

Spring Boot

- Automatic Configuration
- No need for xml files
- Uses TomCat server

MicroServices

- Spring – components
- Microservices – services
- Microservices have endpoints and Spring Boot helps coordinate services to work together

Testing

- Use postman with breakpoints to make sure they work

Http

- Get – read
- Post – create
- Delete- delete
- Put- update or replace

Javadocs

- On top of a method
- Return , params, author

Git debugging

- You can click bottom left and see the log
- You can reset branch to a certain commit, mostly read only but hard will allow you to edit but local changes will be lost
- Debugger allows you to see variable values as it goes through
- See evaluations in real time and run them

Unit Test

- Checks quality
- Test functionality – if it takes too long , code might not be ideally made using OOP
- JUnit and Mocks help test things by mocking things
- Cucumber – used Human readable GWT to test methods
- CI/CD - runs tests automatically

Mock

- Define objects with mock method
- Define what happens next (when (x.isHarvested())).thenReturn(false);

- Can verify whether internal calls are made using verify for void methods

BDD

- Given – When – Then syntax
- Start with requirements -> GWT -> write tests -> run -> build -> run
- MockBeans allows you to create your own implementation

```
@Test
void saveSpecimen_validateReturnSpecimenWithLatitudeAndLongitude() throws Exception {
    givenSpecimenDataAreAvailable();
    whenUserCreatesANewSpecimenAndSaves();
    thenCrateNewSpecimenRecordAndReturnIt();
}

private void whenUserCreatesANewSpecimenAndSaves() {
    specimen.setLatitude("39.74");
    specimen.setLongitude("-84.51");
}

private void thenCrateNewSpecimenRecordAndReturnIt() throws Exception {
    Specimen createdSpecimen = specimenService.save(specimen);
    assertEquals(specimen, createdSpecimen);
    verify(specimenDAO, atLeastOnce()).save(specimen);
}
```

TDD

- Before you create the service – test driven design ^

CircleCI

- Associate with Github account
- Runs tests and tells you whether they pass
- Need to add configuration for it
- CI – multiple integrations / day
- CDelivery – everything auto and manual deployment
- CDeployment – everything auto along with deployment

CD

- Simplicity
- Manifesto for Agile SD
- Desing thinking
- Iterative/Incremental Development (small steps and verify as we go)
- Lean management (not much overhead get info very quick)
- Estimation accuracy

Polymorphism

- Variable type and Object Type can be two different things

Annotations

- Autowired – find me a matching object
- Components can be autowired
- Services for logic
- Repository for persistence

HashMap

- Key , value pair
- Using the key takes directly to the value instead of traversing through a list
- More efficient with larger collections