Development of NHS employees Android Application using remote server
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Brief:
Project overview:
A brief description of your planned project. NB. Do not go into detail about how this has changed from your initial idea here.

I am developing an android mobile application for NHS employees to enable both employees and service managers to manage the shift rota and profiles including adding new employees on the system.

The mobile application would be an integrated version of existing NHS mobile applications and NHS-owned Employee Online desktop version. HR operations are not included in the app. There will be a separate login screen for both registered employees and the manager. Upon creating the profile, employees will receive an automated email from the manager/app with login information link. They will be able change their password immediately, which the employees would use as their login details.

I am going to develop the project using Android Studio with JAVA and MySQL AWS EC2 server. For Backend application, I will use Laravel PHP framework using PHPstorm.

Summary of work to date:
In chronological order, summarise the work you have done so far. You can do this as a list of bullet points. For each point, state:

- Flowchart
- Wireframe
- Working on app design using Adobe XD

I have completed a flowchart and wireframe for the mobile application. I might add few more features when I complete my project. All newly added screens and their operations will be clearly explained in the final project report.

- any findings that changed your plans

There is no significant change in my plan, but I will add few more screens when I finish the application, to make it more user friendly and dynamic.

- provide some evidence (e.g. link to blog, image, repo commit, or tag)

https://gitlab.doc.gold.ac.uk/myk-project-students-2018/misla006-project/-/blob/flowchart/FlowChart.pdf
Link to Wireframes:
https://gitlab.doc.gold.ac.uk/myk-project-students-2018/misla006-project/-/commit/84e19e49e261fd702cee95a5634400f1d4480d92

Evaluation:

This section should reflect on your practice to date.
Comment on:

- How have you met your milestones?

My first milestone is this inter report,

- How has the project changed from your initial ideas?

I was planning to use the Goldsmiths university server to implement the database. Now I have decided to use an external server to work with the NHS IT team to develop the android application according to their custom requirements.

- Was your scoping for the project good or bad?

Initially, it took some time for me to start the initial works. I will be able to concentrate fully once I finish my term-time coursework's.

- How do the current outcomes match up to your expectations for the final work?
  I am learning Laravel PHP framework and also Android Studio operations which might limit the Android application to limited options.
- What have you learned so far?

I have learned to solely implement on a project and used Lucid chart for students to draw the Flowcharts. I draw wireframes simply using pen and paper.

I have now very good at Amazon AWS EC2 instance features and security settings.

Implementing Laravel PHP framework and PHPMyAdmin using XAMPP.

Revised project plan:

Include a detailed plan taking you from this point to the final submission date. Include as many milestones as possible. Where you have libraries/platforms to research, include links.

Application screen prototypes – 30 May 2021

The app will start with the splash screen and load its resources in the background; after that, the login screen will be shown. When the user logins, the screen will change according to user type; therefore, the home screen for an employee would be different, and for a manager would be different.

https://www.youtube.com/watch?v=68w2VwalD5w&t=941s

Backend Application: 30 July

I am developing the backend part in the PHP Laravel framework using PHPstorm IDE.

I would implement the Laravel project with Apache MySQL PHPMyAdmin in the EC2 instance. REST API will provide the database connection and will link the database to the android app.

Then this REST API will be connected to the android app using the Retrofit library.

1. first, I have created a Laravel project which is nhs-employees-web
2. Installed sanctum for API authentication
3. Then configured the authentication process.
4. Added additional users column in the table because Laravel has built a users migrations table
5. I created a list of migrations tables: roles, users, personal_access_tokens, shifts, wards, user_shifts, and employees.
6. Then a list of models for those tables where the model will contact the database
7. I used 1-1 relationship with user-employee(basically user information), and many to many relationships with pivot table user shift.
8. I have used Postman for API testing.

I set routes that generate URLs. From here, we indicate to the controller. We use a function to insert, read, update, delete from the database through the model.
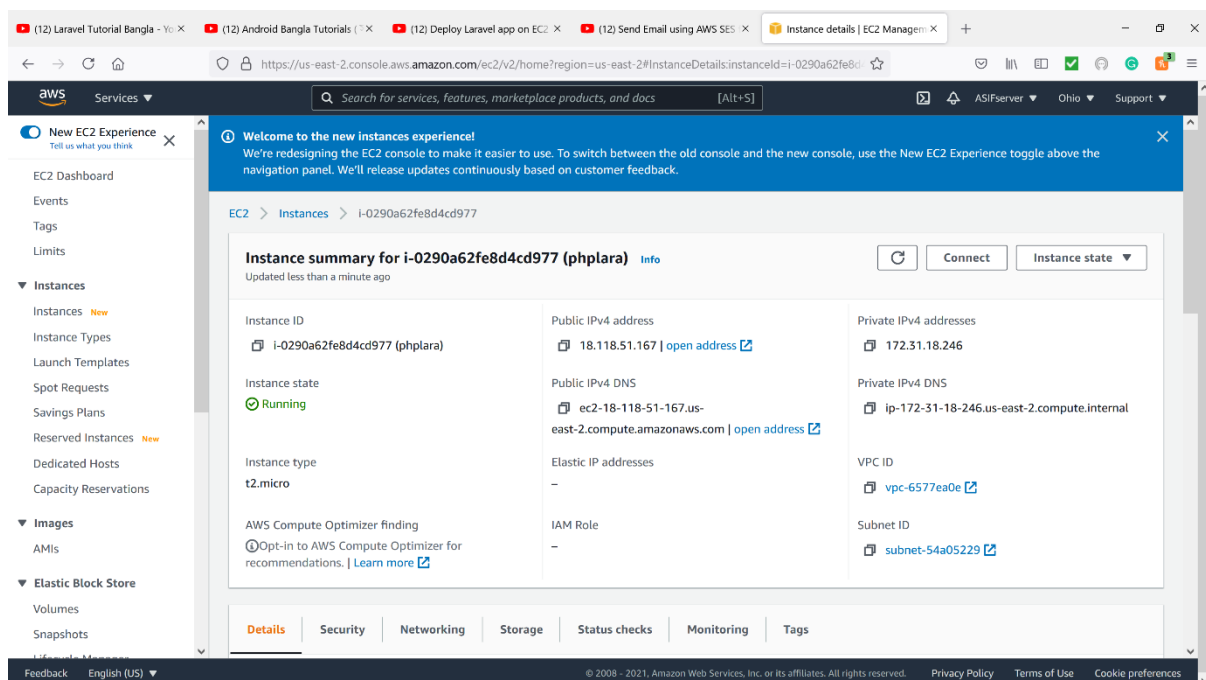
Required libraries:

```
"guzzlehttp/guzzle": "^7.0.1",
"laravel/framework": "^8.40",
"league/glide": "2.0.x-dev",
"laravel/sanctum": "^2.11",
"laravel/tinker": "^2.5"
```
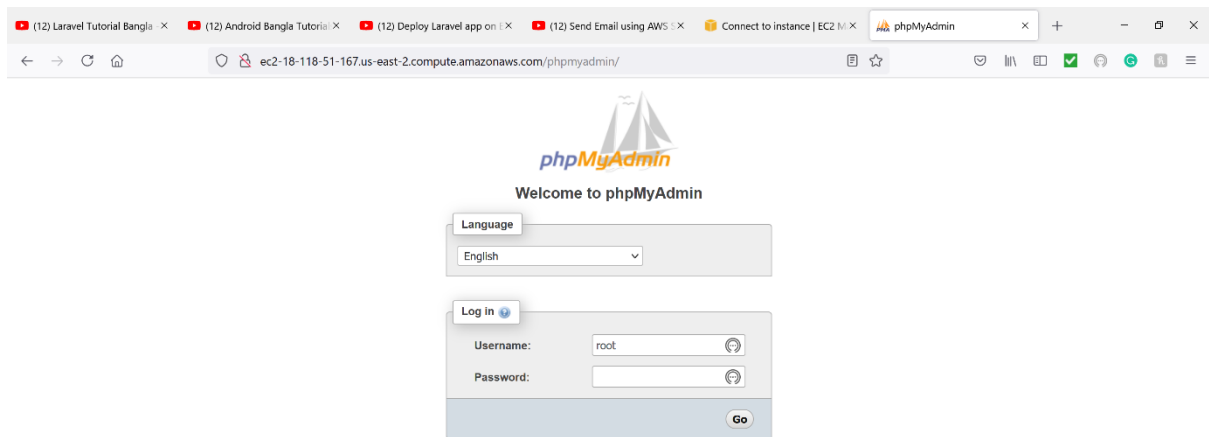
*Guzzle is a PHP HTTP client that makes it easy to send HTTP requests and trivial to integrate with web services.

*Glide is on-demand image manipulation library written in PHP. Its straightforward API is exposed via HTTP.

*Laravel Sanctum provides a featherweight authentication system for SPAs (single page applications), mobile applications, and simple, token based APIs.

*Tinker is a REPL(read-eval-print loop). REPL allows users to interact with the application through the command line. It is mostly used for interaction with Eloquent ORM, jobs, events, and more.

Setting up AWS EC2 Ubuntu server with Apache MySQL PHP PHPMyAdmin::
https://www.youtube.com/watch?v=x2MbZKamYaM
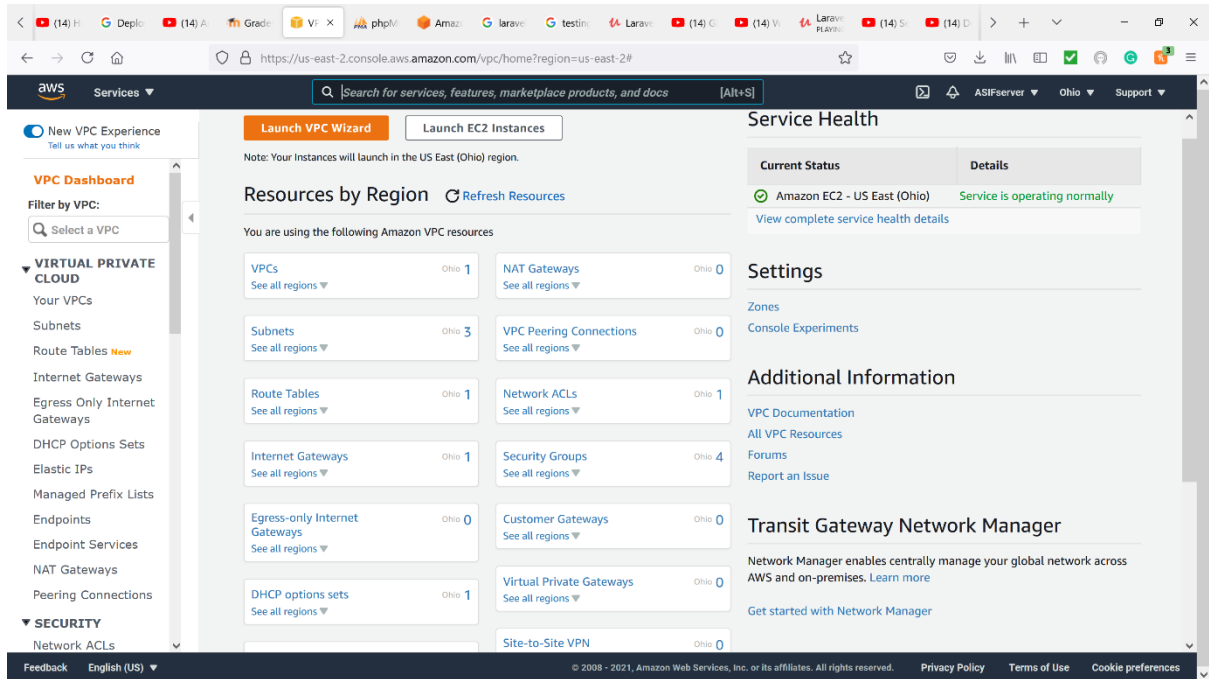
Setting VPC and Amazon EC2 instance to launch Laravel application::
https://youtu.be/FwIeIfXcdf4

Local server testing using Postman:
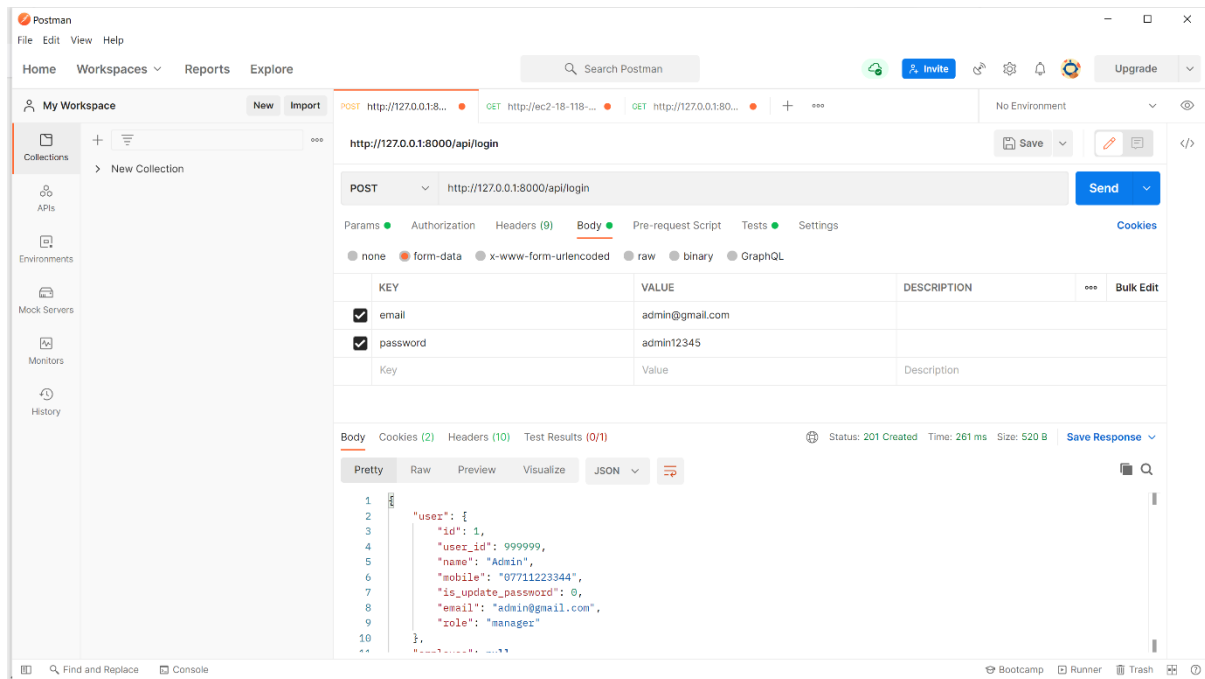
AWS EC2 server testing using POSTMAN:

https://www.udemy.com/course/laravel-beginner-fundamentals/learn/lecture/23352604#overview
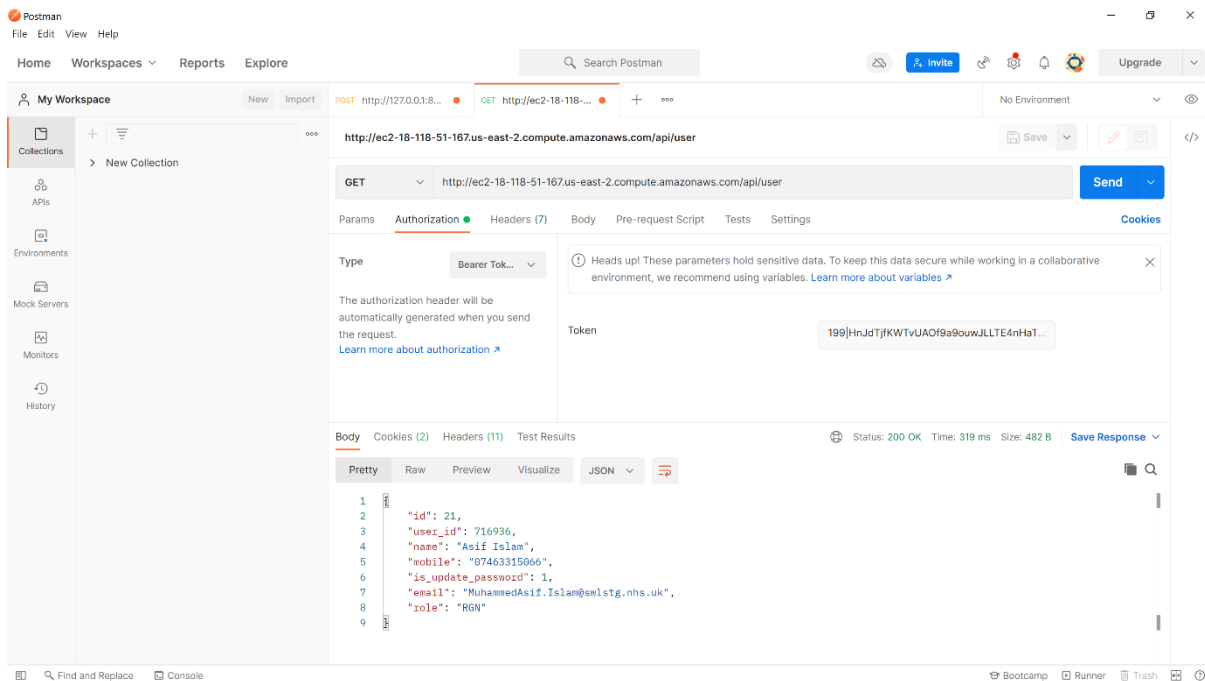
Full Stack Development Tutorial:
https://www.udemy.com/course/2018-masterclass-laravel-56qrcodesapisandroid-and-ios/learn/lecture/10829826#overview

Application coding: 10 August 2021
I will code the android app in JAVA, and for that, we will use the Android Studio IDE.
As mentioned above, we will use the Laravel PHP framework for backend development. We will host the API and the database to AWS EC2 free tier server.
We will start designing the UI first so we can know how our app will look. Once the UI is done, we will be more explicit about the use cases. Mainly we will use MVVM architecture which is the most recommended architectural pattern.

Setting up Project on Android Studio::

https://www.udemy.com/course/full-android-course-with-14-real-apps-42-hours/learn/lecture/23470690#overview

https://www.youtube.com/watch?v=fis26HvvDII&t=2195s

Requred libraries::

Navigation body
'androidx.navigation:navigation-fragment:2.3.5'
'androidx.navigation:navigation-ui:2.3.5'

sdp and ssp libraries build responsive designed app.
'com.intuit.ssp:ssp-android:1.0.6'
'com.intuit.sdp:sdp-android:1.0.6'

Material
'com.google.android.material:material:1.3.0'

Circle image
'de.hdodenhof:circleimageview:3.1.0'

Mvvm and Databinding
'android.arch.lifecycle:extensions:1.1.1'

Retrofit is a type-safe **REST** client library for Android and Java, making it easy to consume **RESTful** web services.
'com.squareup.retrofit2:retrofit:2.9.0'
'com.squareup.retrofit2:converter-gson:2.8.1'

Retrofit logging interceptor
"com.squareup.okhttp3:logging-interceptor:4.9.1"

Picasso is a powerful image downloading and caching library for Android.
'com.squareup.picasso:picasso:2.71828'

Universal image loader
'com.nostra13.universalimageloader:universal-image-loader:1.9.5'

def lottieVersion = **"3.4.4"**
"com.airbnb.android:lottie:$lottieVersion**"**

gson is a Java serialization/deserialization library to convert Java Objects into JSON and back.
'com.google.code.gson:gson:2.8.6'

Expendable layout
"com.github.skydoves:expandablelayout:1.0.7"

Swipe refresh layout
"androidx.swiperefreshlayout:swiperefreshlayout:1.1.0"

SYSTEM REQUIREMENTS
Hardware Requirements
- **Processor:** Intel(R) Core(TM) i7-8550U CPU @ 1.80GHz, 2001 Mhz, 4 Core(s), 8 Logical Processor(s)
- **Ram:** 16 GB Ram
- **System:** x64-based PC

Software Requirements
- **Operating System Server:** Windows 10
- **Coding Language:** JAVA
- **IDE:** Android Studio
- **Framework:** Laravel 8.50.0(PHP 8.0.7)
- **Database:** MySQL
- **Android Version:** 11 "R"

Repository link:

Include a link to your GitLab repository. Read access should be granted to your supervisor and program leader.

https://gitlab.doc.gold.ac.uk/myk-project-students-2018/misla006-project