VTTP 2023 Batch 3 Mini Project

Name	Tan Xuanlin, Chelsea
Email	chelseatanxuanlin@gmail.com

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In this final project, you are to design and develop an application of your choice using what you have learnt from this course.

The project duration starts from Sept 4 to 15; Sept 15 is the presentation day.

Your application should consist of a minimum of 2 logical parts:

- Frontend - Angular
- Backend - Spring Boot

Your application must use technologies listed under Mandatory and Optional below.

The mini project will be graded according to the 4 categories:

- Application (50 marks) - How well thought out is your application, how you have implemented the application features and creativity. Think of this criteria as trying to sell your application to a VC (venture capitalist) to get money
- Aesthetics (20 marks) - Look and feel of the application
- Mandatory requirements (10 marks) - fulfilling the mandatory requirements
- Optional requirements (20 marks) - fulfilling the optional technical requirements

Mandatory

You must use **all** of the following requirements in your application.

Mark a cross X on the box beside each item to indicated that you have fulfilled the mandatory criteria

Angular	
Forms (either reactive or template driven)	x
Use GET, POST, PUT, DELETE (3 or more) to communicate between frontend and backend	x
Single Page Application (client side routing) with a minimum of 4 views	x
Abstract common functionalities into Services	x
Include an application manifest	x
Spring Boot	
Use of POST to handle either x-www-form-urlencoded and/or JSON and/or multipart payload	x
Making HTTP request to external RESTful API	x
Parameterized routes	x
Query string	x
Must support more than 1 user	x
Database	
Must use MySQL	x
Modeling data relationship: 1 to 1, 1 to many	x
Demonstrate data integrity and consistency when updating multiple tables	x
Must use another database type eg. key/value, blob, graph, document	x
Deployment	

The application that you have developed must be publicly accessible You can deploy your application either as 2 separate deployments, frontend and backend or as a single deployment where the frontend is served from the backend. Applications can be deployed to Railway or any equivalent cloud PaaS platform like Heroku, AppEngine, etc If Angular is deployed separately, they can be deployed to static web hosting sites or JAM platforms like Vercel, Cloudflare or serving it from your hosted web server. Note: you cannot use Github pages for hosting your application	x
All databases must be deployed to the 'cloud'. They can be deployed as VMs in public cloud or using managed database services	x

Optional

Your application should accumulate a minimum of **20 points** from the lists below. This 20 points is not the marks of your project but rather a gauge of how many optional requirements you have in your project. So your project must have 20 points worth of optional requirements.

Mark a X on the selection options.

Backend Optional Requirements	
Use web sockets (8pts) in Angular and Spring Boot	
Integrate with any API that requires OAuth2 authentication (4pts)	
Integrate with Google calendar or Drive (6pts)	x
Bots eg Telegram, Slack, (6pts)	x
Firebase web notification with frontend web notification (10pts)	
Include simple AI into your application. Must be model based (not a series of if/then/else) or use 3rd party AI service (5pts)	

Using a graph databases eg. Neo4j (6pts)	
Sending email (3pts)	x
Use Spring Boot security with JWT to authenticate and authorize Angular request (4pts)	
Integrate with Ethereum's smart contract. You must also write the smart contract with Solidity (12pts)	
Ingesting and processing messages from a queue eg. Kafka, Rabbit, Redis, etc (6pts)	
Integrating with payment gateway (6pts)	

Frontend Optional Requirements	
Use any Javascript/Typescript game framework eg. Phaser3, LittleJS, Kaboom, etc. (6pts)	
Bundle Angular application as iOS or Android application with hybrid app tools like Capacitor, Cordova, NativeScript (8pts)	
Use map eg Google Map, must be dynamic (4pts)	
Use a UI component framework - eg. ng-bootstrap, Material, PrimeNG (3pts)	x
Use state management libraries like Akita, NgRx, NGSX, etc (6pts)	
Adding a service worker to precache application assets (4pts)	

Deployment Optional Requirements	
On a server (virtual machine) running on any public cloud. (4pts)	
Containerize your application and deploy into a Kubernetes cluster (10pts)	
Containerized your Angular and Spring Boot application (3pts)	x
Apply a domain name and configure your application to use the domain name (2pts)	x
Use Github actions for continuous build and continuous deployment to automatically build and deploy your application (6pts)	

If you have ideas or requirements that are not on the above list, please discuss with the instructors before using it in your

application. The instructor will assign a point to your requirements. You cannot assign points to your own requirements.

Description of your requirements	Pts
Genrerating a pdf invoice using data from database	

Presentation

You will be presenting your application on the days from **Sept 15 2023**. A presentation schedule will be sent closer to the date. Presentation is to be conducted in-person and not over Zoom. You will have 10 mins to show off your application. You only have 1 opportunity to present.

You will be presenting the application on a provided computer; your project must be deployed before your presentation. You cannot present your project running on your notebook.

Submission

You must submit your assessment by pushing it to your repository at either GitHub, GitLab or BitBucket.

Only commits before **0900 Sept 15 2023** will be accepted. Any commits after **0900 Sept 15 2023** will not be accepted. No other form of submission will be accepted (eg. ZIP file).

Fill up the form and put a cross on all the mandatory requirements and optional requirements that you have used.

Generate a PDF copy of this mini project document and rename it to your official name (as in your NRIC) and email it to isslcm@nus.edu.sg.
This document must reach the above email no later than 1700 Sept 14 2023 for your project to be graded. No marks will be awarded for your project if I did not receive this document by 1700 Sept 14 2023.

Remember to generate a PDF of this document and rename the PDF file to your official name (as in your NRIC). Otherwise your submission will not be accepted.

Academic Integrity

The assessment must be your own work. You cannot ask a third party to write any part of this assessment or use AI tools such as ChatGPT to generate output and submit it as part of your assessment. This will result in an automatic disqualification from the assessment.

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