

# Experiment 3

## Maven Build using GitHub Actions

**Objective:** Set up a GitHub Actions workflow to automatically build a Maven project whenever changes are pushed to a GitHub repository.

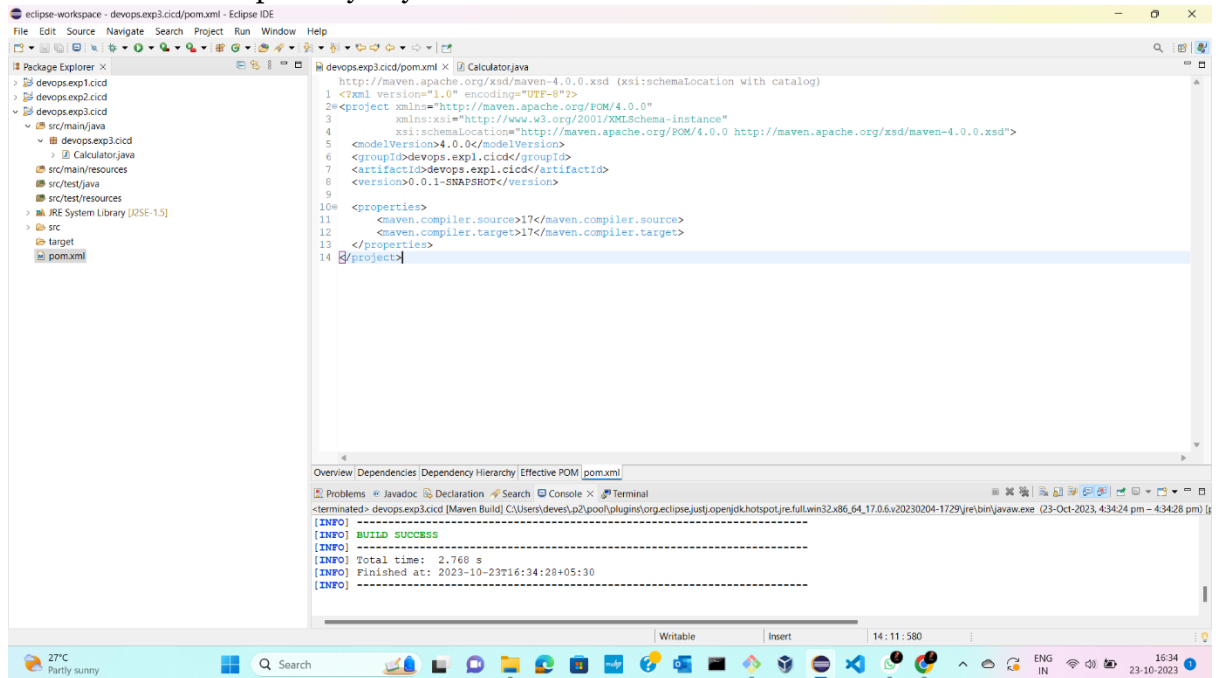
### Prerequisites:

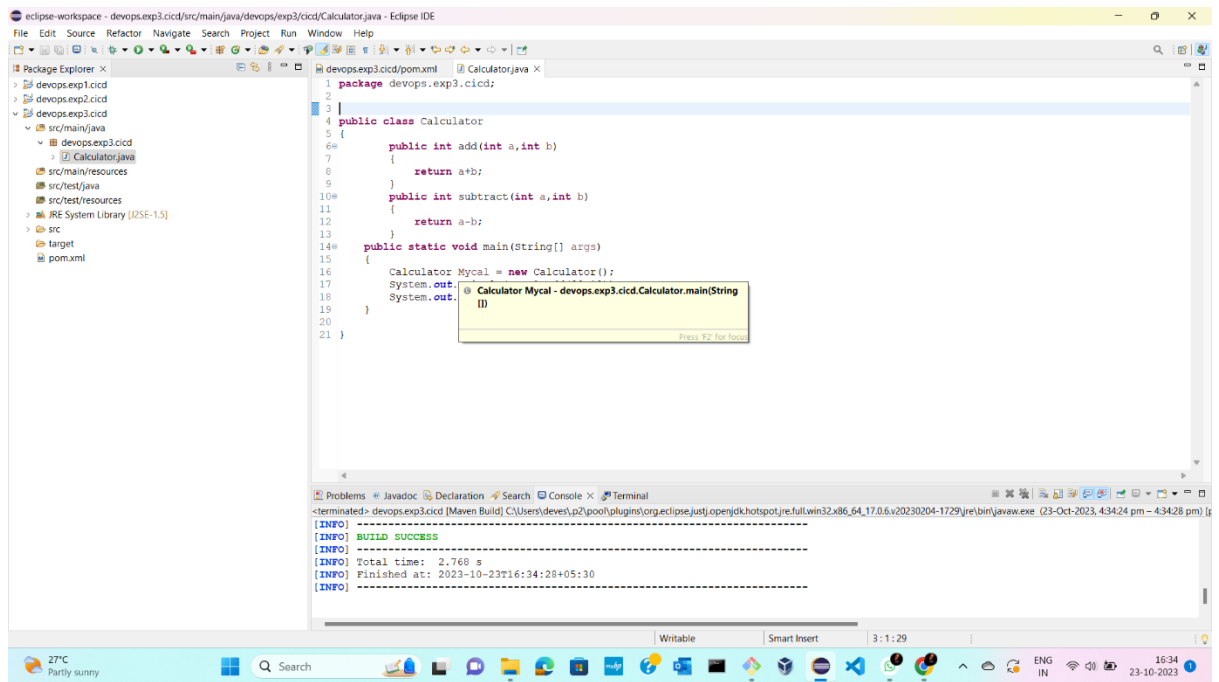
- GitHub account
- A Maven-based Java project hosted on GitHub

### Exercise Steps:

#### Step 1: Fork and Clone the Repository

- Fork a sample Maven-based Java project repository on GitHub.
- Clone the forked repository to your local machine.





## Step 2: Create a GitHub Actions Workflow

- In your cloned repository, create a directory named `.github/workflows` if it doesn't exist.
- Inside the `.github/workflows` directory, create a YAML file (e.g., `maven-build.yml`) to define your GitHub Actions workflow. You can use any text editor to create the file.
- Edit `maven-build.yml` and add the following content:

name: Maven Build

on:

push:

branches:

- main # Change this to your main branch name

jobs:

build:

runs-on: ubuntu-latest

steps:

- name: Checkout code

uses: actions/checkout@v2

- name: Set up Java

uses: actions/setup-java@v2

with:

java-version: '11' # Change this to the desired Java version

- name: Build with Maven

run: mvn clean install

This workflow will trigger a Maven build whenever changes are pushed to the main branch.

The screenshot shows a web browser displaying the GitHub repository page for 'Exp3\_cicd' by user 'DeveshSingh0801'. The repository is public and has 0 stars, 1 watching, and 0 forks. The main branch is selected, showing 1 branch and 0 tags. A recent commit by 'DeveshSingh0801' is displayed, titled 'Maven-build is made', with a green checkmark indicating success. The commit was made 2 minutes ago and contains 1 commit. The file changes table lists several files that were modified, all with the message 'Maven-build is made' and a timestamp of '2 minutes ago'. The files include '.github/workflows', '.settings', 'src/main/java/devops/exp3/cicd', 'target', '.classpath', '.project', and 'pom.xml'. On the right side, there are sections for 'About' (no description provided), 'Releases' (no releases published), 'Packages' (no packages published), and 'Languages'. At the bottom, there is a taskbar showing the system clock as 16:41 on 23-10-2023, and the weather as 27°C Partly sunny.

| File                           | Change              | Time          |
|--------------------------------|---------------------|---------------|
| .github/workflows              | Maven-build is made | 2 minutes ago |
| .settings                      | Maven-build is made | 2 minutes ago |
| src/main/java/devops/exp3/cicd | Maven-build is made | 2 minutes ago |
| target                         | Maven-build is made | 2 minutes ago |
| .classpath                     | Maven-build is made | 2 minutes ago |
| .project                       | Maven-build is made | 2 minutes ago |
| pom.xml                        | Maven-build is made | 2 minutes ago |

```

name: Maven Build

on:
  push:
    branches:
      - main # Change this to the branch you want to trigger the workflow on (e.g., 'master' or 'main')

jobs:
  build:
    runs-on: ubuntu-latest # Use the latest version of Ubuntu as the runner

    steps:
      - name: Checkout code
        uses: actions/checkout@v2 # This step checks out your code repository

      - name: Set up Java
        uses: actions/setup-java@v2
        with:
          java-version: '17' # You can specify the desired Java version here
          distribution: 'adopt' # Specify the distribution here, e.g., 'adopt', 'adopt-lts', 'adopt-hotspot', or 'adopt-openj9'

      - name: Build with Maven
        run: mvn clean install # Customize this command as needed to build your project

```

```

$ cd ..
Devesh Thakur@LAPTOP-ODCSKIKH MINGW64 /C:/Users/deves/eclipse-workspace/devops.exp3.cicd/.github (master)
$ cd ..
Devesh Thakur@LAPTOP-ODCSKIKH MINGW64 /C:/Users/deves/eclipse-workspace/devops.exp3.cicd (master)
$ git init
Initialized empty Git repository in C:/Users/deves/eclipse-workspace/devops.exp3.cicd/.git/
Devesh Thakur@LAPTOP-ODCSKIKH MINGW64 /C:/Users/deves/eclipse-workspace/devops.exp3.cicd (master)
$ git add
warning: in the working copy of '.github/workflows/Maven-Build.yml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'target/maven-status/maven-compiler-plugin/compile/default-compile/inputFiles.lst', LF will be replaced by CRLF the next time Git touches it
Devesh Thakur@LAPTOP-ODCSKIKH MINGW64 /C:/Users/deves/eclipse-workspace/devops.exp3.cicd (master)
$ git commit -m "Maven-build is made"
[master (root-commit) 19be5be] Maven-build is made
18 files changed, 176 insertions(+)
create mode 100644 .classpath
create mode 100644 .github/workflows/Maven-Build.yml
create mode 100644 .project
create mode 100644 .settings/org.eclipse.jdt.core.prefs
create mode 100644 .settings/org.eclipse.m2e.core.prefs
create mode 100644 pom.xml
create mode 100644 src/main/java/devops/exp3/cicd/Calculator.java
create mode 100644 target/classes/META-INF/MANIFEST.MF
create mode 100644 target/classes/META-INF/maven/devops.exp1.cicd/devops.exp1.cicd/pom.properties
create mode 100644 target/classes/META-INF/maven/devops.exp1.cicd/devops.exp1.cicd/pom.xml
create mode 100644 target/classes/META-INF/maven/devops.exp3.cicd/devops.exp3.cicd/pom.properties
create mode 100644 target/classes/META-INF/maven/devops.exp3.cicd/devops.exp3.cicd/pom.xml
create mode 100644 target/classes/devops/exp3/cicd/Calculator.class
create mode 100644 target/devops.exp1.cicd-0.0.1-SNAPSHOT.jar
create mode 100644 target/maven-archiver/pom.properties
create mode 100644 target/maven-status/maven-compiler-plugin/compile/default-compile/createdFiles.lst
create mode 100644 target/maven-status/maven-compiler-plugin/compile/default-compile/inputFiles.lst
create mode 100644 target/maven-status/maven-compiler-plugin/testCompile/default-testCompile/inputFiles.lst
Devesh Thakur@LAPTOP-ODCSKIKH MINGW64 /C:/Users/deves/eclipse-workspace/devops.exp3.cicd (master)
$ git branch -M main
Devesh Thakur@LAPTOP-ODCSKIKH MINGW64 /C:/Users/deves/eclipse-workspace/devops.exp3.cicd (main)
$ git remote add origin https://github.com/DeveshSingh0801/Exp3_cicd.git
Devesh Thakur@LAPTOP-ODCSKIKH MINGW64 /C:/Users/deves/eclipse-workspace/devops.exp3.cicd (main)
$ git push -u origin main
Enumerating objects: 45, done.
Counting objects: 100% (45/45), done.
Delta compression using up to 8 threads
Compressing objects: 100% (26/26), done.
Writing objects: 100% (45/45), 6.93 KiB | 1.39 MiB/s, done.
Total 45 (delta 2), reused 0 (delta 0), pack-reused 0
remotes: Resolving deltas: 100% (2/2), done.
to https://github.com/DeveshSingh0801/Exp3_cicd.git
* [new branch] main -> main
branch 'main' set up to track 'origin/main'.
Devesh Thakur@LAPTOP-ODCSKIKH MINGW64 /C:/Users/deves/eclipse-workspace/devops.exp3.cicd (main)

```

## Step 3: Commit and Push Changes

- Save the maven-build.yml file.
- Commit the changes to your local repository:

```
git add .
```

```
git commit -m "Add GitHub Actions workflow for Maven build"
```

```
git push origin main
```

## Step 4: Check the Workflow Status

- Go to your GitHub repository on the GitHub website.
- Click on the "Actions" tab to see the workflow running. You should see a workflow named "Maven Build" or the name you specified in the YAML file.

- Monitor the workflow's progress, and once it completes successfully, you should see a green checkmark indicating a successful build.

## Step 5: Verify the Build Artifacts

- If the build was successful, navigate to the "Actions" tab on your GitHub repository, and click on the latest workflow run.
- In the workflow details, you can find the "Artifacts" section. Click on the artifact(s) to download and verify the build artifacts.

The screenshot displays the GitHub Actions interface for a repository named 'DeveshSingh0801 / Exp3\_cicd'. The 'Actions' tab is selected, showing a workflow named 'Maven Build' with a status of 'Success'. The workflow was triggered by a push to the 'main' branch. The 'Summary' section shows a job named 'build' that completed successfully. The 'Maven-Build.yml' file is shown with the trigger 'on: push'. The 'Annotations' section shows 1 warning.

DeveshSingh0801 / Exp3\_cicd

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← Maven Build

✓ Maven-build is made #1 Re-run all jobs

Summary

Jobs

- ✓ build

Run details

- Usage
- Workflow file

Triggered via push now

DeveshSingh0801 pushed to 19be5be main

Status: Success Total duration: 36s Artifacts: -

Maven-Build.yml

on: push

✓ build 24s

Annotations

1 warning