

## NUS ISS Software Engineering (IBF2021) Final Project

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**Date:** Wed Mar 1 - 8 2022

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

The assessment duration starts from March 1 to 8 and will consist of 2 parts

- Mon Mar 1 to 7 2022 - work on your application
- Mar 8 2022 - present your application

Your application will be assessed on the following

- Design and implementation
- Use of technologies to address issues
- Aesthetics and usability
- Creativity

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.

## Mandatory

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

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

<b>Angular</b>	
Forms (either reactive or template driven)	X
Use GET, POST, PUT, DELETE (2 or more) to communicate between frontend and backend	X
Single Page Application (client side routing)	X
Abstract common functionalities into Services	X
Include an application manifest	X
<b>Spring Boot</b>	
Use of POST to handle either x-www-form-urlencoded or JSON payload	X
Making HTTP request to external RESTful API	X
Parameterized routes	X
Query string	X
Must support more than 1 user	X
<b>Database</b>	
MySQL	X
Modeling data relationship: 1 to 1, 1 to many	X
Demonstrate data integrity and consistency when updating multiple tables	X
<b>Deployment</b>	
The application that you have developed must be publicly accessible You can deploy your application either as 2 separate	X

<p>deployments, frontend and backend or as a single deployment where the frontend is served from the backend.</p> <p>Applications can be deployed to Heroku (PaaS)</p> <p>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.</p> <p>Note: you cannot use Github pages for hosting your application</p>	
<p>All databases must be deployed to the 'cloud'. They can be deployed as VMs in public cloud or using managed database services</p>	X

## Optional

Your application should accumulate a minimum of **15 points** from the lists below.

Mark a X on the selection options.

Backend Optional Requirements	
Use web sockets ( <u>4 pts</u> )	
Integrate with any API that requires OAuth2 authentication ( <u>6pts</u> )	
Integrate with Google calendar or Drive ( <u>5pts</u> )	
Bots eg Telegram, Slack, ( <u>6pts</u> )	
Firebase web notification ( <u>4pts</u> )	
Include simple AI into your application. Must be model based (not a series of if/then/else) or use 3rd party AI service ( <u>3pts</u> )	
Integrate with voice with Alexa or Google Assistant ( <u>6pts</u> )	
Sending email ( <u>4pts</u> )	X

Use Spring Boot security with JWT to authenticate and authorize Angular request ( <u>6pts</u> )	
Ethereum smart contract ( <u>10pts</u> )	
Use MongoDB as an extra persistent layer ( <u>6pts</u> )	X

### Frontend Optional Requirements

Use web sockets ( <u>4 pts</u> )	
Integrate and use any game framework eg. Phaser3, LittleJS, Kaboom, etc. ( <u>6pts</u> )	
Bundle Angular application as iOS or Android application with hybrid app tools like Capacitor, Cordova, NativeScript ( <u>8pts</u> )	
Use map eg Google Map ( <u>4pts</u> ) *Directions are also included in the map.	X
Web notification ( <u>4pts</u> )	
Use Blockly toolkit ( <u>6pts</u> )	X
Use a UI component framework - eg. ng-bootstrap, Material, PrimeNG ( <u>3pts</u> )	X

additional 1  
mark  
consultation

### Deployment Optional Requirements

On a server (virtual machine) running on any public cloud. ( <u>4pts</u> )	X
Use other PaaS platform to deploy the Spring Boot application other than Heroku ( <u>3pts</u> )	X
Use S3 on AWS (if your project is using S3) ( <u>4pts</u> )	
Add a GitHub actions on your application repository to automatically deploy the application to Heroku when you commit and push your code to a branch called <u>release</u> ( <u>5pts</u> )	

If you have some service that is not on the above list, please discuss with the instructors before using it in your application.

Description of your service	Pts

Description of your service	Pts

## Presentation

You will be presenting your application on **Tuesday March 8 2022**. You will have 10 mins to show off your application. You will be presenting the application on the provided computer or on your mobile phone. You only have 1 opportunity to present.

The order of presentation will be published by Monday March 7 2022.

## Submission

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

Only commits before **0900 Tuesday March 8 2022** will be accepted. Any commits after **0900 Tuesday March 8 2022** will not be accepted. No other form of submission will be accepted (eg. ZIP file).

If you are using a private repository, it is your responsibility to ensure that the accessor can access your repository. Please approach the invigilator to get the username to share your repository.

After you have committed your work, post the following information to Slack channel #04-paf-submission

1. Your name (as per NRIC)
2. One or more of the deployed application's URL, bot name etc. Your application must be 'live' before your turn to present
3. Git repository URL

Hand in this form to your instructor either before your presentation on **Tuesday March 8 2022**. Complete this form by filling in your name (as per NRIC), email and the appropriate number of crosses in the Mandatory and Optional sections.

### Academic Integrity

The assessment must be your own work. You cannot ask a third party to write any part of this assessment. This will result in an automatic failure.