Edit Questions form).

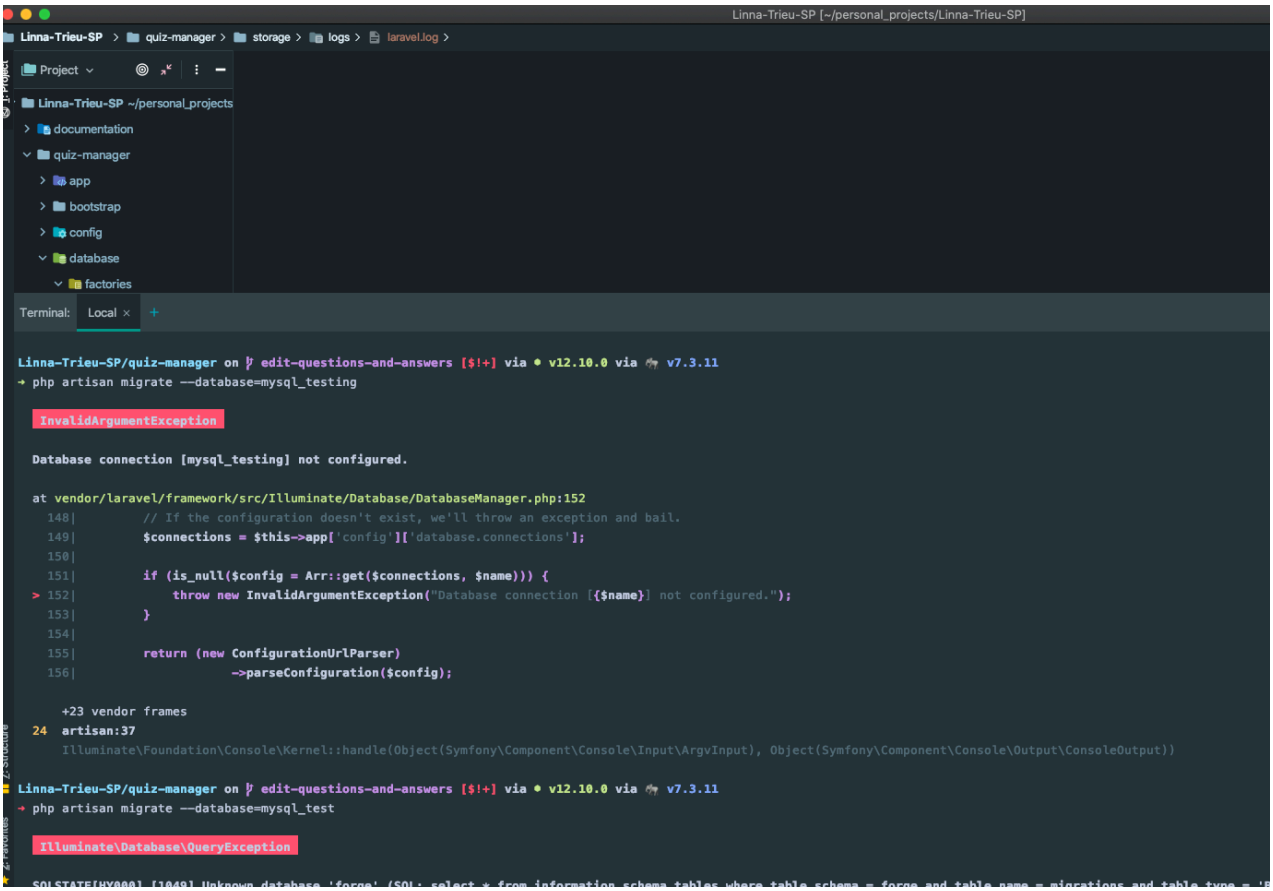

QUIZ MANAGER
QUIZZES
Create a New Question
Question description
E.g 'What is the capital of the UK?'
Input the multiple-choice options for your question (minimum of three)
Option A
Manchester
Option B
London
Option C
Glasgow
Option D
Option E
Correct answer
Input an answer key: A, B, C, D or E
Submit Question

- Also updating the Edit Quiz form from a UX perspective. Each of the views currently are very bare and it is not immediately clear to the end user what they are supposed to do. I am adding text to each form to clarify and provide instructions to the end user….
- Finally adding some tests for the update feature:
- AH. Falling behind today and haven't touched any documentation today…. For some reason my feature tests just aren't working.
- It seems related to an error using Faker and Factory - a recurring error even after creating an object (e.g. quiz) using the factory, a Database error fails the test as the DB does not recognise that the object has been created…. 'NOT NULL constraint'
- E.g.



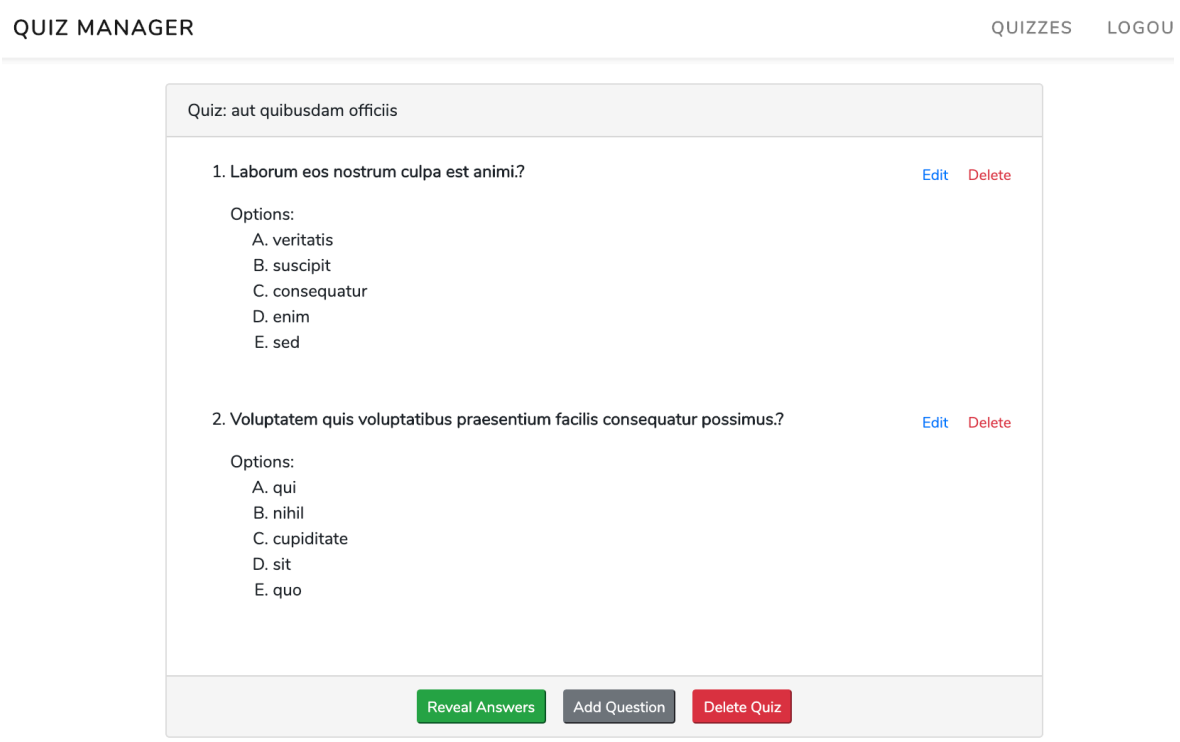
- Looking into why factory/faker isn't working in this test….Spending a lot of time researching and debugging this…Eating up a lot of time.
- TIMEBOX: MOVE ON AT 4PM IF STILL NO SOLUTION 😭
- AH - it seems to be a limitation of the database driver. -sqlite
- Really frustrating but through trawling through online forums, it seems to be an edge case issue for some individuals
- I need to create a fresh DB for test purposes

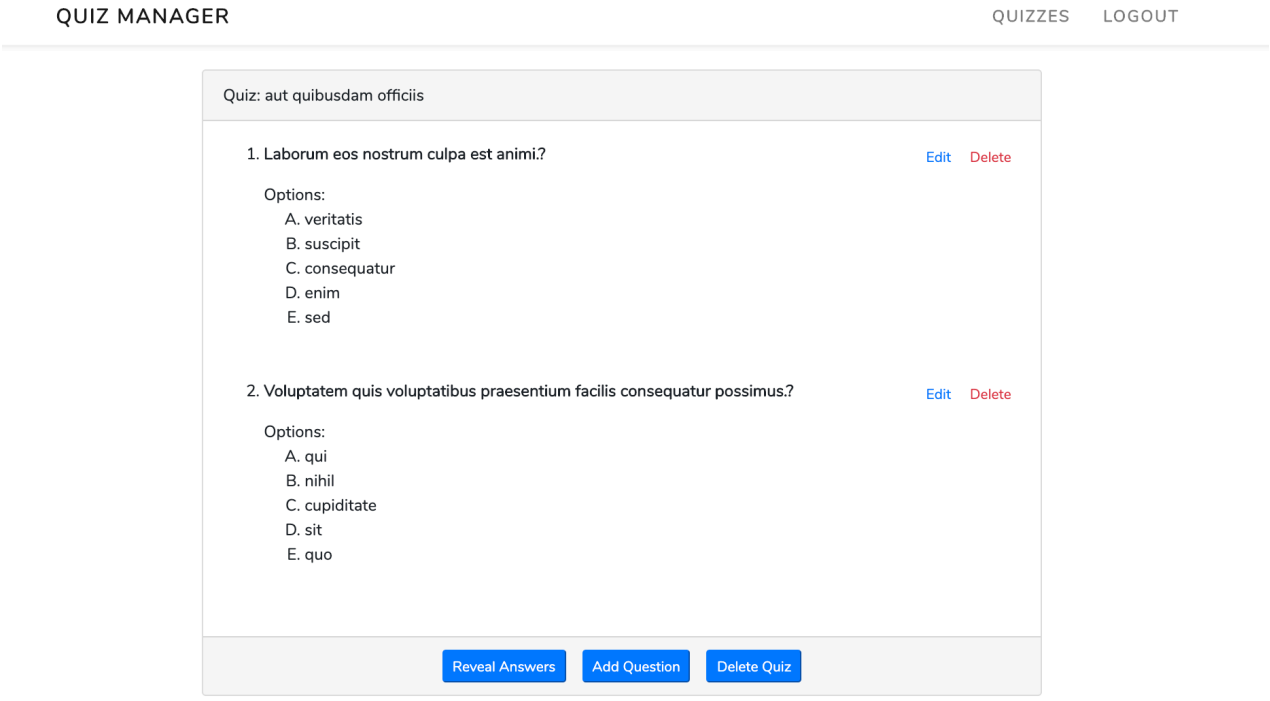
- Went deep deep into debugging random things - infra , db, testing ….
- Wasn't able to resolve the issue and I had to move on😓



- I abandoned the plan and the specific Feature test.- not sure why it wasn't working. Kept the current testing structure with an in memory sqlite database.
- I created a branch which contains the experimentation…. But had to leave behind to get on with THE FINAL DAY OF PROJECT. Though that was a disappointing waste of 2 hours.
- Branch: `test-database-experiment`
- OUTCOME: As a result of the lack of feature tests in one area (Feature: Editing a Question & Answer) I will need to document this in the Test Documentation, and as a result, perform more manual testing in that particular area to address the lack of automated tests.

- **Experimenting with styles…**



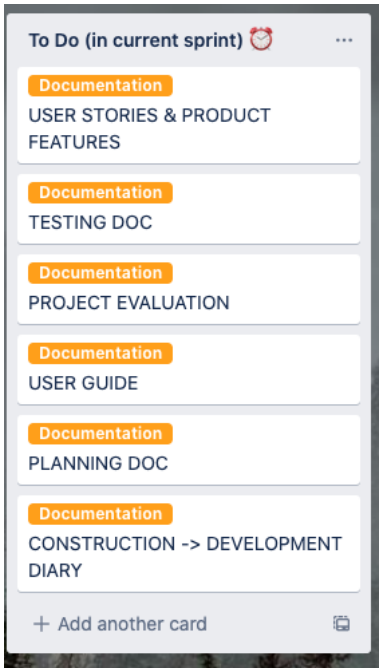


- A tiring day, but done and achieved a lot over the course of this development diary. I am happy to have fulfilled all the user requirements and user stories for the Quiz Manager in very tight time constraints.
- Not much more I can do. I should implement a code freeze from this point 👍🏽

16/09/20 - FINAL PROJET DAY

- OK, last few changes to made before a code freeze.
  - Need to make sure everything is available for offline use (so that the folder can be sent as a zip file and be run in isolation - without reference to external website links)
  - Need to include and commit all vendor files to Git
  - Do manual testing
  - Implement quick wins in terms of product bugs and missing features

- Then I need to implement a code freeze and move onto the documentation side: Still using the trello board to track deliverables.



- As for the development diary, this is the final entry as the development phase of the Quiz Manager project has finished.
- For the remainder of my time on the project, I will now move onto documenting the post-implementation documents.