

Home Assignment

For this assignment, we will be working on extending the FarToCel application during our in-class sessions. **(7 points)**

1. Expand the application to include conversions from Kelvin to Fahrenheit using the formula:
 $((kel-273.15) * (9/5) + 32)$; example, 300.1 Kelvin is equal to 59.0 Fahrenheit.

AT test case and ensure that the newly added function is correct. **(1 point)**

```
@Test
void convertKeltoFarTest() {
    double test = Math.round(FahrtToCel.kelvinToFah(300.1));
    assertEquals(59.0, test);
}
```

2. If you haven't already done so, create a GitHub repository for FarToCel and push the latest updates to it.



3. Set up a Jenkins project for the FarToCel project (either as freestyle or Maven, *with the name FarToCelKel_pollSCM_Amir*) and configure it to poll the source code repository for changes (* * * * *). Build and make sure everything is ok. **(1-point)**



4. Include a *Dockerfile* in the FarToCel project, build it, and run the Docker container locally. **(2 points)**. Make sure you add the filename tag and include the package to the manifest in pom.

```
<build>
  <finalName>interconversions</finalName>
  <plugins>
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-jar-plugin</artifactId>
      <version>3.2.0</version>
      <configuration>
        <archive>
          <manifest>
            <mainClass>org.example.App</mainClass>
          </manifest>
        </archive>
      </configuration>
    </plugin>
  </plugins>
  ...
```

```
# Use an official Maven image as a parent image
FROM maven:latest

# Set the working directory in the container
WORKDIR /app

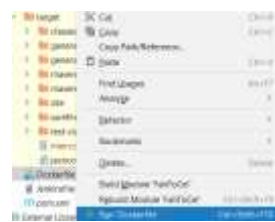
# Copy the pom.xml file to the container
COPY pom.xml /app/

# Copy the entire project to the container
COPY . /app/

# Package your application
RUN mvn package

# Run the main class (assuming your application has a main class)
CMD ["java", "-jar", "target/interconversions.jar"]

# to build: docker build -t javamvn .
# To run: docker run --name javamvn1 javamvn
```



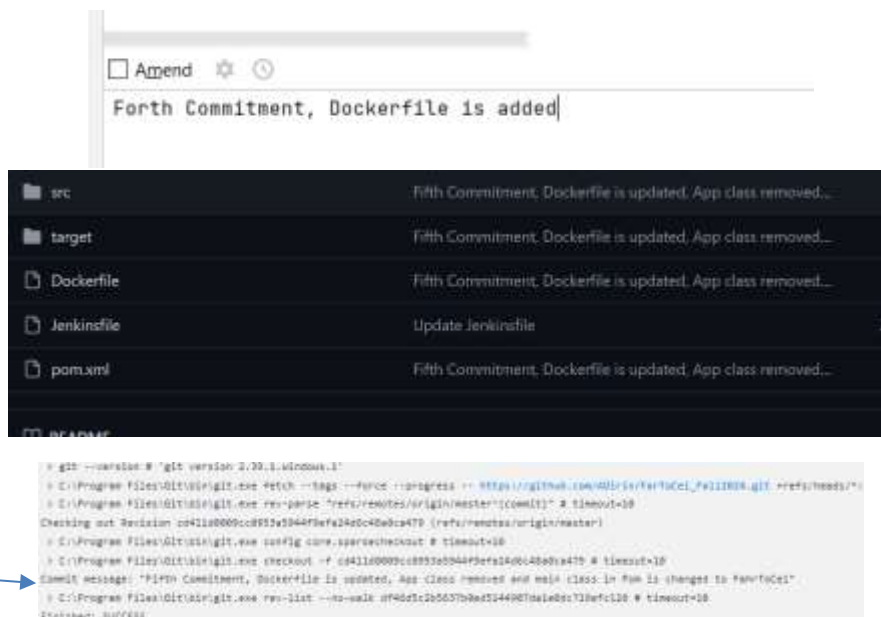
or

```
docker build -t javamvn1 .
```

ID	Image	Tag	Created	Size
b616585f8768	javamvn1	latest	10 seconds ago	58MB

```
$ docker run b616585f8768
212 Fahrenheit is equal to 100 Celsius.
100 Celsius is equal to 212 Fahrenheit.
273 Kelvin is equal to 0 Celsius.
300.1 Kelvin is equal to 59.0 Fahrenheit.
```

- Ensure that the latest modifications to your FarToCel project are pushed to GitHub and configure Jenkins to automatically start building after a new commit is uploaded to the repository.



- Create an account on hub.docker.com if you haven't already. (1 point)



7. Update Jenkins with Docker plugins, referring to the instructions provided in the class and accompanying video clip in the Oma. **(2-points)**



```

pipeline {
    agent any // IN THE LECTURE I WILL EXPLAIN THE SCRIPT AND THE WORKFLOW

    environment {
        // Define Docker Hub credentials ID
        DOCKERHUB_CREDENTIALS_ID = 'amiridirin'

        // Define Docker Hub repository name
        DOCKERHUB_REPO = 'amiridirin/fartocelkelvin'

        // Define Docker image tag
        DOCKER_IMAGE_TAG = 'latest'
    }

    stages {
        stage('Checkout') {
            steps {
                // Checkout code from Git repository
                git 'https://github.com/ADirin/FarToCel_Fall2024.git'
            }
        }

        stage('Build Docker Image') {
            steps {
                // Build Docker image
                script {
                    docker.build("${DOCKERHUB_REPO}:${DOCKER_IMAGE_TAG}")
                }
            }
        }

        stage('Push Docker Image to Docker Hub') {
            steps {
                // Push Docker image to Docker Hub
                script {
                    docker.withRegistry('https://index.docker.io/v1/', DOCKERHUB_CREDENTIALS_ID) {
                        docker.image("${DOCKERHUB_REPO}:${DOCKER_IMAGE_TAG}").push()
                    }
                }
            }
        }
    }
}

```

