

# Birla Institute of Technology and Science



## INTRODUCTION TO DEVOPS

Assignment: Part A

Group No: 7

Topic: DEVOPS LIVE PROJECT

Sr.No.	Team Members	BITS ID
1	Aman Chitransh	2020HS70020
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**Project Title:** Employee Management

**Project Description:** Employee management is a microservice based project which can handle the employees data with their department details.

**Features:**

- Department service handles all the departments available.
- User service handles all the employee's data.
- User service interacts with department service to give employee data with department data.

**Technologies:**

- **Frontend:** UI5
- **Backend:** Spring boot, Java
- **Testing:** Selenium, Junits

**IDE:**

- IntelliJ
- Visual Studio Code

**Platform:**

- Web Browser

**GitHub Repository:**

- Frontend: <https://github.com/DEVOPS-TEAM-BITS/Devops-Assignment>
- Backend: <https://github.com/aaasarthak/devops-UI>

## Source Code Management:

- We have used Git and GitHub for our Source code management.
- The workflow that has been followed is Feature branch workflow, where each of the developers in our team has their own dedicated feature branches to work on the features instead of directly working on main branch.
- We have also leveraged the feature of Pull Requests to merge our feature branches into our main branch in our central repository

## GitHub Repository:

- Frontend: <https://github.com/DEVOPS-TEAM-BITS/Devops-Assignment>
- Backend: <https://github.com/aaasarthak/devops-UI>

DEVOPS-TEAM-BITS / Devops-Assignment · Public

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master · 1 branch · 0 tags

Nikhil8109 Integration Tests added · 78fa0f4 20 hours ago · 18 commits

.github/workflows global pom updated 3 days ago

cloud-config-server global pom updated 3 days ago

cloud-gateway global pom updated 3 days ago

department-service APIs added 2 days ago

service-registry Sonarcube integrated 3 days ago

src/test/java/practice Integration Tests added 20 hours ago

user-service APIs added 2 days ago

.DS\_Store sonarcube integration 4 days ago

pom.xml APIs added 2 days ago

Add a README

About

No description, website, or topics provided.

Releases

No releases published

Create a new release

Packages

No packages published

Publish your first package

Contributors 5

Java 100%

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master · 1 branch · 0 tags

sarthak505 UI added · 1e54ee4 2 days ago · 3 commits

.che first 2 days ago

webapp UI added 2 days ago

.gitignore first 2 days ago

neo-app.json first 2 days ago

package-lock.json first 2 days ago

package.json first 2 days ago

pom.xml first 2 days ago

ui5.yaml first 2 days ago

Add a README

About

No description, website, or topics provided.

Releases

No releases published

Packages

No packages published

Languages

JavaScript 74.1% HTML 25.5% CSS 0.4%

Help people interested in this repository understand your project by adding a README.

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## Continuous Build Management:

- We have used Maven for maintaining builds and dependencies of our project.
- Maven helped us in making our build process easy by hiding the complexities involved in maintaining the dependencies.

### Pom.xml: (Depicting Our dependencies)

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <project xmlns="http://maven.apache.org/POM/4.0.0">
3      <modelVersion>4.0.0</modelVersion>
4      <parent>
5          <groupId>org.springframework.boot</groupId>
6          <artifactId>spring-boot-starter-parent</artifactId>
7          <version>2.5.1</version>
8          <relativePath/> <!-- lookup parent from repository -->
9      </parent>
10     <packaging>pom</packaging>
11     <groupId>com.practice</groupId>
12     <artifactId>Devops-assignment</artifactId>
13     <version>0.0.1-SNAPSHOT</version>
14     <description>Demo project for Spring Boot</description>
15     <properties>
16         <java.version>11</java.version>
17         <spring-cloud.version>2020.0.3</spring-cloud.version>
18         <sonar.organization>devopstest11</sonar.organization>
19         <sonar.host.url>https://sonarcloud.io/sonar.host.url</sonar.host.url>
20     </properties>
21     <modules>
22         <module>cloud-gateway</module>
23         <module>department-service</module>
24         <module>service-registry</module>
25         <module>user-service</module>
26     </modules>
27     <dependencyManagement>
28         <dependencies>
29             <dependency>
30                 <groupId>org.springframework.cloud</groupId>
31                 <artifactId>spring-cloud-dependencies</artifactId>
32                 <version>${spring-cloud.version}</version>
33                 <type>pom</type>
34                 <scope>import</scope>
35             </dependency>
36         </dependencies>
37     </dependencyManagement>
38 </project>
```

## Compilation using Maven (mvn compile):

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19042.1237]
(c) Microsoft Corporation. All rights reserved.

C:\Users\I524947\IdeaProjects\Devops-Assignment>mvn compile
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] Devops-assignment           [pom]
[INFO] cloud-gateway               [jar]
[INFO] department-service           [jar]
[INFO] service-registry             [jar]
[INFO] user-service                 [jar]
[INFO]
[INFO] -----< com.practice:Devops-assignment >-----
[INFO] Building Devops-assignment 0.0.1-SNAPSHOT [1/5]
[INFO] [ pom ]
[INFO]
[INFO] -----< com.practice:cloud-gateway >-----
[INFO] Building cloud-gateway 0.0.1-SNAPSHOT [2/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:resources (default-resources) @ cloud-gateway ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] Copying 2 resources
[INFO] Copying 1 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:compile (default-compile) @ cloud-gateway ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] -----< com.practice:department-service >-----
[INFO] Building department-service 0.0.1-SNAPSHOT [3/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:resources (default-resources) @ department-service ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] Copying 2 resources
[INFO] Copying 1 resource
[INFO]

C:\Windows\System32\cmd.exe
[INFO] Building service-registry 0.0.1-SNAPSHOT [4/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:resources (default-resources) @ service-registry ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] Copying 2 resources
[INFO] Copying 0 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:compile (default-compile) @ service-registry ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] -----< com.practice:user-service >-----
[INFO] Building user-service 0.0.1-SNAPSHOT [5/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:resources (default-resources) @ user-service ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] Copying 2 resources
[INFO] Copying 1 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:compile (default-compile) @ user-service ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] -----
[INFO] Reactor Summary for Devops-assignment 0.0.1-SNAPSHOT:
[INFO]
[INFO] Devops-assignment ..... SUCCESS [ 0.016 s]
[INFO] cloud-gateway ..... SUCCESS [ 2.849 s]
[INFO] department-service ..... SUCCESS [ 0.588 s]
[INFO] service-registry ..... SUCCESS [ 0.551 s]
[INFO] user-service ..... SUCCESS [ 0.564 s]
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time: 5.318 s
[INFO] Finished at: 2021-10-22T14:40:02+05:30
[INFO] -----
```

C:\Users\I524947\IdeaProjects\Devops-Assignment>

## Unit Testing using Maven (mvn test):

```
C:\Windows\System32\cmd.exe
C:\Users\I524947\IdeaProjects\Devops-Assignment>mvn test
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] Devops-assignment                               [pom]
[INFO] cloud-gateway                                 [jar]
[INFO] department-service                            [jar]
[INFO] service-registry                             [jar]
[INFO] user-service                                  [jar]
[INFO]
[INFO] -----< com.practice:Devops-assignment >-----
[INFO] Building Devops-assignment 0.0.1-SNAPSHOT      [1/5]
[INFO] [ pom ]
[INFO] -----< com.practice:cloud-gateway >-----
[INFO] Building cloud-gateway 0.0.1-SNAPSHOT          [2/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:resources (default-resources) @ cloud-gateway ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] Copying 2 resources
[INFO] Copying 1 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:compile (default-compile) @ cloud-gateway ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:testResources (default-testResources) @ cloud-gateway ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] skip non existing resourceDirectory C:\Users\I524947\IdeaProjects\Devops-Assignment\cloud-gateway\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:testCompile (default-testCompile) @ cloud-gateway ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.22.2:test (default-test) @ cloud-gateway ---
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Caused by: java.net.ConnectException: Connection refused: connect: localhost:8761
    at org.apache.http.impl.client.InternalHttpClient.doExecute(InternalHttpClient.java:185)
    at org.apache.http.impl.client.CloseableHttpClient.execute(CloseableHttpClient.java:83)
    at org.apache.http.impl.client.CloseableHttpClient.execute(CloseableHttpClient.java:56)
    at org.springframework.http.client.HttpComponentsClientHttpRequest.executeInternal(HttpComponentsClientHttpRequest.java:87)
    at org.springframework.http.client.AbstractBufferingClientHttpRequest.executeInternal(AbstractBufferingClientHttpRequest.java:48)
    at org.springframework.http.client.AbstractClientHttpRequest.execute(AbstractClientHttpRequest.java:66)
    at org.springframework.web.client.RestTemplate.doExecute(RestTemplate.java:776)
    ... 39 more
Caused by: java.net.ConnectException: Connection refused: connect: localhost:8761
    at java.base/java.net.PlainSocketImpl.connect0(Native Method)
    at java.base/java.net.PlainSocketImpl.socketConnect(PlainSocketImpl.java:101)
    at java.base/java.net.AbstractPlainSocketImpl.doConnect(AbstractPlainSocketImpl.java:399)
    at java.base/java.net.AbstractPlainSocketImpl.connectToAddress(AbstractPlainSocketImpl.java:242)
    at java.base/java.net.AbstractPlainSocketImpl.connect(AbstractPlainSocketImpl.java:224)
    at java.base/java.net.SocksSocketImpl.connect(SocksSocketImpl.java:392)
    at java.base/java.net.Socket.connect(Socket.java:609)
    at org.apache.http.conn.socket.PlainConnectionSocketFactory.connectSocket(PlainConnectionSocketFactory.java:75)
    at org.apache.http.impl.conn.DefaultHttpClientConnectionOperator.connect(DefaultHttpClientConnectionOperator.java:142)
    ... 52 more
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] -----
[INFO] Reactor Summary for Devops-assignment 0.0.1-SNAPSHOT:
[INFO]
[INFO] Devops-assignment ..... SUCCESS [ 0.012 s]
[INFO] cloud-gateway ..... SUCCESS [ 49.151 s]
[INFO] department-service ..... SUCCESS [01:18 min]
[INFO] service-registry ..... SUCCESS [ 24.395 s]
[INFO] user-service ..... SUCCESS [ 42.602 s]
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time: 03:15 min
[INFO] Finished at: 2021-10-22T14:44:50+05:30
[INFO] -----
```

## Packaging using Maven (mvn package):

```
C:\Windows\System32\cmd.exe
Caused by: java.net.ConnectException: Connection refused: connect: localhost:8761
    at java.base/java.net.PlainSocketImpl.connect0(Native Method)
    at java.base/java.net.PlainSocketImpl.socketConnect(PlainSocketImpl.java:101)
    at java.base/java.net.AbstractPlainSocketImpl.doConnect(AbstractPlainSocketImpl.java:399)
    at java.base/java.net.AbstractPlainSocketImpl.connectToAddress(AbstractPlainSocketImpl.java:242)
    at java.base/java.net.AbstractPlainSocketImpl.connect(AbstractPlainSocketImpl.java:224)
    at java.base/java.net.SocksSocketImpl.connect(SocksSocketImpl.java:392)
    at java.base/java.net.Socket.connect(Socket.java:609)
    at org.apache.http.conn.socket.PlainConnectionSocketFactory.connectSocket(PlainConnectionSocketFactory.java:75)
    at org.apache.http.impl.conn.DefaultHttpClientConnectionOperator.connect(DefaultHttpClientConnectionOperator.java:142)
    ... 52 more

[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO]
[INFO] --- maven-jar-plugin:3.2.0:jar (default-jar) @ user-service ---
[INFO] Building jar: C:\Users\I524947\IdeaProjects\Devops-Assignment\user-service\target\user-service-0.0.1-SNAPSHOT.jar
[INFO]
[INFO] --- spring-boot-maven-plugin:2.5.1:repackage (repackage) @ user-service ---
[INFO] Replacing main artifact with repackaged archive
[INFO] -----
[INFO] Reactor Summary for Devops-assignment 0.0.1-SNAPSHOT:
[INFO]
[INFO] Devops-assignment ..... SUCCESS [  0.017 s]
[INFO] cloud-gateway ..... SUCCESS [ 50.635 s]
[INFO] department-service ..... SUCCESS [01:19 min]
[INFO] service-registry ..... SUCCESS [ 22.593 s]
[INFO] user-service ..... SUCCESS [ 45.516 s]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time:  03:19 min
[INFO] Finished at: 2023-10-22T14:51:05+05:30
[INFO] -----
```

C:\Users\I524947\IdeaProjects\Devops-Assignment>

```
C:\Users\I524947\IdeaProjects\Devops-Assignment>mvn package
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] Devops-assignment                  [pom]
[INFO] cloud-gateway                     [jar]
[INFO] department-service                 [jar]
[INFO] service-registry                  [jar]
[INFO] user-service                      [jar]
[INFO]
[INFO] -----< com.practice:Devops-assignment >-----
[INFO] Building Devops-assignment 0.0.1-SNAPSHOT [1/5]
[INFO] ----- [ pom ] -----
[INFO]
[INFO] -----< com.practice:cloud-gateway >-----
[INFO] Building cloud-gateway 0.0.1-SNAPSHOT [2/5]
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:resources (default-resources) @ cloud-gateway ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] Copying 2 resources
[INFO] Copying 1 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:compile (default-compile) @ cloud-gateway ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:testResources (default-testResources) @ cloud-gateway ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] skip non existing resourceDirectory C:\Users\I524947\IdeaProjects\Devops-Assignment\cloud-gateway\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:testCompile (default-testCompile) @ cloud-gateway ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.22.2:test (default-test) @ cloud-gateway ---
[INFO]
[INFO] -----
[INFO] T E S T S
```

## Installing in Repository using maven (mvn install):

```
C:\Windows\System32\cmd.exe
C:\Users\I524947\IdeaProjects\Devops-Assignment>mvn install
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] Devops-assignment           [pom]
[INFO] cloud-gateway               [jar]
[INFO] department-service           [jar]
[INFO] service-registry             [jar]
[INFO] user-service                 [jar]
[INFO]
[INFO] -----< com.practice:Devops-assignment >-----
[INFO] Building Devops-assignment 0.0.1-SNAPSHOT          [1/5]
[INFO] [ pom ]-----[ INFO ]
[INFO]
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ Devops-assignment ---
[INFO] Installing C:\Users\I524947\IdeaProjects\Devops-Assignment\pom.xml to C:\Users\I524947\.m2\repository\com\practice\Devops-assignment\0.0.1-SNAPSHOT.pom
[INFO]
[INFO] -----< com.practice:cloud-gateway >-
[INFO] Building cloud-gateway 0.0.1-SNAPSHOT          [2/5]
[INFO] [ jar ]-----[ INFO ]
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:resources (default-resources) @ cloud-gateway ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] Copying 2 resources
[INFO] Copying 1 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:compile (default-compile) @ cloud-gateway ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:3.2.0:testResources (default-testResources) @ cloud-gateway ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Using 'UTF-8' encoding to copy filtered properties files.
[INFO] skip non existing resourceDirectory C:\Users\I524947\IdeaProjects\Devops-Assignment\cloud-gateway\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:testCompile (default-testCompile) @ cloud-gateway ---
[INFO] Nothing to compile - all classes are up to date
[INFO]

C:\Windows\System32\cmd.exe
at java.base/java.net.AbstractPlainSocketImpl.connect(AbstractPlainSocketImpl.java:224)
at java.base/java.net.SocksSocketImpl.connect(SocksSocketImpl.java:392)
at java.base/java.net.Socket.connect(Socket.java:609)
at org.apache.http.conn.socket.PlainConnectionSocketFactory.connectSocket(PlainConnectionSocketFactory.java:75)
at org.apache.http.impl.conn.DefaultHttpClientConnectionOperator.connect(DefaultHttpClientConnectionOperator.java:142)
... 52 more

[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- maven-jar-plugin:3.2.0:jar (default-jar) @ user-service ---
[INFO] --- spring-boot-maven-plugin:2.5.1:repackage (repackage) @ user-service ---
[INFO] Replacing main artifact with repackaged archive
[INFO]
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ user-service ---
[INFO] Installing C:\Users\I524947\IdeaProjects\Devops-Assignment\user-service\target\user-service-0.0.1-SNAPSHOT.jar to C:\Users\I524947\.m2\repository\com\practice\user-service\0.0.1-SNAPSHOT\user-service-0.0.1-SNAPSHOT.jar
[INFO] Installing C:\Users\I524947\IdeaProjects\Devops-Assignment\user-service\pom.xml to C:\Users\I524947\.m2\repository\com\practice\user-service\0.0.1-SNAPSHOT\user-service-0.0.1-SNAPSHOT.pom
[INFO]
[INFO] -----
[INFO] Reactor Summary for Devops-assignment 0.0.1-SNAPSHOT:
[INFO]
[INFO] Devops-assignment ..... SUCCESS [ 0.717 s]
[INFO] cloud-gateway ..... SUCCESS [ 45.526 s]
[INFO] department-service ..... SUCCESS [01:08 min]
[INFO] service-registry ..... SUCCESS [ 20.304 s]
[INFO] user-service ..... SUCCESS [ 42.347 s]
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time: 02:58 min
[INFO] Finished at: 2021-10-22T14:55:52+05:30
[INFO] -----
```

## Clean up using Maven (mvn clean):

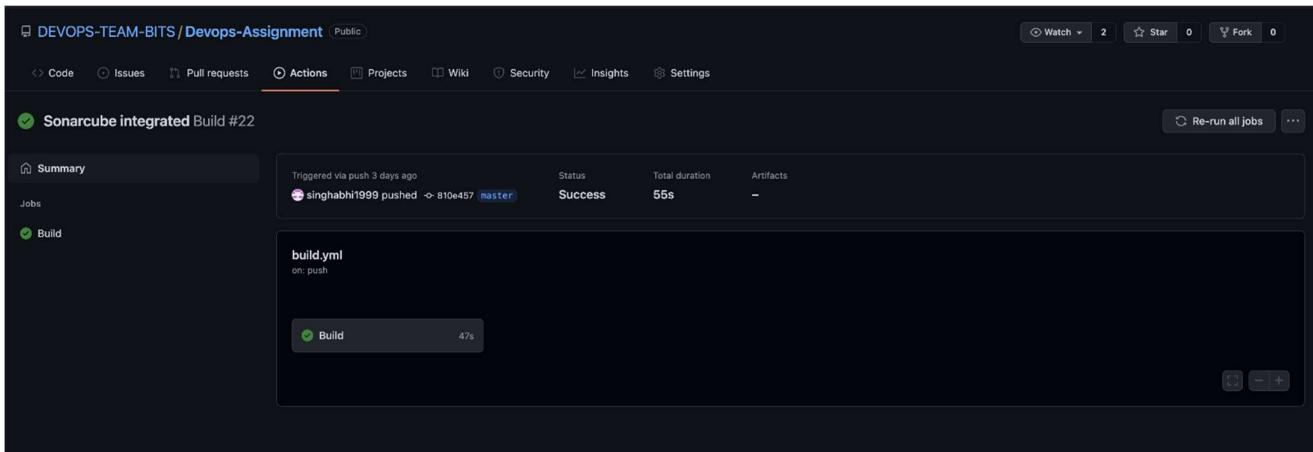
```
C:\Windows\System32\cmd.exe
C:\Users\I524947\IdeaProjects\Devops-Assignment>mvn clean
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] Devops-assignment                               [pom]
[INFO] cloud-gateway                                 [jar]
[INFO] department-service                            [jar]
[INFO] service-registry                             [jar]
[INFO] user-service                                [jar]
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ Devops-assignment ---
[INFO]
[INFO] --- com.practice:Devops-assignment >-
[INFO] Building Devops-assignment 0.0.1-SNAPSHOT      [1/5]
[INFO] [ pom ]
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ Devops-assignment ---
[INFO]
[INFO] --- com.practice:cloud-gateway >-
[INFO] Building cloud-gateway 0.0.1-SNAPSHOT          [2/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ cloud-gateway ---
[INFO] Deleting C:\Users\I524947\IdeaProjects\Devops-Assignment\cloud-gateway\target
[INFO]
[INFO] --- com.practice:department-service >-
[INFO] Building department-service 0.0.1-SNAPSHOT       [3/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ department-service ---
[INFO] Deleting C:\Users\I524947\IdeaProjects\Devops-Assignment\department-service\target
[INFO]
[INFO] --- com.practice:service-registry >-
[INFO] Building service-registry 0.0.1-SNAPSHOT         [4/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ service-registry ---
[INFO] Deleting C:\Users\I524947\IdeaProjects\Devops-Assignment\service-registry\target
[INFO]
[INFO] --- com.practice:user-service >-
[INFO] Building user-service 0.0.1-SNAPSHOT            [5/5]
[INFO]

C:\Windows\System32\cmd.exe
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ cloud-gateway ---
[INFO] Deleting C:\Users\I524947\IdeaProjects\Devops-Assignment\cloud-gateway\target
[INFO]
[INFO] --- com.practice:department-service >-
[INFO] Building department-service 0.0.1-SNAPSHOT       [3/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ department-service ---
[INFO] Deleting C:\Users\I524947\IdeaProjects\Devops-Assignment\department-service\target
[INFO]
[INFO] --- com.practice:service-registry >-
[INFO] Building service-registry 0.0.1-SNAPSHOT         [4/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ service-registry ---
[INFO] Deleting C:\Users\I524947\IdeaProjects\Devops-Assignment\service-registry\target
[INFO]
[INFO] --- com.practice:user-service >-
[INFO] Building user-service 0.0.1-SNAPSHOT            [5/5]
[INFO] [ jar ]
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ user-service ---
[INFO] Deleting C:\Users\I524947\IdeaProjects\Devops-Assignment\user-service\target
[INFO]
[INFO] Reactor Summary for Devops-assignment 0.0.1-SNAPSHOT:
[INFO]
[INFO] Devops-assignment ..... SUCCESS [ 0.488 s]
[INFO] cloud-gateway ..... SUCCESS [ 0.189 s]
[INFO] department-service ..... SUCCESS [ 0.215 s]
[INFO] service-registry ..... SUCCESS [ 0.187 s]
[INFO] user-service ..... SUCCESS [ 0.204 s]
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 2.124 s
[INFO] Finished at: 2021-10-22T14:57:19+05:30
[INFO]
```

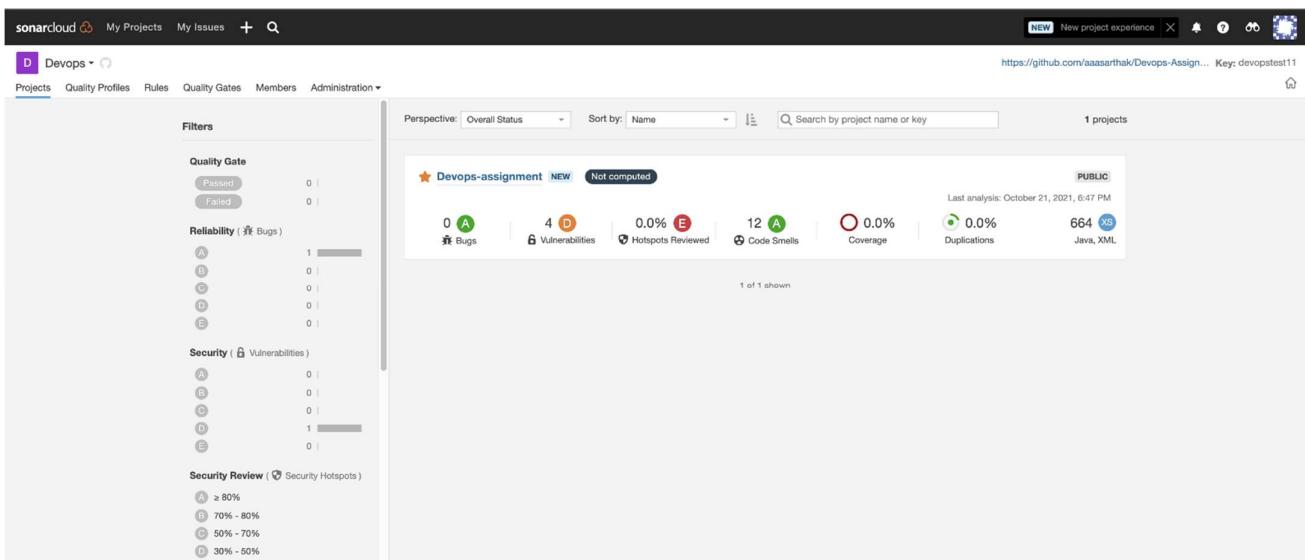
## Code Quality Management:

- We have used SonarQube for checking the quality of the code.
- Build will be triggered on every code push.

SonarQube integrated with Git repo:



SonarQube Report :



## SonarQube Report Summary:

The screenshot shows the SonarQube interface for the 'Devops-assignment' project. The top navigation bar includes 'Devops / Devops-assignment / Overview'. The main content area displays the following information:

- Main Branch Status:** Quality Gate is 'Not computed'.
- Main Branch Evolution:** Findings: 18, Coverage: 0.0%, Duplications: 0.0%. Last analysis: Oct 21, 2021.
- Latest Activity:** NEW ANALYSIS on October 21, 6:47 PM, 78fa0f46. Metrics: 0 Fixed Issues, +1 New Issues, 0.0% Coverage, 0.0% Duplications. Lines of Code: 664.

On the left sidebar, there are links for 'Information' and 'Administration'.

The screenshot shows the SonarCloud interface for the 'Devops-assignment' project. The top navigation bar includes 'sonarcloud My Projects My Issues +'. The main content area displays the following information:

- Quality Gate:** Not computed.
- Metrics:**
  - RELIABILITY: 0 Bugs (A)
  - Maintainability: 12 Code Smells (A)
  - SECURITY: 4 Vulnerabilities (D)
  - SECURITY REVIEW: 2 Security Hotspots (E)
  - COVERAGE: 0.0% Coverage
  - DUPPLICATIONS: 0.0% Duplications

## Files scanned and respective report:

The screenshot shows the SonarCloud interface for the 'Devops-assignment' project, specifically the 'Code' tab. The main content area displays the following information:

- Search bar:** Search for files...
- Table:** A detailed report of scanned files with their respective metrics. The table includes columns: Lines of Code, Bugs, Vulnerabilities, Code Smells, Security Hotspots, Coverage, and Duplications.

	Lines of Code	Bugs	Vulnerabilities	Code Smells	Security Hotspots	Coverage	Duplications
cloud-gateway	79	0	0	1	0	0.0%	0.0%
department-service	237	0	2	5	1	0.0%	0.0%
service-registry	63	0	0	1	0	0.0%	0.0%
src/test/java/practice	—	0	0	1	0	—	—
user-service	247	0	2	4	1	0.0%	0.0%
pom.xml	38	0	0	0	0	—	0.0%

At the bottom, it says '6 of 6 shown'.

## SonarQube issue with details:

The screenshot shows the SonarQube Issues page for the project 'Devops-assignment' in the 'master' branch. The page displays 16 issues, all of which are 'Code Smell' type and have a severity of 'Info'. The issues are listed in a table with columns for file path, issue description, creation date, severity, and assigned developer.

File	Description	Created	Severity	Assigned To
cloud-gateway.../java/com/practice/cloudgateway/CloudGatewayApplicationTests.java	Add at least one assertion to this test case. Why is this an issue?	5 days ago	L10	No tags
department-service.../practice/department/controller/DepartmentController.java	Replace this persistent entity with a simple POJO or DTO object. Why is this an issue?	5 days ago	L20	No tags
department-service.../practice/department/dto/UserList.java	Remove this unused import 'lombok.Builder'. Why is this an issue?	yesterday	L42	No tags
service-registry.../com/practice/serviceregistry/ServiceRegistryApplicationTests.java	Add at least one assertion to this test case. Why is this an issue?	5 days ago	L10	No tags
department-service.../java/com/practice/department/DepartmentServiceApplicationTests.java	Replace this persistent entity with a simple POJO or DTO object. Why is this an issue?	yesterday	L42	No tags
department-service.../java/com/practice/department/dto/UserList.java	Remove this unused import 'lombok.Data'. Why is this an issue?	yesterday	L6	No tags
department-service.../java/com/practice/department/DepartmentServiceApplicationTests.java	Remove this unused "users" private field. Why is this an issue?	yesterday	L9	No tags
cloud-gateway.../java/com/practice/cloudgateway/CloudGatewayApplicationTests.java	Replace this persistent entity with a simple POJO or DTO object. Why is this an issue?	5 days ago	L20	No tags
department-service.../java/com/practice/department/controller/DepartmentController.java	Replace this persistent entity with a simple POJO or DTO object. Why is this an issue?	5 days ago	L42	No tags
department-service.../practice/department/dto/UserList.java	Remove this unused import 'lombok.Builder'. Why is this an issue?	yesterday	L5	No tags
service-registry.../com/practice/serviceregistry/ServiceRegistryApplicationTests.java	Add at least one assertion to this test case. Why is this an issue?	5 days ago	L10	No tags
department-service.../java/com/practice/department/DepartmentServiceApplicationTests.java	Replace this persistent entity with a simple POJO or DTO object. Why is this an issue?	yesterday	L42	No tags
cloud-gateway.../java/com/practice/cloudgateway/CloudGatewayApplicationTests.java	Replace this persistent entity with a simple POJO or DTO object. Why is this an issue?	5 days ago	L20	No tags
department-service.../java/com/practice/department/controller/DepartmentController.java	Replace this persistent entity with a simple POJO or DTO object. Why is this an issue?	5 days ago	L42	No tags
department-service.../practice/department/dto/UserList.java	Remove this unused import 'lombok.Builder'. Why is this an issue?	yesterday	L6	No tags
service-registry.../com/practice/serviceregistry/ServiceRegistryApplicationTests.java	Add at least one assertion to this test case. Why is this an issue?	5 days ago	L10	No tags

# Integration Testing using Selenium:

- We used Selenium to test our application by automating the UI Elements.

Automatically navigating to User's service:

The terminal window displays the following Java code:

```
public class DemoTest {
    public static void main(String[] args) {
        WebDriver driver = new ChromeDriver();
        driver.get("http://webidetesting5940575-e470apir9t.dispatcher.int.sap.eu2.hana.ondemand.com/webapp");
        String title = driver.getTitle();
        System.out.println("Title: " + title);
        driver.quit();
    }
}
```

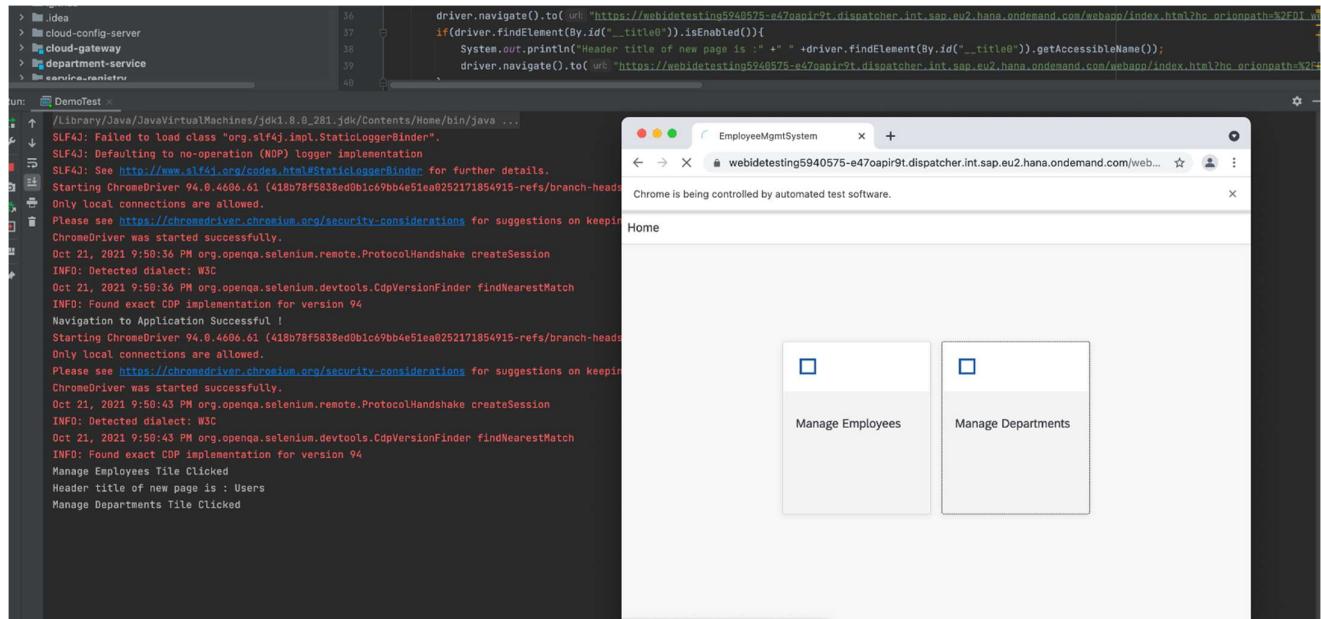
The terminal output shows the application's logs:

```
Process finished with exit code 1
[1] 1000 % DemoTest
Oct 21, 2021 9:49:26 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
INFO: Detected dialect: W3C
Oct 21, 2021 9:49:26 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
INFO: Found exact CDP implementation for version 94
Navigation to Application Successful !
Starting ChromeDriver 94.0.4606.61 (418b78f5838ed0b1c69bb4e51ea0252171854915-refs/branch-heads/4606@{Oct 21, 2021 9:49:42 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Oct 21, 2021 9:49:42 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
INFO: Found exact CDP implementation for version 94
Exception in thread "main" org.openqa.selenium.NoSuchElementException: no such element: Unable to locate element:{"using": "xpath", "value": "(//a[@href='#'])[1]"}
(Session info: chrome=94.0.4606.81)
For documentation on this error, please visit: https://selenium.dev/exceptions/no_such_element
Build info: version: '4.0.0', revision: '5a21814679'
System info: host: 'C02F77SM0H', ip: 'fe80:0:0:0:42b:3f77:845b:e5df%en0', os.name: 'Mac OS X', os.version: '10.15.7', java.version: '11.0.11'
Driver info: org.openqa.selenium.chrome.ChromeDriver
Command: [681aa84cd70f1dc74a84fb8843aeaf, findElement {using=id, value=_title--_xmlview0--containsCapacities [acceptInsecureCerts: false, browserName: chrome, browserVersion: 94.0.4606.81, chromeOptions: {args: [--remote-debugging-port=9222], extensions: ["/Applications/Google Chrome.app"], userAgent: "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/94.0.4606.81 Safari/537.36"}, display: null, javascriptEnabled: true, platformName: 'Mac OS X', platformVersion: '10.15.7', proxy: null, setWindowRect: true, timeouts: {implicit: 0, pageLoad: 300000, script: 30000}], using: 'xpath', value: '(//a[@href='#'])[1]'}]
Capabilities: {acceptInsecureCerts: false, browserName: chrome, browserVersion: 94.0.4606.81, chrome: {args: [--remote-debugging-port=9222], extensions: ["/Applications/Google Chrome.app"], userAgent: "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/94.0.4606.81 Safari/537.36"}, display: null, javascriptEnabled: true, platformName: 'Mac OS X', platformVersion: '10.15.7', proxy: null, setWindowRect: true, timeouts: {implicit: 0, pageLoad: 300000, script: 30000}}, browserVersion: 94.0.4606.81, chromeOptions: {args: [--remote-debugging-port=9222], extensions: ["/Applications/Google Chrome.app"], userAgent: "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/94.0.4606.81 Safari/537.36"}, display: null, javascriptEnabled: true, platformName: 'Mac OS X', platformVersion: '10.15.7', proxy: null, setWindowRect: true, timeouts: {implicit: 0, pageLoad: 300000, script: 30000}}, display: null, javascriptEnabled: true, platformName: 'Mac OS X', platformVersion: '10.15.7', proxy: null, setWindowRect: true, timeouts: {implicit: 0, pageLoad: 300000, script: 30000}}
Session ID: 681aa84cd70f1dc74a84fb8843aeaf
at org.openqa.selenium.remote.codec.w3c.W3CHttpResponseCodec.createException(W3CHttpResponseCodec.java:188)
at org.openqa.selenium.remote.codec.w3c.W3CHttpResponseCodec.decode(W3CHttpResponseCodec.java:133)
at org.openqa.selenium.remote.codec.w3c.W3CHttpResponseCodec.decode(W3CHttpResponseCodec.java:53)
at org.openqa.selenium.remote.HttpCommandExecutor.execute(HttpCommandExecutor.java:184)
at org.openqa.selenium.remote.service.DriverCommandExecutor.invokeExecute(DriverCommandExecutor.java:134)
at org.openqa.selenium.remote.service.DriverCommandExecutor.execute(DriverCommandExecutor.java:132)
at org.openqa.selenium.remote.RemoteWebDriver.execute(RemoteWebDriver.java:559)
at org.openqa.selenium.remote.ElementLocation.findElement(ElementLocation.java:66)
at org.openqa.selenium.remote.RemoteWebDriver.findElement(RemoteWebDriver.java:383)
at org.openqa.selenium.remote.RemoteWebDriver.findElement(RemoteWebDriver.java:375)
at practice.DemoTest.TestNavToManageDepartmentsAndEmployees(DemoTest.java:33)
at practice.DemoTest.main(DemoTest.java:6)
```

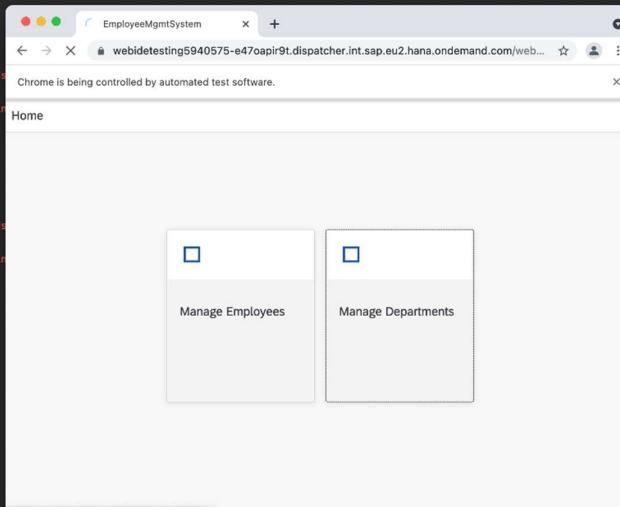
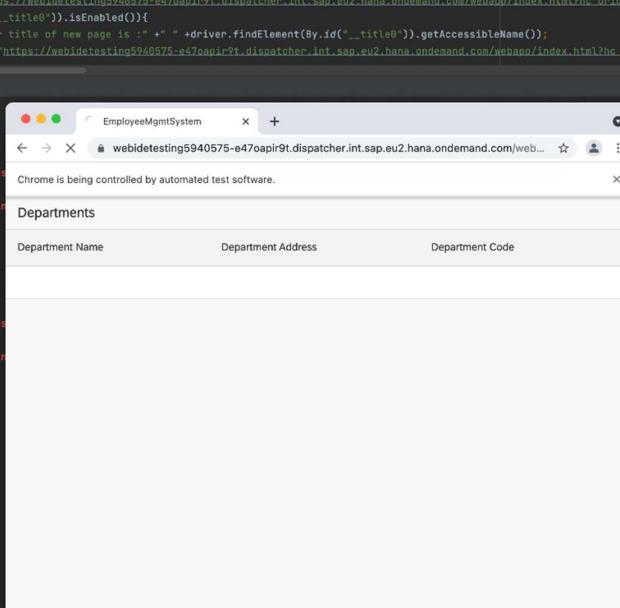
The browser windows show the application's interface:

- The first browser window shows the home page with two buttons: "Manage Employees" and "Manage Departments".
- The second browser window shows the "Users" list table with columns: First Name, Last Name, Email Address, and Department ID. A message "Waiting for webidetesting5940575-e470apir..." is displayed at the bottom.

## Automatically navigating to Department service:



```
> /Library/Java/JavaVirtualMachines/jdk1.8.0_281.jdk/Contents/Home/bin/java ...
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
Starting ChromeDriver 94.0.4606.61 (418b78f5838ed0b1c69bb4e51ea0252171854915-refs/branch-heads/94@#) on port 54057
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver up to date.
Oct 21, 2021 9:50:36 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Oct 21, 2021 9:50:36 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
INFO: Found exact CDP implementation for version 94
Navigation to Application Successful !
Starting ChromeDriver 94.0.4606.61 (418b78f5838ed0b1c69bb4e51ea0252171854915-refs/branch-heads/94@#) on port 54057
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver up to date.
Oct 21, 2021 9:50:43 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Oct 21, 2021 9:50:43 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
INFO: Found exact CDP implementation for version 94
Manage Employees Tile Clicked
Header title of new page is : Users
Manage Departments Tile Clicked
```

```
> /Library/Java/JavaVirtualMachines/jdk1.8.0_281.jdk/Contents/Home/bin/java ...
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
Starting ChromeDriver 94.0.4606.61 (418b78f5838ed0b1c69bb4e51ea0252171854915-refs/branch-heads/94@#) on port 54057
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver up to date.
Oct 21, 2021 9:50:36 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Oct 21, 2021 9:50:36 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
INFO: Found exact CDP implementation for version 94
Navigation to Application Successful !
Starting ChromeDriver 94.0.4606.61 (418b78f5838ed0b1c69bb4e51ea0252171854915-refs/branch-heads/94@#) on port 54057
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver up to date.
Oct 21, 2021 9:50:43 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Oct 21, 2021 9:50:43 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
INFO: Found exact CDP implementation for version 94
Manage Employees Tile Clicked
Header title of new page is : Users
Manage Departments Tile Clicked
Header title of new page is : Departments
```

## Code for Test Cases:

```
public class DemoTest {

    public void OpenTestBrowserConnection(){
        System.setProperty("webdriver.chrome.driver","/Users/I524946/Downloads/chromedriver");
        WebDriver driver = new ChromeDriver();
        driver.get("https://webidetesting5940575-e47oapir9t.dispatcher.int.sap.eu2.hana.ondemand.com/webapp/index.html?hc_orionpath=%2FDT_webide_di_workspace");
        System.out.println("Navigation to Application Successful !");
        driver.manage().timeouts().implicitlyWait( time: 5, TimeUnit.SECONDS);
        driver.quit();

    }

    public void TestNavToManageDepartmentsAndEmployees(){
        System.setProperty("webdriver.chrome.driver","/Users/I524946/Downloads/chromedriver");
        WebDriver driver = new ChromeDriver();
        driver.navigate().to( url: "https://webidetesting5940575-e47oapir9t.dispatcher.int.sap.eu2.hana.ondemand.com/webapp/index.html?hc_orionpath=%2FDT_webide_di_workspace");
        driver.manage().timeouts().implicitlyWait( time: 10, TimeUnit.SECONDS);
        Actions ac = new Actions(driver);
        WebElement tile = driver.findElement(By.id("__tile1__xmlview0--container-0"));
        ac.click(tile).perform();
        System.out.println("Manage Employees Tile Clicked");
        driver.navigate().to( url: "https://webidetesting5940575-e47oapir9t.dispatcher.int.sap.eu2.hana.ondemand.com/webapp/index.html?hc_orionpath=%2FDT_webide_di_workspace");
        if(driver.findElement(By.id("__title0")).isEnabled()){
            System.out.println("Header title of new page is :" + " " +driver.findElement(By.id("__title0")).getAccessibleName());
            driver.navigate().to( url: "https://webidetesting5940575-e47oapir9t.dispatcher.int.sap.eu2.hana.ondemand.com/webapp/index.html?hc_orionpath=%2FDT_webide_di_workspace");
        }
        else{
            System.out.println("Navigation to Manage Employees page Automation failed !");
        }
        tile = driver.findElement(By.id("__tile1__xmlview0--container-1"));
        ac.click(tile).perform();
        System.out.println("Manage Departments Tile Clicked");
        driver.navigate().to( url: "https://webidetesting5940575-e47oapir9t.dispatcher.int.sap.eu2.hana.ondemand.com/webapp/index.html?hc_orionpath=%2FDT_webide_di_workspace");
        if(driver.findElement(By.id("__title0")).isEnabled()){
            System.out.println("Header title of new page is :" + " " +driver.findElement(By.id("__title0")).getAccessibleName());
            driver.navigate().to( url: "https://webidetesting5940575-e47oapir9t.dispatcher.int.sap.eu2.hana.ondemand.com/webapp/index.html?hc_orionpath=%2FDT_webide_di_workspace");
            driver.quit();
        }
    }
}
```

## Jenkins Pipeline:

### CI / CD using Jenkins:

- We have used Jenkins for our CI / CD process.
- Our Jenkins pipelines triggers automatically whenever we make a commit, push code, or merge a pull request in our repository.

The screenshot shows the Jenkins interface for a job named 'learning'. The main title is 'Build #12 (Oct 21, 2021 5:53:49 PM)'. It indicates 'No changes.' and was started by user 'admin'. The revision is '1fcc31c4f5c50fb81af2d0c165d5dc64ff1103f3' and the repository is 'https://github.com/DEVOPS-TEAM-BITS/Devops-Assignment'. A note says 'Started 1 hr 24 min ago Took 1 min 49 sec on jenkins'. A 'Keep this build forever' button is present. On the left, a sidebar lists options like Back to Project, Status, Changes, Console Output, View as plain text, Edit Build Information, Delete build '#12', Git Build Data, Previous Build, and Next Build.

The screenshot shows the Jenkins dashboard for the 'Employee Management Pipeline'. The main title is 'Employee Management Pipeline'. It features a 'Stage View' table with four columns: Compilation and Build, Integration Test, Source code Analysis, and Deployment. The table shows two stages: Jan 12 at 15:06 with 'No Changes' and Jan 13 at 15:06 with 'No Changes'. Below the table is a 'Recent Changes' section and a 'Permalinks' section listing recent builds. The sidebar includes options like Back to Dashboard, Status, Changes, Build Now (which is selected), Configure, Delete Pipeline, Full Stage View, GitHub, Rename, Pipeline Syntax, and Polling Log. A 'Build History' section shows builds #5, #4, #3, #2, and #1 with their respective dates and times. At the bottom, there are links for Atom feed for all and Atom feed for failures.

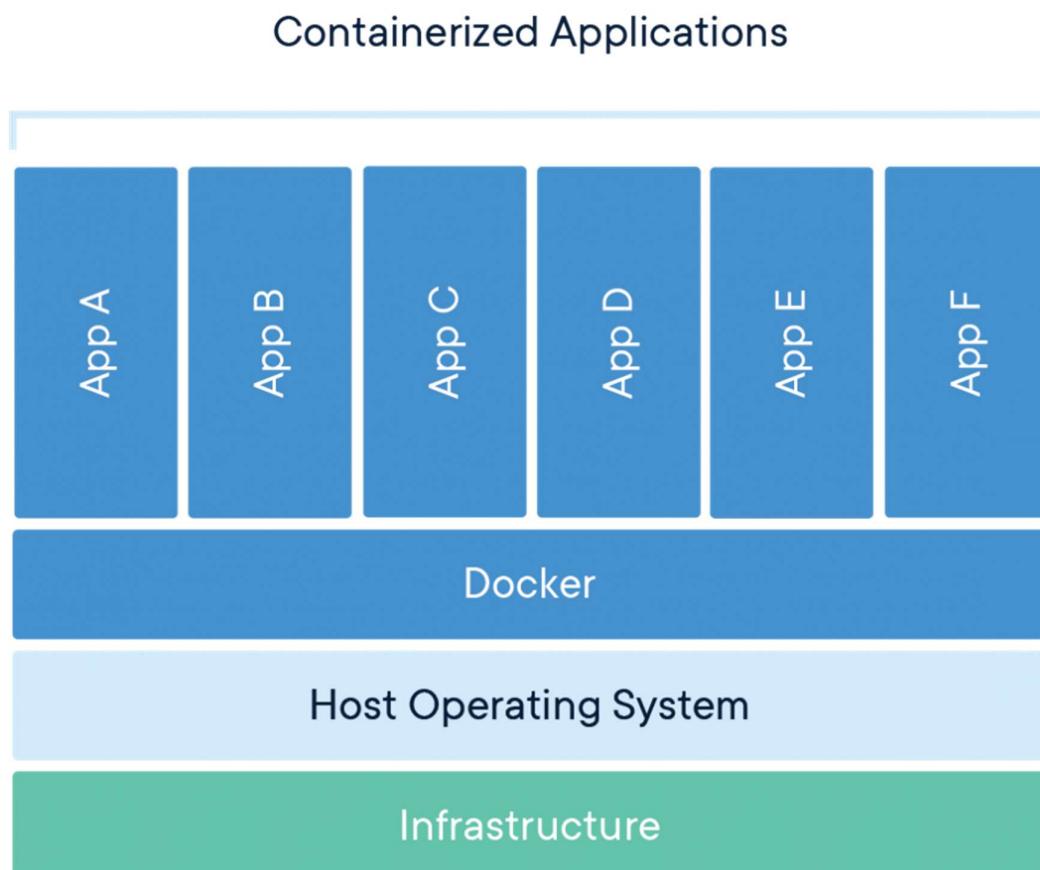
## Docker and Kubernetes:

We have used docker and Kubernetes to containerize and maintain them. We have created a docker file to containerize our application and we are using the Kubernetes to maintain and scale these applications.

You can find the docker file in our repository and Kubernetes in the Kubernetes folder of our repository.

Docker takes away repetitive, mundane configuration tasks and is used throughout the development lifecycle for fast, easy, and portable application development - desktop and cloud. Docker's comprehensive end to end platform includes UIs, CLIs, APIs and security that are engineered to work together across the entire application delivery lifecycle.

Kubernetes is an open-source orchestration system for automating the management, placement, scaling, and routing of containers that has become popular with developers and IT operations teams in recent years. It was first developed by Google and contributed to Open Source in 2014 and is now maintained by the Cloud Native Computing Foundation. There is an active Kubernetes community and ecosystem developing around Kubernetes with thousands of contributors and dozens of certified partners.



## ELK:

Elasticsearch is an open source, full-text search, and analysis engine, based on the Apache Lucene search engine. Logstash is a log aggregator that collects data from various input sources, executes different transformations and enhancements and then ships the data to various supported output destinations. Kibana is a visualization layer that works on top of Elasticsearch, providing users with the ability to analyse and visualize the data.

