

1. Build a branching model to help your team understand the Git workflow for faster integration of work.

Configure Git user

Set global Git username and email

```
git config --global user.name  
git config --global user.email
```

Create and initialize a new Git repository

Create directory 'practical', navigate to it, and initialize a Git repository

```
mkdir practical  
cd practical  
git init
```

```
F:\sem 7\Devops\practical1>git config --global user.name  
Jay-Dalsaniya  
  
F:\sem 7\Devops\practical1>  
F:\sem 7\Devops\practical1>git config --global user.email  
dalsaniyajay111@gmail.com  
  
F:\sem 7\Devops\practical1>mkdir practical  
  
F:\sem 7\Devops\practical1>cd practical  
  
F:\sem 7\Devops\practical1\practical>git init  
Initialized empty Git repository in F:/sem 7/Devops/practical1/practical/.git/
```

Add files and commit

```
git add welcome.html
```

Add welcome.html to staging area and check status

```
git status  
git add .
```

Add all files to staging area and check status

```
git status
```

```
F:\sem 7\Devops\practical1\practical>git add welcome.html

F:\sem 7\Devops\practical1\practical>git status
On branch main

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   welcome.html

F:\sem 7\Devops\practical1\practical>git add .

F:\sem 7\Devops\practical1\practical>git status
On branch main

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   welcome.html
```

Commit changes with a message

```
git commit -m "This Is First Commit"
```

```
F:\sem 7\Devops\practical1\practical>git commit -m "This Is First Commit"
[main (root-commit) 380316e] This Is First Commit
 1 file changed, 1 insertion(+)
 create mode 100644 welcome.html
```

View logs and manage branches

View commit logs

```
git log
```

```
F:\sem 7\Devops\practical1\practical>git commit -m "This Is First Commit"
[main (root-commit) 380316e] This Is First Commit
 1 file changed, 1 insertion(+)
 create mode 100644 welcome.html

F:\sem 7\Devops\practical1\practical>git log
commit 380316e128e66c36ad2d64d6dda12a28d42635c5 (HEAD -> main)
Author: Jay-Dalsaniya <dalsaniyajay111@gmail.com>
Date: Thu Jul 18 22:11:29 2024 +0530

    This Is First Commit
```

List branches

```
git branch
```

Create a new branch named 'jay_dalsaniya'

```
git branch jay_dalsaniya
```

Create and switch to 'jayu'

```
git checkout -b jayu
```

List branches

git branch

```
F:\sem 7\Devops\practical1\practical>git branch
* main

F:\sem 7\Devops\practical1\practical>git branch jay_dalsaniya

F:\sem 7\Devops\practical1\practical>git checkout -b jayu
Switched to a new branch 'jayu'

F:\sem 7\Devops\practical1\practical>git branch
  jay_dalsaniya
* jayu
  main
```

Check the status of the working directory

git status

```
F:\sem 7\Devops\practical1\practical>git status
On branch jayu
nothing to commit, working tree clean
```

Checkout to jay_dalsaniya branch and merge branches

Switch to 'jay_dalsaniya' branch

git checkout jay_dalsaniya

Merge 'jayu' into 'jay_dalsaniya'

git merge jayu

```
F:\sem 7\Devops\practical1\practical>git status
On branch jayu
nothing to commit, working tree clean

F:\sem 7\Devops\practical1\practical>git add .

F:\sem 7\Devops\practical1\practical>git commit -m"add new file "
[jayu 6d90a80] add new file
1 file changed, 1 insertion(+)
create mode 100644 hello.html

F:\sem 7\Devops\practical1\practical>git checkout jay_dalsaniya
Switched to branch 'jay_dalsaniya'

F:\sem 7\Devops\practical1\practical>git merge jayu
Updating 380316e..6d90a80
Fast-forward
 hello.html | 1 +
1 file changed, 1 insertion(+)
create mode 100644 hello.html
```

Delete 'jayu'

```
git branch -d jayu
```

```
F:\sem 7\Devops\practical1\practical>git branch -d jayu
Deleted branch jayu (was 6d90a80).
```

Add remote repository and push to GitHub

Add remote GitHub repository

```
git remote add origin https://github.com/Jay-Dalsaniya/github_practices-.git
```

Push changes to the 'master' branch on GitHub

```
git push -u origin main
```

```
F:\sem 7\Devops\practical1\practical>git remote add origin https://github.com/Jay-Dalsaniya/github_practices-.git

F:\sem 7\Devops\practical1\practical>git push -u origin main
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 243 bytes | 243.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Jay-Dalsaniya/github_practices-.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
```

2. Maven and Gradle Environmental Setup for Java Applications.

Part 1: Maven Project

Pre-requisites:

- Maven installed on your system.
- A shell or command prompt ready for executing commands.

Steps:

1. Create a Directory for the Project:

- Start by creating a directory where your project will reside. Navigate to this directory in your shell or command prompt.

```
mkdir my-maven-project
cd my-maven-project
```

2. Generate the Maven Project:

- Execute the following Maven goal to generate a new project using the maven-archetype-quickstart archetype. This archetype provides a basic template for a Java project.

```
mvn archetype:generate -DgroupId=com.mycompany.app -DartifactId=my-app
-DarchetypeArtifactId=maven-archetype-quickstart -DarchetypeVersion=1.4 -
-DinteractiveMode=false
```

```
Microsoft Windows [Version 10.0.22631.3958]
(c) Microsoft Corporation. All rights reserved.

F:\sem 7\Devops\practical2>mvn archetype:generate -DgroupId=com.mycompany.app -DartifactId=my-app -DarchetypeArtifactId=maven-archetype-quickstart -DarchetypeVersion=1.4 -DinteractiveMode=false
[INFO] Scanning for projects...
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/3.2.0/maven-clean-plugin-3.2.0.pom (5.3 kB at 1.5 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/3.2.0/maven-clean-plugin-3.2.0.pom (5.3 kB at 1.5 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/35/maven-plugins-35.pom (9.9 kB at 3.4 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/35/maven-plugins-35.pom (9.9 kB at 3.4 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/35/maven-parent-35.pom (45 kB at 14 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/35/maven-parent-35.pom (45 kB at 14 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/25/apache-25.pom (21 kB at 22 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/25/apache-25.pom (21 kB at 22 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/3.2.0/maven-clean-plugin-3.2.0.jar (36 kB at 27 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-clean-plugin/3.2.0/maven-clean-plugin-3.2.0.jar (36 kB at 27 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/3.1.2/maven-install-plugin-3.1.2.pom (8.5 kB at 32 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/3.1.2/maven-install-plugin-3.1.2.pom (8.5 kB at 32 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/42/maven-plugins-42.pom (7.7 kB at 13 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/42/maven-plugins-42.pom (7.7 kB at 13 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/42/maven-parent-42.pom (50 kB at 3.9 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/42/maven-parent-42.pom (50 kB at 3.9 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/32/apache-32.pom (24 kB at 11 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/32/apache-32.pom (24 kB at 11 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/junit/junit-bom/5.10.2/junit-bom-5.10.2.pom (5.6 kB at 9.0 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/junit/junit-bom/5.10.2/junit-bom-5.10.2.pom (5.6 kB at 9.0 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/3.1.2/maven-install-plugin-3.1.2.jar (32 kB at 2.6 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-install-plugin/3.1.2/maven-install-plugin-3.1.2.jar (32 kB at 2.6 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-deploy-plugin/3.1.2/maven-deploy-plugin-3.1.2.pom (9.6 kB at 2.1 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-deploy-plugin/3.1.2/maven-deploy-plugin-3.1.2.pom (9.6 kB at 2.1 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-deploy-plugin/3.1.2/maven-deploy-plugin-3.1.2.jar (40 kB at 4.7 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-deploy-plugin/3.1.2/maven-deploy-plugin-3.1.2.jar (40 kB at 4.7 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-site-plugin/3.12.1/maven-site-plugin-3.12.1.pom (20 kB at 5.9 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-site-plugin/3.12.1/maven-site-plugin-3.12.1.pom (20 kB at 5.9 kB/s)
```

Department of Computer Engineering
01CE0717 – DevOps Essentials – Lab Manual

```

Downloaded from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-util/4.0/asm-util-4.0.jar (37 kB at 3.0 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-analysis/4.0/asm-analysis-4.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-analysis/4.0/asm-analysis-4.0.jar (20 kB at 1.5 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/beanshell/bsh/2.0b4/bsh-2.0b4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-lang3/3.8.1/commons-lang3-3.8.1.jar (502 kB at 39 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/ant/ant/1.8.1/ant-1.8.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/ant/ant/1.8.1/ant-1.8.1.jar (282 kB at 21 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/ant/ant/1.8.1/ant-1.8.1.jar (1.5 MB at 55 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/groovy/groovy/2.0.1/groovy-2.0.1.jar (3.3 MB at 37 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/groovy/groovy-all/2.4.16/groovy-all-2.4.16.jar (7.2 MB at 37 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/ibm/icu4j/70.1/icu4j-70.1.jar (14 MB at 69 kB/s)
[INFO] Generating project in Batch mode
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1.4/maven-archetype-quickstart-1.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1.4/maven-archetype-quickstart-1.4.pom (1.6 kB at 1.3 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-bundles/1.4/maven-archetype-bundles-1.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-bundles/1.4/maven-archetype-bundles-1.4.pom (4.5 kB at 46 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1.4/maven-archetype-quickstart-1.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1.4/maven-archetype-quickstart-1.4.jar (7.1 kB at 32 kB/s)
[INFO]
[INFO] Using following parameters for creating project from Archetype: maven-archetype-quickstart:1.4
[INFO]
[INFO] Parameter: groupId, Value: com.mycompany.app
[INFO] Parameter: artifactId, Value: my-app
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Parameter: package, Value: com.mycompany.app
[INFO] Parameter: packageInPathFormat, Value: com/mycompany/app
[INFO] Parameter: package, Value: com.mycompany.app
[INFO] Parameter: groupId, Value: com.mycompany.app
[INFO] Parameter: artifactId, Value: my-app
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Project created from Archetype in dir: F:\sem 7\Devops\practical2\my-app
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO]
[INFO] Total time: 06:05 min
[INFO] Finished at: 2024-08-02T11:35:00+05:30
[INFO]

```

- Note: If Maven is newly installed, it may take some time to download the necessary artifacts to your local repository. In case of a timeout, you might need to execute the command again.

3. Navigate to the Project Directory:

- Once the project is generated, change into the directory that was created. The directory will have the same name as the artifactId specified.

```
cd my-app
```

4. Directory Structure:

- The my-app directory now contains the following structure:

```

my-app
├── pom.xml
├── src
│   ├── main
│   │   ├── java
│   │   │   ├── com
│   │   │   │   ├── mycompany
│   │   │   │   │   ├── app
│   │   │   │   │   │   App.java
│   │   └── test
│   │       ├── java
│   │       │   ├── com
│   │       │   │   ├── mycompany
│   │       │   │   │   ├── app
│   │       │   │   │   │   AppTest.java

```

- pom.xml: The Project Object Model (POM) file containing the project configuration.

- src/main/java: Contains the source code of the application.
- src/test/java: Contains the test code.

5. Validate the Project:

- Validate the project to ensure all necessary information is available for the build process.

```
mvn validate
```

```
F:\sem 7\Devops\practical2\my-app>mvn validate
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.mycompany.app:my-app >-----
[INFO] Building my-app 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.111 s
[INFO] Finished at: 2024-08-02T11:44:50+05:30
[INFO]
```

6. Compile the Project:

- Compile the source code of the project.

```
mvn compile
```

```
F:\sem 7\Devops\practical2\my-app>mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.mycompany.app:my-app >-----
[INFO] Building my-app 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- resources:3.0.2:resources (default-resources) @ my-app ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory F:\sem 7\Devops\practical2\my-app\src\main\resources
[INFO]
[INFO] --- compiler:3.8.0:compile (default-compile) @ my-app ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to F:\sem 7\Devops\practical2\my-app\target\classes
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 1.497 s
[INFO] Finished at: 2024-08-02T11:45:44+05:30
[INFO]
```

7. Test the Project:

- Run the tests (if any). Maven will compile and execute the test classes.

```
mvn test
```

```
F:\sem 7\Devops\practical2\my-app>mvn test
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.mycompany.app:my-app >-----
[INFO] Building my-app 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- resources:3.0.2:resources (default-resources) @ my-app ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory F:\sem 7\Devops\practical2\my-app\src\main\resources
[INFO]
[INFO] --- compiler:3.8.0:compile (default-compile) @ my-app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- resources:3.0.2:testResources (default-testResources) @ my-app ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory F:\sem 7\Devops\practical2\my-app\src\test\resources
```

8. Package the Project:

- Package the compiled code into its distributable format, such as a JAR file.

mvn package

```
F:\sem 7\Devops\practical2\my-app>mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.mycompany.app:my-app >-----
[INFO] Building my-app 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- resources:3.0.2:resources (default-resources) @ my-app ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory F:\sem 7\Devops\practical2\my-app\src\main\resources
[INFO]
[INFO] --- compiler:3.8.0:compile (default-compile) @ my-app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- resources:3.0.2:testResources (default-testResources) @ my-app ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory F:\sem 7\Devops\practical2\my-app\src\test\resources
[INFO]
[INFO] --- compiler:3.8.0:testCompile (default-testCompile) @ my-app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- surefire:2.22.1:test (default-test) @ my-app ---
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.mycompany.app.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.03 s - in com.mycompany.app.AppTest
[INFO]
[INFO] Results:
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- jar:3.0.2:jar (default-jar) @ my-app ---
[INFO] Building jar: F:\sem 7\Devops\practical2\my-app\target\my-app-1.0-SNAPSHOT.jar
[INFO]
[INFO] BUILD SUCCESS
[INFO]
```

- This will create a JAR file in the target directory.

9. Install the Project:

- Install the package into your local Maven repository. This step allows other projects to use this project as a dependency.

mvn install

```
F:\sem 7\Devops\practical2\my-app>cd target
F:\sem 7\Devops\practical2\my-app\target>java -jar my-app-1.0-SNAPSHOT.jar
no main manifest attribute, in my-app-1.0-SNAPSHOT.jar
F:\sem 7\Devops\practical2\my-app\target>cd ..
F:\sem 7\Devops\practical2\my-app>mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.mycompany.app:my-app >-----
[INFO] Building my-app 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- resources:3.0.2:resources (default-resources) @ my-app ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory F:\sem 7\Devops\practical2\my-app\src\main\resources
[INFO]
[INFO] --- compiler:3.8.0:compile (default-compile) @ my-app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- resources:3.0.2:testResources (default-testResources) @ my-app ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory F:\sem 7\Devops\practical2\my-app\src\test\resources
[INFO]
[INFO] --- compiler:3.8.0:testCompile (default-testCompile) @ my-app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- surefire:2.22.1:test (default-test) @ my-app ---
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.mycompany.app.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.043 s - in com.mycompany.app.AppTest
[INFO]
[INFO] Results:
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
```

10. Clean the Project:

- Clean up the target directory by removing files generated during the build process.

mvn clean

11. Run the Project:

- If your project produces a JAR file, you can run it using the following command:

```
java -jar target/my-app-1.0-SNAPSHOT.jar
```

```
[INFO] Nothing to compile - all classes are up to date
[INFO] --- surefire:2.22.1:test (default-test) @ my-app ---
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.mycompany.app.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.043 s - in com.mycompany.app.AppTest
[INFO] Results:
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO] ---
[INFO] --- jar:3.0.2:jar (default-jar) @ my-app ---
[INFO] Building jar: F:\sem 7\Devops\practical2\my-app\target\my-app-1.0-SNAPSHOT.jar
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 2.802 s
[INFO] Finished at: 2024-08-02T12:15:48+05:30
[INFO] -----

F:\sem 7\Devops\practical2\my-app>cd target
F:\sem 7\Devops\practical2\my-app\target>java -jar my-app-1.0-SNAPSHOT.jar
Hello World!
F:\sem 7\Devops\practical2\my-app\target>cd
F:\sem 7\Devops\practical2\my-app>cd..
F:\sem 7\Devops\practical2\my-app>
```

- Replace my-app-1.0-SNAPSHOT.jar with the actual name of your JAR file if it's different.

Part 2: Gradle Project

Pre-requisites:

Gradle installed on your system.

- A shell or command prompt ready for executing commands.

Steps:

Create a Directory for the Project:

- Create a directory for your project and navigate to it:

```
mkdir practical4
```

```
cd practical4
```

```
F:\sem 7\Devops\practical2>mkdir practical4  
F:\sem 7\Devops\practical2>cd practical4
```

Initialize the Gradle Project:

- Run the following command to initialize a new Gradle project:

```
gradle init
```

```
F:\sem 7\Devops\practical2\practical4>gradle init  
Starting a Gradle Daemon, 1 incompatible and 1 stopped Daemons could not be reused, use --status for details  
  
Select type of build to generate:  
 1: Application  
 2: Library  
 3: Gradle plugin  
 4: Basic (build structure only)  
Enter selection (default: Application) [1..4]  
Select implementation language:  
 1: Java  
 2: Kotlin  
 3: Groovy  
 4: Scala  
 5: C++  
 6: Swift  
Enter selection (default: Java) [1..6] 1  
Enter target Java version (min: 7, default: 21): 21  
Project name (default: practical4):  
  
Select application structure:  
 1: Single application project  
 2: Application and library project  
Enter selection (default: Single application project) [1..2]  
  
Select build script DSL:  
 1: Kotlin  
 2: Groovy  
Enter selection (default: Kotlin) [1..2]  
  
Select test framework:  
 1: JUnit 4  
 2: TestNG  
 3: Spock  
 4: JUnit Jupiter  
Enter selection (default: JUnit Jupiter) [1..4]  
  
Generate build using new APIs and behavior (some features may change in the next minor release)? (default: no) [yes, no]
```

```
Generate build using new APIs and behavior (some features may change in the next minor release)? (default: no) [yes, no]

> Task :init
Learn more about Gradle by exploring our Samples at https://docs.gradle.org/8.9/samples/sample_building_java_applications.html

<=====> 100% EXECUTING [38s]
BUILD SUCCESSFUL in 54s
1 actionable task: 1 executed
```

Follow the prompts:

- Select the type of build: **Application**
- Select implementation language: **Java**
- Enter target Java version: **21**
- Project name: **practical4**
- Select application structure: **Single application project**
- Select build script DSL: **Kotlin**
- Select test framework: **JUnit 4**
- Generate build using new APIs and behavior: **No**

Explore the Generated Project:

- Run the following command to see the tasks available:

```
gradle tasks
```

```
F:\sem 7\Devops\practical2\practical4>gradle tasks
```

```
> Task :tasks
```

```
-----  
Tasks runnable from root project 'practical4'  
-----
```

Application tasks

```
-----
```

run - Runs this project as a JVM application

Build tasks

```
-----
```

assemble - Assembles the outputs of this project.

build - Assembles and tests this project.

buildDependents - Assembles and tests this project and all projects that depend on it.

buildNeeded - Assembles and tests this project and all projects it depends on.

classes - Assembles main classes.

clean - Deletes the build directory.

jar - Assembles a jar archive containing the classes of the 'main' feature.

testClasses - Assembles test classes.

Build Setup tasks

```
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```

init - Initializes a new Gradle build.

updateDaemonJvm - Generates or updates the Gradle Daemon JVM criteria.

wrapper - Generates Gradle wrapper files.

Distribution tasks

```
-----
```

assembleDist - Assembles the main distributions

distTar - Bundles the project as a distribution.

distZip - Bundles the project as a distribution.

installDist - Installs the project as a distribution as-is.

Documentation tasks

```
-----
```

javadoc - Generates Javadoc API documentation for the 'main' feature.

Help tasks

Help tasks

```
-----
```

buildEnvironment - Displays all buildscript dependencies declared in root project 'practical4'.

dependencies - Displays all dependencies declared in root project 'practical4'.

dependencyInsight - Displays the insight into a specific dependency in root project 'practical4'.

help - Displays a help message.

javaToolchains - Displays the detected java toolchains.

kotlinDslAccessorsReport - Prints the Kotlin code for accessing the currently available project extensions and conventions.

outgoingVariants - Displays the outgoing variants of root project 'practical4'.

projects - Displays the sub-projects of root project 'practical4'.

properties - Displays the properties of root project 'practical4'.

resolvableConfigurations - Displays the configurations that can be resolved in root project 'practical4'.

tasks - Displays the tasks runnable from root project 'practical4' (some of the displayed tasks may belong to subprojects).

Verification tasks

```
-----
```

check - Runs all checks.

test - Runs the test suite.

To see all tasks and more detail, run `gradle tasks --all`

To see more detail about a task, run `gradle help --task <task>`

BUILD SUCCESSFUL in 13s

1 actionable task: 1 executed

Build the Project:

- Compile and package the project:

```
gradle build
```

```
F:\sem 7\Devops\practical2\practical4>gradle build

BUILD SUCCESSFUL in 12s
7 actionable tasks: 7 executed
F:\sem 7\Devops\practical2\practical4>
```

Run the Application:

- Run the project using the following command:

```
gradle run
```

You should see the output: **Hello World!**

```
F:\sem 7\Devops\practical2\practical4>gradle run

> Task :app:run
Hello World!

BUILD SUCCESSFUL in 997ms
2 actionable tasks: 1 executed, 1 up-to-date
```

Cleaning the Project:

- Clean the build directory:

```
gradle clean
```

```
F:\sem 7\Devops\practical2\practical4>gradle clean

BUILD SUCCESSFUL in 831ms
1 actionable task: 1 executed
```