1. Download required Tools
   1. Intelij Community
   2. Postgres
   3. DbEaver Community
   4. Keycloak
   5. Node.js
   6. Angular
   7. Java 8 JDK (includes JRE, JVM)
   8. Maven (Binary zip archive)
   9. Git
2. Setup Path Variables for each bin
   1. Intelij
   2. Node js
   3. Postgres
   4. Maven
   5. Git
   6. Java\_Home
3. Check Setup
   1. npm --v
   2. node -v
   3. java -version
   4. postgres -V
   5. ng version
   6. mvn -version
   7. git -v
4. Setup Intelij with JDK and Maven
5. Start a project: start.spring.io
   1. Dependencies
      1. Spring Web
      2. Spring Data Jpa
      3. H2 Database
      4. Lombok
      5. Spring Boot DevTools
   2. Project: Maven Project
   3. Language: Java
   4. Spring Boot: 2.6.10
   5. Packaging: Jar
   6. Project Metadata: …
6. Open Project In intelij and add SonarLit Plugin
7. Build Project To check everything is ok
8. Initial commit on github
   1. Git init // default by Intelij
   2. Git checkout -b dev
   3. Git add.
   4. Git commit -m ‘Initial Commit’
   5. Git remote add origin URLINK
   6. Git push
   7. git push --set-upstream origin dev
9. From Application Package create
   1. entities
   2. repositories
   3. services
   4. web
   5. dto
   6. mappers
   7. enums
10. Add entities
    1. AccountOperation
    2. BankAccount
    3. CurrentAccount
    4. Customer
    5. SavingAccount
    6. Referential
11. Add Mapping Object Relational
    1. @Entity
    2. @Id
    3. @SequenceGenerator(name = "CUSTOMER\_SEQ", sequenceName = "CUSTOMER\_SEQ", allocationSize = 1)
    4. @GeneratedValue(strategy = GenerationType.SEQUENCE, generator ="CUSTOMER\_SEQ" )
    5. @OneToMany(mappedBy=”xxx”, FetchType.Lazy), @ManyToOne
    6. Tips: list side is the one to many
    7. @Inheritance (strategy = InheritanceType.SINGLE\_TABLE)
    8. @DiscriminatorColumn (name=” TYPE”, length=4)
    9. @DiscriminatorValue
    10. @Enumerated(EnumType.STRING)
    11. @JsonProperty(access = JsonProperty.Access.WRITE\_ONLY)
12. Specify Database on application.properties
    1. Spring.datasource.url=jdbc:h2:mem:bank
    2. Spring.h2.console.enabled=true
    3. Server.port=8085
13. Create required repositories
    1. Interface => extends JpaRepository <entity,Long>{}
14. Test persistence in Database
    1. Application
    2. @Bean
    3. CommandLineRunner start(Repository repo){
    4. Return args ->{
    5. Class class = new Class();
    6. Class.setx(‘hello’);
    7. Repository.save(class);});};}
15. If everything looks good switch to postgres
    1. From pom.xml comment h2 dependency
    2. Add postgres dependency
    3. Application.properties change h2 with postgres
    4. spring.datasource.url=jdbc:postgresql://localhost:5432/bank
    5. spring.datasource.username=postgres
    6. spring.datasource.password=postgres
    7. spring.datasource.driver-class-name=org.postgresql.Driver
    8. spring.jpa.show-sql=true
    9. spring.jpa.hibernate.ddl-auto=create-drop
    10. spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.PostgreSQLDialect
16. Start Postgres server from postgres directory
    1. pg\_ctl -D data start
17. Go to Dbeaver and setup connection to postgres server
18. IF everything looks good
19. Service create service
    1. Nouvelle interface qui contient le besoin fonctionnel (Déclaration des méthodes)
    2. Créer le service qui contient l’implémentation de l’interface ;
    3. Add annotation @Service, @Transactional
    4. Import requiered repositories and injection de dépendance using @AllArgsConstructor
20. Add slf4j annotation on serviceImpl
    1. @Slf4j
    2. And use it like log.info(‘Hello World’);
21. New package exceptions
    1. NotFoundException extends RuntimeException
    2. String message
    3. Super(message)
22. Back to service and add throws the not found exception
23. Once All services are done
24. We copy paste entity to DTO
25. Then we use Map Struct Interface
    1. Add notation service
    2. Using Mapstruct
    3. Might face probleme between Lombok and mapstruct
    4. Easy fix

<plugin>

<groupId>org.apache.maven.plugins</groupId>

<artifactId>maven-compiler-plugin</artifactId>

<configuration>

<source>${java.version}</source>

<target>${java.version}</target>

<annotationProcessorPaths>

<path>

<groupId>org.projectlombok</groupId>

<artifactId>lombok</artifactId>

<version>1.18.16</version>

</path>

<!-- This is needed when using Lombok 1.18.16 and above -->

<path>

<groupId>org.projectlombok</groupId>

<artifactId>lombok-mapstruct-binding</artifactId>

<version>0.2.0</version>

</path>

<!-- Mapstruct should follow the lombok path(s) -->

<path>

<groupId>org.mapstruct</groupId>

<artifactId>mapstruct-processor</artifactId>

<version>1.4.1.Final</version>

</path>

</annotationProcessorPaths>

</configuration>

</plugin>

1. Flyway for database migration
   1. Add plugin

<plugin>

<groupId>org.flywaydb</groupId>

<artifactId>flyway-maven-plugin</artifactId>

<executions>

<execution>

<phase>generate-sources</phase>

<goals>

<goal>migrate</goal>

</goals>

</execution>

</executions>

<configuration>

<driver>org.postgresql.Driver</driver>

<url>jdbc:postgresql://localhost:5432/bank</url>

<user>postgres</user>

<password>postgres</password>

<baselineOnMigrate>true</baselineOnMigrate>

<schemas>public</schemas>

<locations>

<location>

filesystem:src/main/resources/db

</location>

</locations>

</configuration>

</plugin>

* 1. Add Migration File
  2. V1.0\_\_init\_DigitalBank.sql (Must respect format)
  3. The file contains CREATE TABLE …. Inserto into….

1. Setup Pageable for repositories
2. Time to manage Front Side
3. Once Done set up keycloack
   1. Dowload Keycloak server version
   2. Copy paste in tools
   3. Launch keycloack using cmd
      1. Cd bin
      2. standalone.bat -Djboss.socket.binding.port-offset=100 (optional to change port)
   4. check localhost 8180
   5. Create administrator
   6. Username: admin; pwd: admin
   7. Administration console
   8. Login
4. Keycloak architecture
   1. Realms
   2. Users
   3. Roles
   4. Groups
   5. Clients
   6. Identity tocken
   7. Access tocken
   8. Themes
5. Add clients, users, set password, add roles, role mapping for users, clients installation, keycloak json