**Spring Frame Work – Test Driven Development (TDD)**

**November 2022**

Practices on how TDD works

REST Backend server application built using Spring Boot and web client using React

Requirements implemented one at a time

Requirements defined and implementation guided

Program contains:

* User sign up functionality
* React router and Redux for browser functionality and layout
* Users are listed and contents browsed
* User profile details can be updated

TDD – Write test before writing any production code



**User Sign Up Page - backend**

* User sign up functionality implemented
* Password of user hashed and saved to database

**Sign Up Form – frontend**

How states works in React

**Post User – backend**

* Test code written before writing any production code
* In Spring, HTTP annotations with controller will be used
* Junit – used to run tests
* Test classes and methods used
* Different types of tests – Unit Tests and Integration Tests
* Unit Tests – focus on small amount of code (i.e. method)
* Integration tests – entire web application to run – real user scenario
* Random port used for testing
* Test to be run in a controlled environment - not reliant on external dependencies thus define profile to run tests
* Use test annotation for each test method
* Naming of test method is NB for maintaining and debugging
* Set profile validity parameters – username, displayname, pwd
* Lombok used for code regeneration vs. boiler plate code
* POST - /api/1.0/users – good idea to append API and version of end point may evolve and change
* Test to see if we’re receiving what is expected, called Assertion method – more fluid syntax



Test 1 works due to having end point of post user mapping

**Saving User to Database – backend**

* API extracted to constant
* Assert if user stored in database
* Run query in H2 database
* JPA repo comes with most db query methods
* Update test class
* Tests are run in a random order
* New test runs before old one.
* All starts in a known state and back to original after test
* Clean up method clears db before each test

**Response Body – backend**

* Response type – generic response template
* TDD cycles assists in refactoring code
* Can check response letters being received
* Best way to write a test is to do a single assertion – focus on single requirement in each test
* Application requirements easier to pass if approach taken
* Easy to find out which one would fail with new requirements. If fail, debug

**Password Hashing – backend**

* Data stored in mem – h2