

4 - Build Tools & Package Manager Tools

Solutions for Module "Build Tools and Package Manager"

Use repository: <https://gitlab.com/twn-devops-bootcamp/latest/04-build-tools/build-tools-exercises>
Your team wants to build out a small helper library in Java and ask you to take over the project.

► Solution 0: Clone project and create own Git repository

EXERCISE 0: Clone project and create own Git repository

- To work with the project for the exercises:
- Clone the project and create your own project/git repository from it

I have created my own public remote repo on Github:

<https://github.com/Saban39/build-tools-exercises.git>

```
sgworker@MacBook-Pro-3.local /Users/sgworker
% git clone https://gitlab.com/twn-devops-bootcamp/latest/04-build-
tools/build-tools-exercises
Klone nach 'build-tools-exercises'...
Warnung: Umleitung nach https://gitlab.com/twn-devops-bootcamp/latest/04-
build-tools/build-tools-exercises.git/
remote: Enumerating objects: 276, done.
remote: Total 276 (delta 0), reused 0 (delta 0), pack-reused 276
Empfange Objekte: 100% (276/276), 15.58 MiB | 10.57 MiB/s, fertig.
Löse Unterschiede auf: 100% (72/72), fertig.
```

```
sgworker@MacBook-Pro-3.local /Users/sgworker
% cd build-tools-exercises
```

```
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises
[master]
% rm -rf .git
```

```
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises
% git init
Leeres Git-Repository in /Users/sgworker/build-tools-exercises/.git/
initialisiert
```

```
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises
% git add *
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises
```

```
% git commit -m 'inital commit'
[main (Root-Commit) 406baad] inital commit
6 files changed, 110 insertions(+)
create mode 100644 README.md
create mode 100644 build.gradle
```

```
create mode 100644 settings.gradle
create mode 100644 src/main/java/com/example/Application.java
create mode 100644 src/main/webapp/index.html
create mode 100644 src/test/java/AppTest.java
```

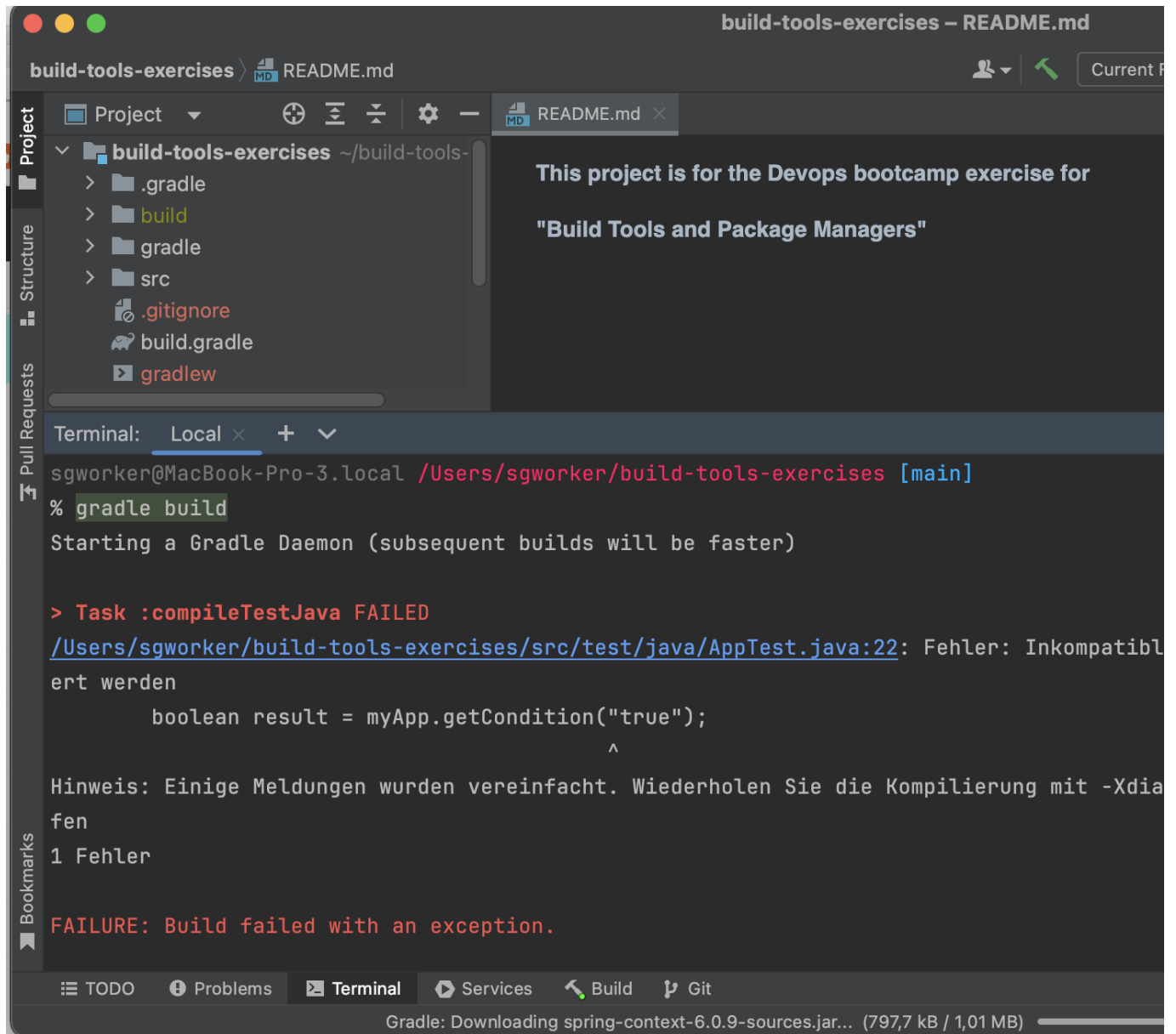
```
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises [main]
% git remote add origin https://github.com/Saban39/build-tools-
exercises.git
```

```
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises [main]
% git push --set-upstream origin main
Objekte aufzählen: 16, fertig.
Zähle Objekte: 100% (16/16), fertig.
Delta-Kompression verwendet bis zu 16 Threads.
Komprimiere Objekte: 100% (10/10), fertig.
Schreibe Objekte: 100% (16/16), 2.08 KiB | 2.08 MiB/s, fertig.
Gesamt 16 (Delta 0), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
To https://github.com/Saban39/build-tools-exercises.git
* [new branch]      main -> main
Branch 'main' folgt nun 'origin/main'.
```

► Solution 1: Build jar artifact

EXERCISE 1: Build jar artifact

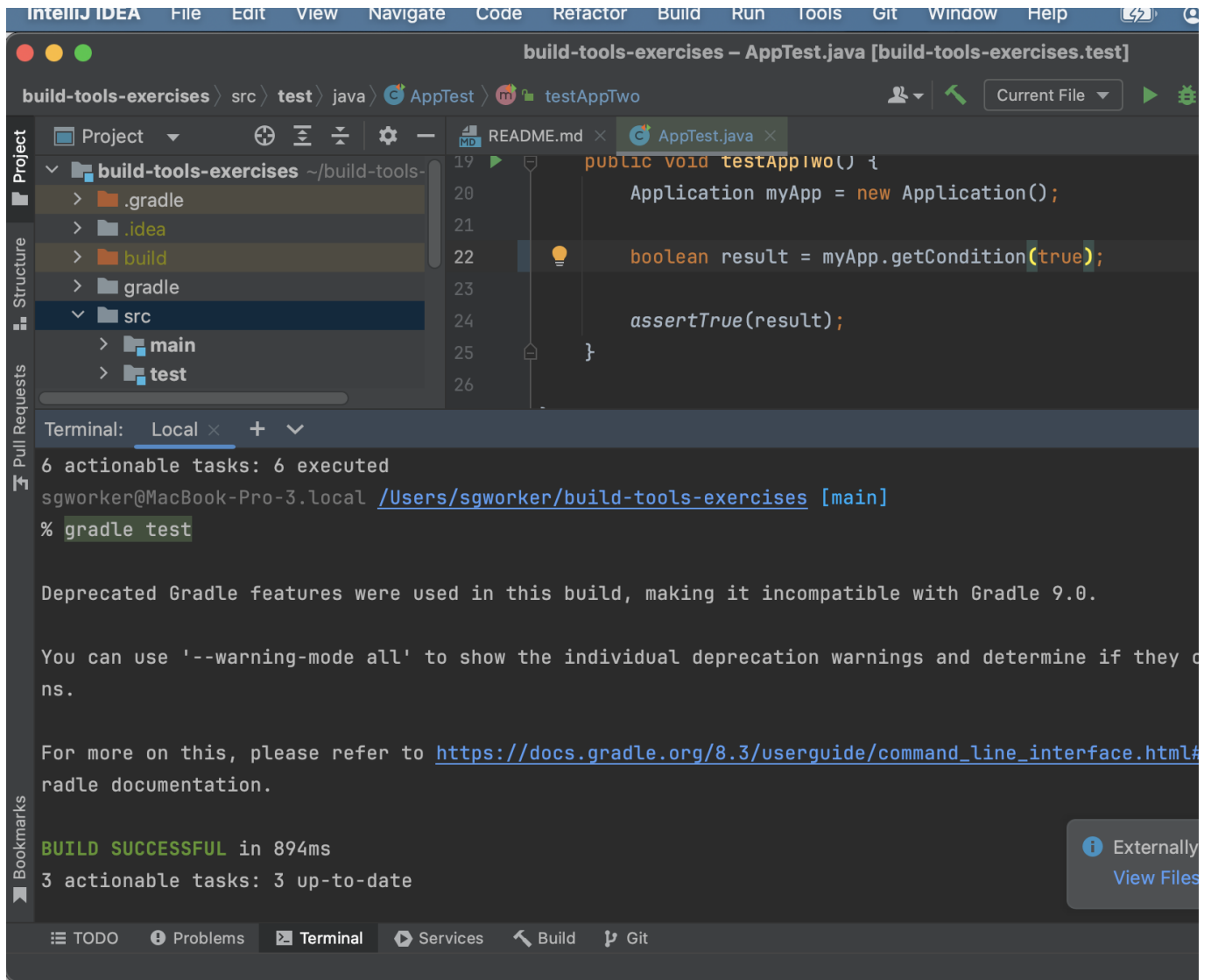
- You want to deploy the artifact to share that library with all team members.
- So: try to build the jar file
- The Build will fail, because of a compile error in a test, so you can't build the jar.



► Solution 2: Run tests

EXERCISE 2: Run tests

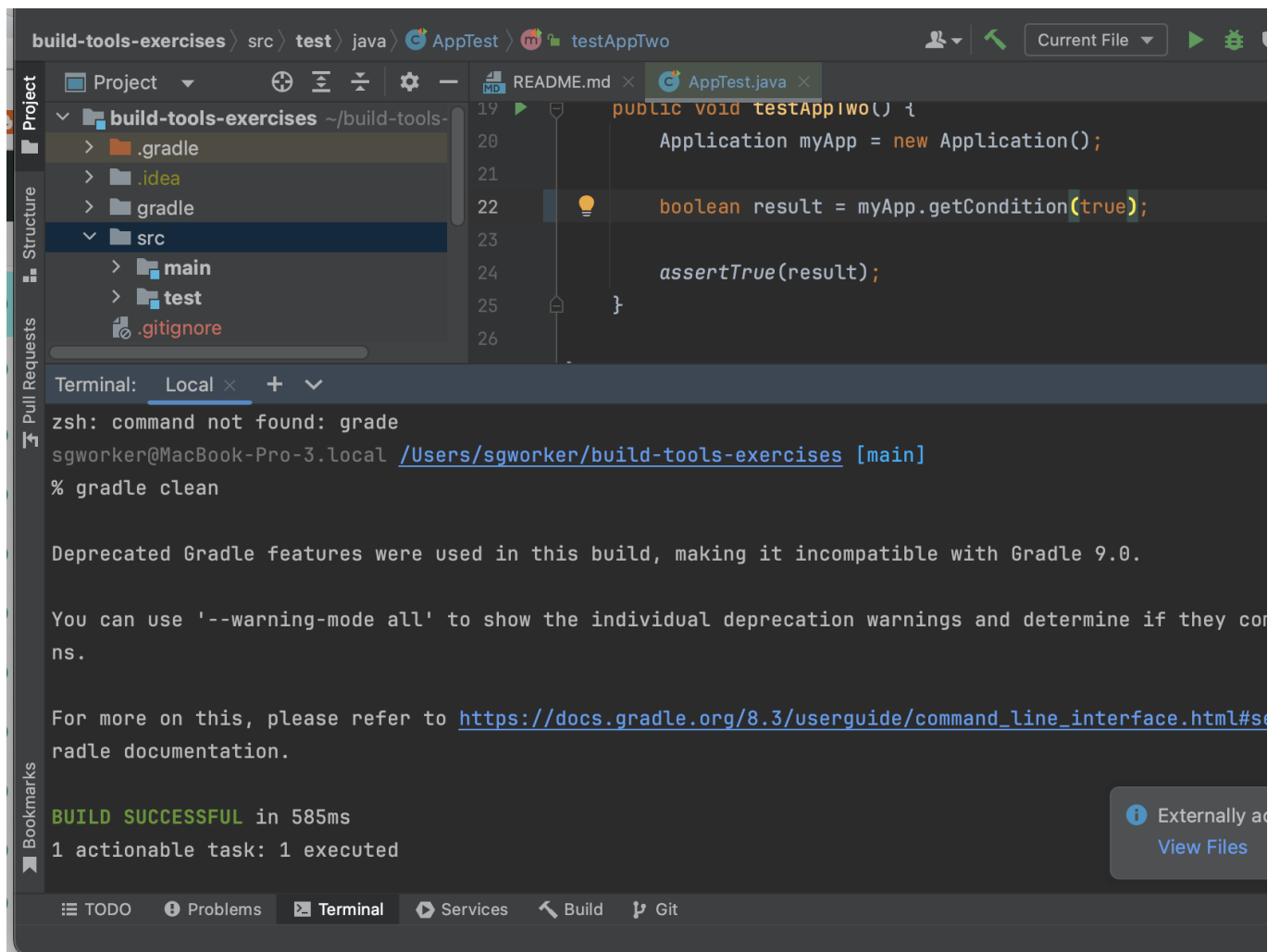
- Fix the test, by changing "true" string to true boolean.
- Run gradle test to execute only the tests and check the fix.



► Solution 3: Clean and build App

EXERCISE 3: Clean and build App

- You fixed the test.
- Now: clean the build folder with gradle clean and try to build jar file again.



The screenshot shows an IDE with a project named 'build-tools-exercises'. The file explorer on the left shows the project structure: 'build-tools-exercises' (root) contains '.gradle', '.idea', 'gradle', 'src', 'main', 'test', and '.gitignore'. The 'src/test/java' directory is selected, showing 'AppTest.java'. The code in 'AppTest.java' is as follows:

```
19 public void testAppTwo() {  
20     Application myApp = new Application();  
21  
22     boolean result = myApp.getCondition(true);  
23  
24     assertTrue(result);  
25 }  
26
```

The terminal window at the bottom shows the following output:

```
zsh: command not found: grade  
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises [main]  
% gradle clean  
  
Deprecated Gradle features were used in this build, making it incompatible with Gradle 9.0.  
  
You can use '--warning-mode all' to show the individual deprecation warnings and determine if they co  
ns.  
  
For more on this, please refer to https://docs.gradle.org/8.3/userguide/command\_line\_interface.html#s  
radle documentation.  
  
BUILD SUCCESSFUL in 585ms  
1 actionable task: 1 executed
```

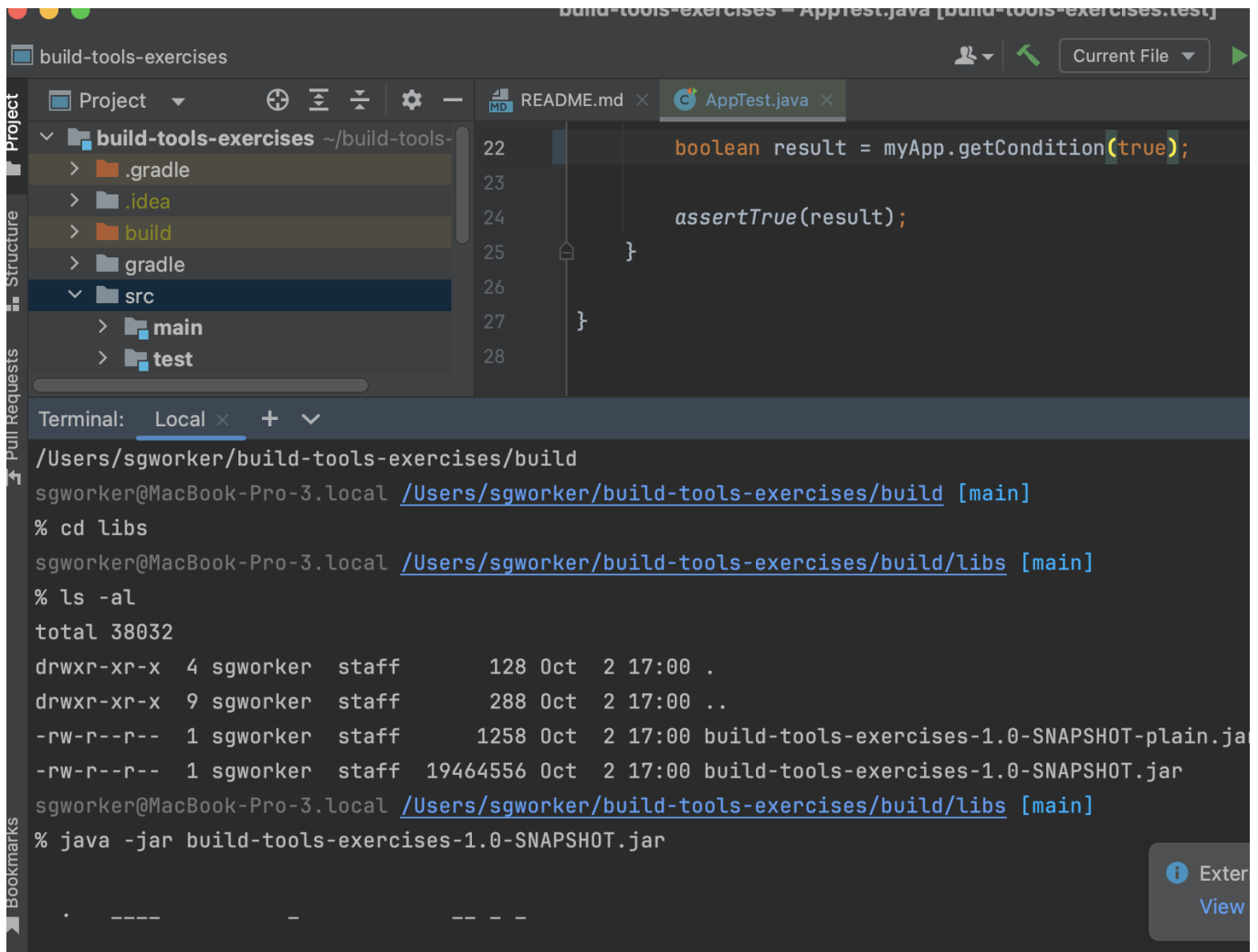
A notification in the bottom right corner says 'Externally ac' and 'View Files'.

► Solution 4: Start application

EXERCISE 4: Start application

- Start the jar file to test that the application runs successfully as a jar file
- Start app with `/build/libs java -jar app-1.0.jar`

NOTE: replace "app-1.0.jar" with the name of YOUR jar file.

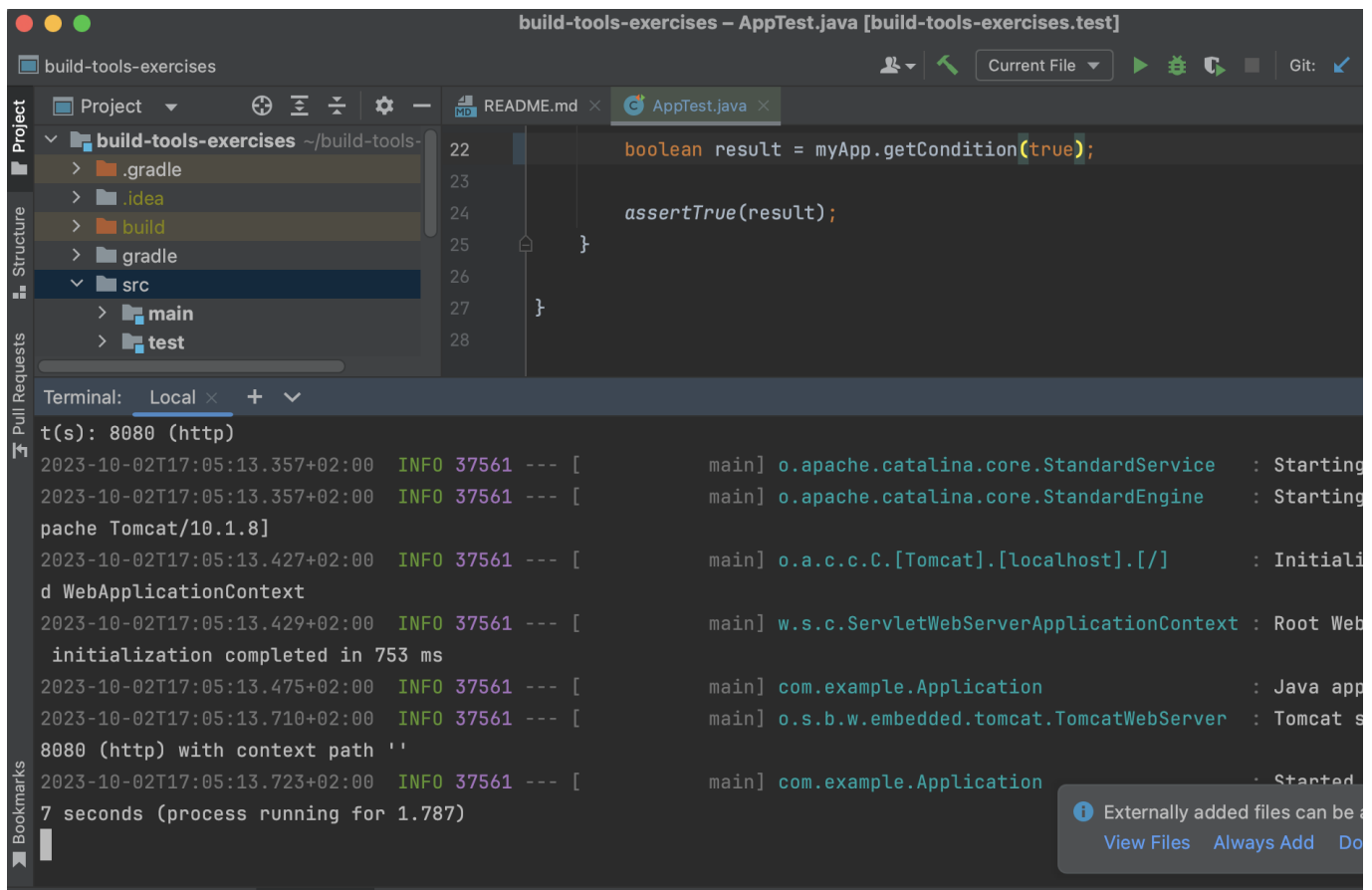


```
build-tools-exercises - AppTest.java [build-tools-exercises.test]

Project
  build-tools-exercises ~/build-tools-
    .gradle
    .idea
    build
    gradle
    src
      main
      test

Terminal: Local x + v

/Users/sgworker/build-tools-exercises/build
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises/build [main]
% cd libs
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises/build/libs [main]
% ls -al
total 38032
drwxr-xr-x  4 sgworker  staff   128 Oct  2 17:00 .
drwxr-xr-x  9 sgworker  staff   288 Oct  2 17:00 ..
-rw-r--r--  1 sgworker  staff  1258 Oct  2 17:00 build-tools-exercises-1.0-SNAPSHOT-plain.jar
-rw-r--r--  1 sgworker  staff 19464556 Oct  2 17:00 build-tools-exercises-1.0-SNAPSHOT.jar
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises/build/libs [main]
% java -jar build-tools-exercises-1.0-SNAPSHOT.jar
```



```
build-tools-exercises - AppTest.java [build-tools-exercises.test]

Project
  build-tools-exercises ~/build-tools-
    .gradle
    .idea
    build
    gradle
    src
      main
      test

Terminal: Local x + v

t(s): 8080 (http)
2023-10-02T17:05:13.357+02:00 INFO 37561 --- [main] o.apache.catalina.core.StandardService : Starting
2023-10-02T17:05:13.357+02:00 INFO 37561 --- [main] o.apache.catalina.core.StandardEngine : Starting
2023-10-02T17:05:13.427+02:00 INFO 37561 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initiali
d WebApplicationContext
2023-10-02T17:05:13.429+02:00 INFO 37561 --- [main] w.s.c.ServletWebServerApplicationContext : Root Web
initialization completed in 753 ms
2023-10-02T17:05:13.475+02:00 INFO 37561 --- [main] com.example.Application : Java app
2023-10-02T17:05:13.710+02:00 INFO 37561 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat s
8080 (http) with context path ''
2023-10-02T17:05:13.723+02:00 INFO 37561 --- [main] com.example.Application : Started
7 seconds (process running for 1.787)
```

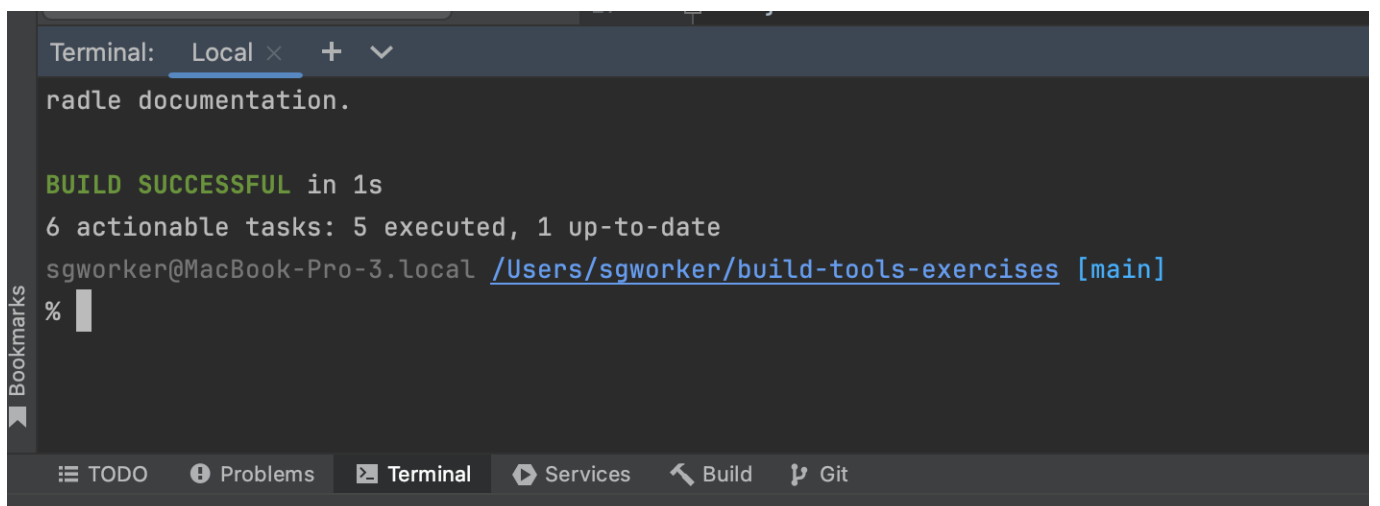
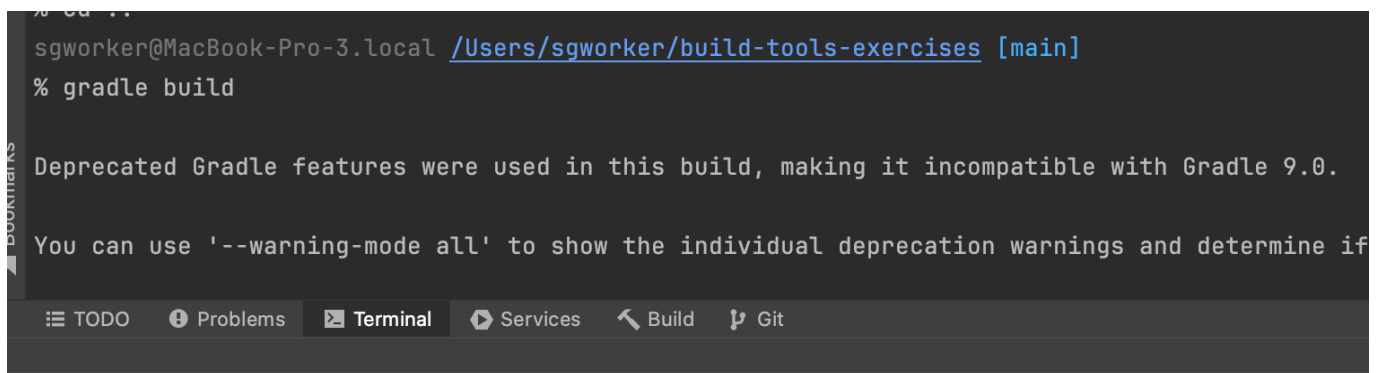
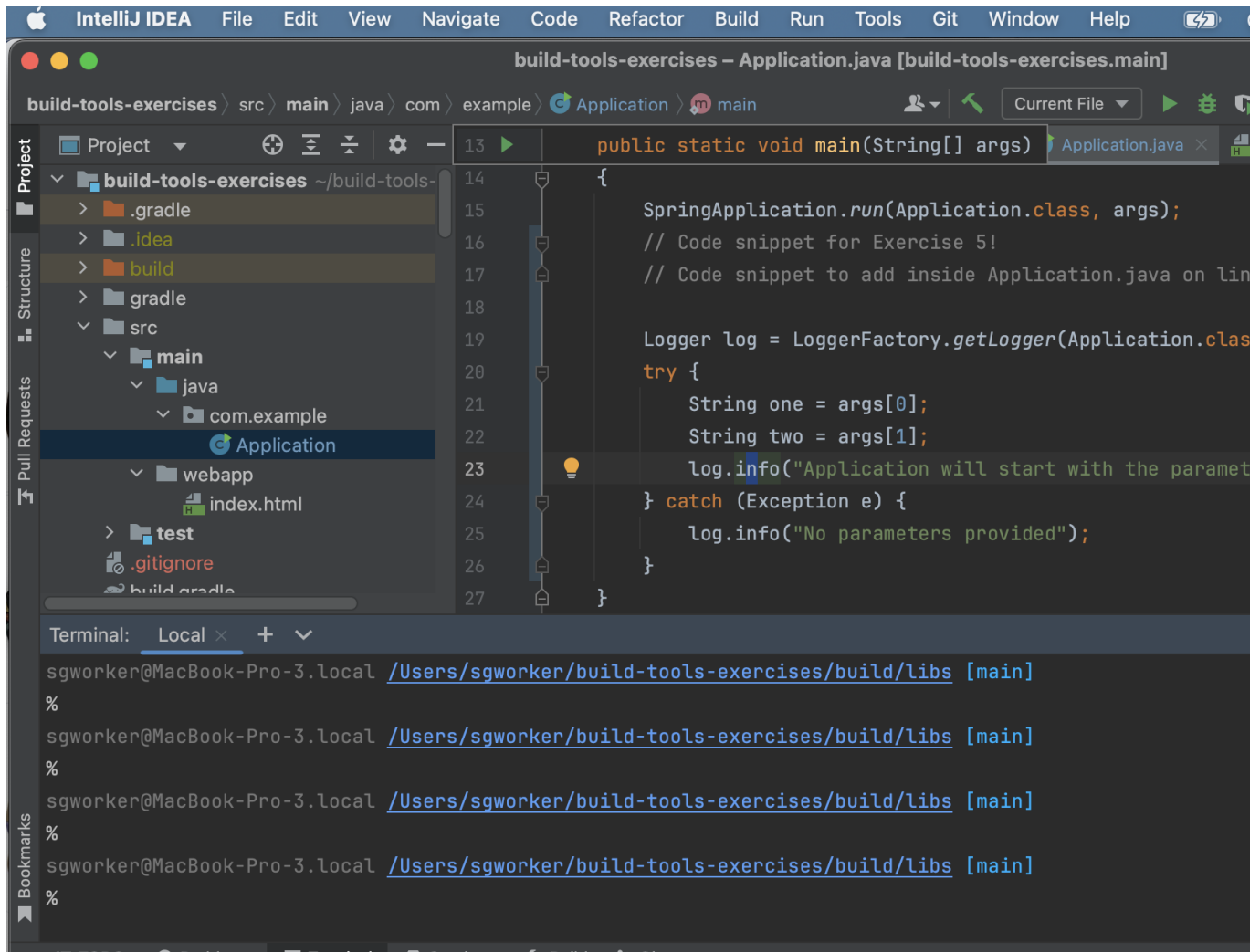
► Solution 5: Start App with 2 Parameters

EXERCISE 5: Start App with 2 Parameters

- Now you want to add parameters to your application, so you and other users can pass different values on startup.
- Add parameter input to the Java code (see code snippet below, which you can copy)
- Rebuild the jar file
- Execute the jar file again with 2 params

```
# Code snippet for Exercise 5!
# Code snippet to add inside Application.java on line 16

Logger log = LoggerFactory.getLogger(Application.class);
try {
    String one = args[0];
    String two = args[1];
    log.info("Application will start with the parameters {} and {}",
one, two);
} catch (Exception e) {
    log.info("No parameters provided");
}
```




```
build-tools-exercises-1.0-SNAPSHOT-plain.jar  build-tools-exercises-1.0-SNAPSHOT.jar
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises/build/libs [main]
% java -jar build-tools-exercises-1.0-SNAPSHOT.jar Hallo Build

  .  ----  _  ----  \
 /___'  _  _  _  _  _  \
(  )\___|  '  |  '  |  '  \  _  _  \
 \  \___)  |  |  |  |  |  |  (  |  )  )  )
```

```
Terminal: Local x + v
2023-10-02T17:18:44.746+02:00 INFO 38085 --- [main] com.example.Application : Ja
2023-10-02T17:18:45.000+02:00 INFO 38085 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : To
8080 (http) with context path ''
2023-10-02T17:18:45.018+02:00 INFO 38085 --- [main] com.example.Application : St
6 seconds (process running for 1.874)
2023-10-02T17:18:45.021+02:00 INFO 38085 --- [main] com.example.Application : Ap
the parameters Hallo and Build
```

```
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises [main]
% git add *
Die folgenden Pfade werden durch eine Ihrer ".gitignore" Dateien ignoriert:
build
Hinweis: Nutzen Sie die Option -f, wenn sie wirklich hinzugefügt werden sollen.
Hinweis: Um diese Meldung abzuschalten, führen Sie folgenden Befehl aus:
Hinweis: "git config advice.addIgnoredFile false"
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises [main]
% git commit -m "Add parameter input args"
[main c31f43e] Add parameter input args
6 files changed, 359 insertions(+), 2 deletions(-)
create mode 100644 gradle/wrapper/gradle-wrapper.jar
create mode 100644 gradle/wrapper/gradle-wrapper.properties
create mode 100755 gradlew
create mode 100644 gradlew.bat
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises [main]
%
```

```
Create mode 100644 gradlew.bat
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises [main]
% git push
Objekte aufzählen: 27, fertig.
Zähle Objekte: 100% (27/27), fertig.
Delta-Kompression verwendet bis zu 16 Threads.
Komprimiere Objekte: 100% (11/11), fertig.
Schreibe Objekte: 100% (17/17), 61.98 KiB | 15.50 MiB/s, fertig.
Gesamt 17 (Delta 2), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/Saban39/build-tools-exercises.git
406baad..c31f43e main -> main
sgworker@MacBook-Pro-3.local /Users/sgworker/build-tools-exercises [main]
%
```

