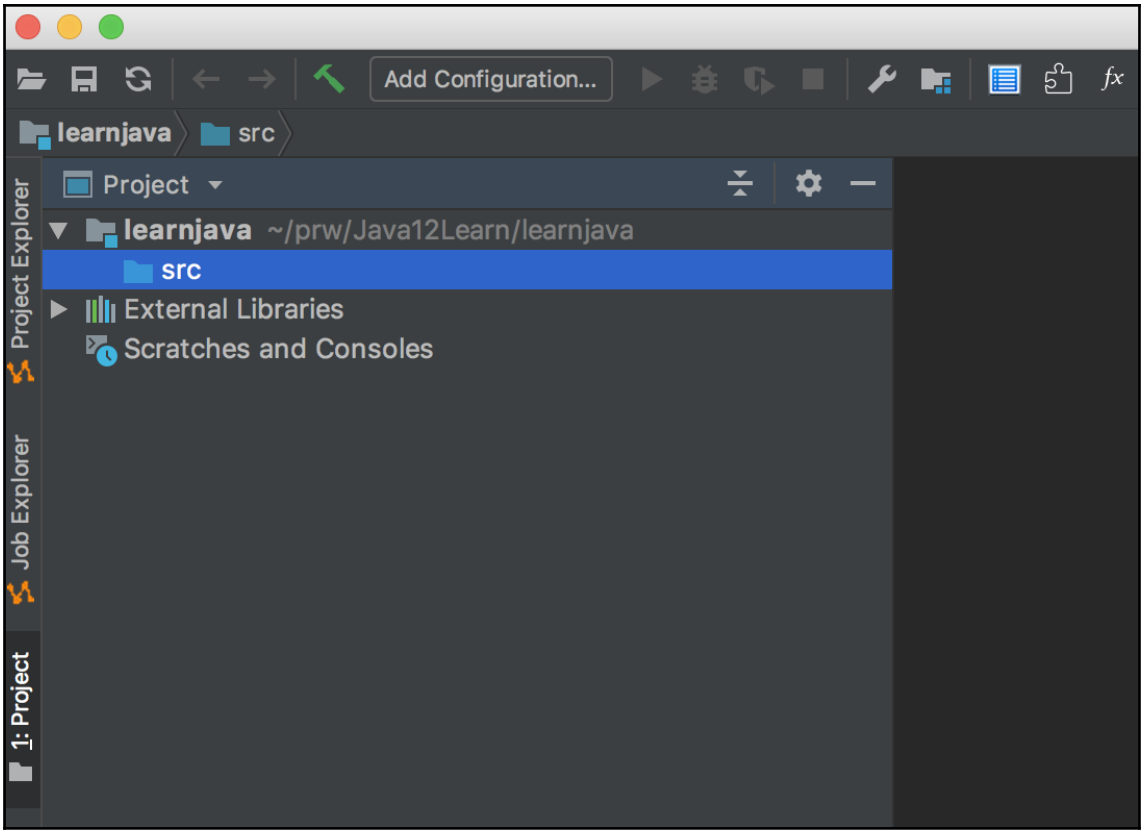
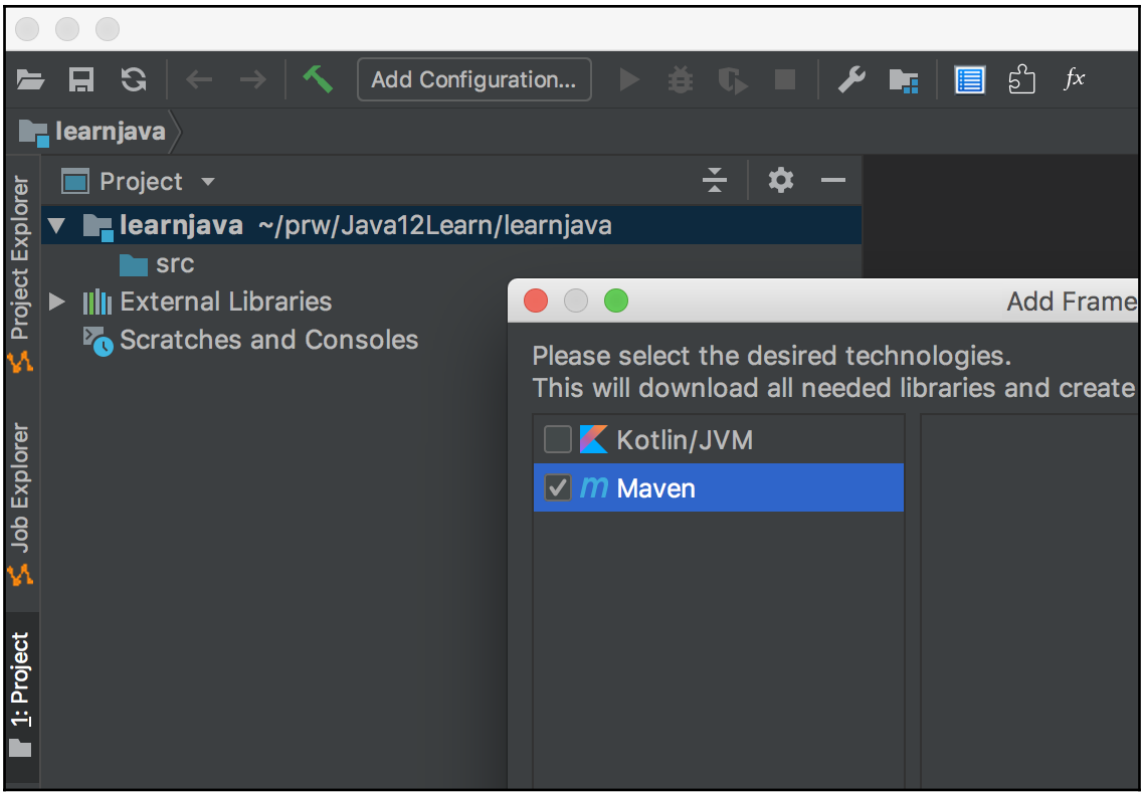
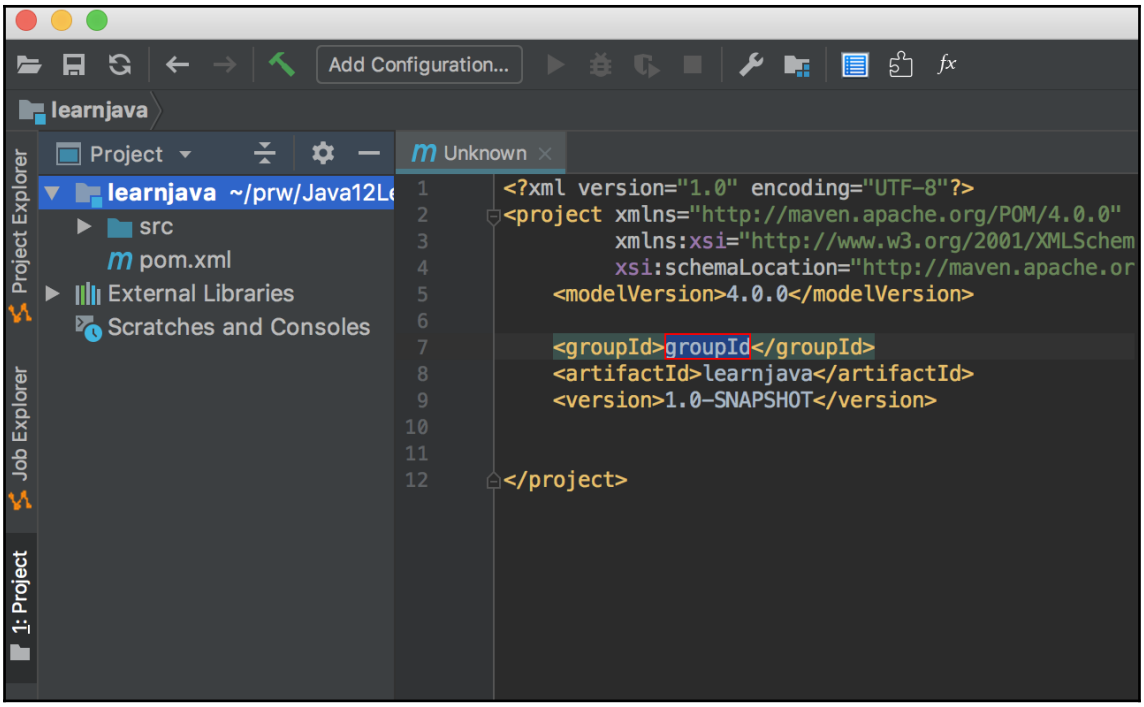
Graphic Bundle

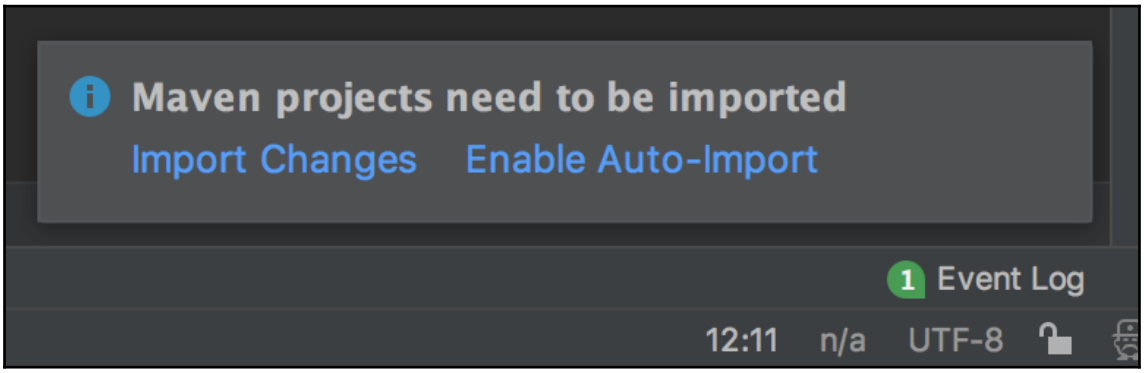
Chapter 1: Getting Started with Java 12

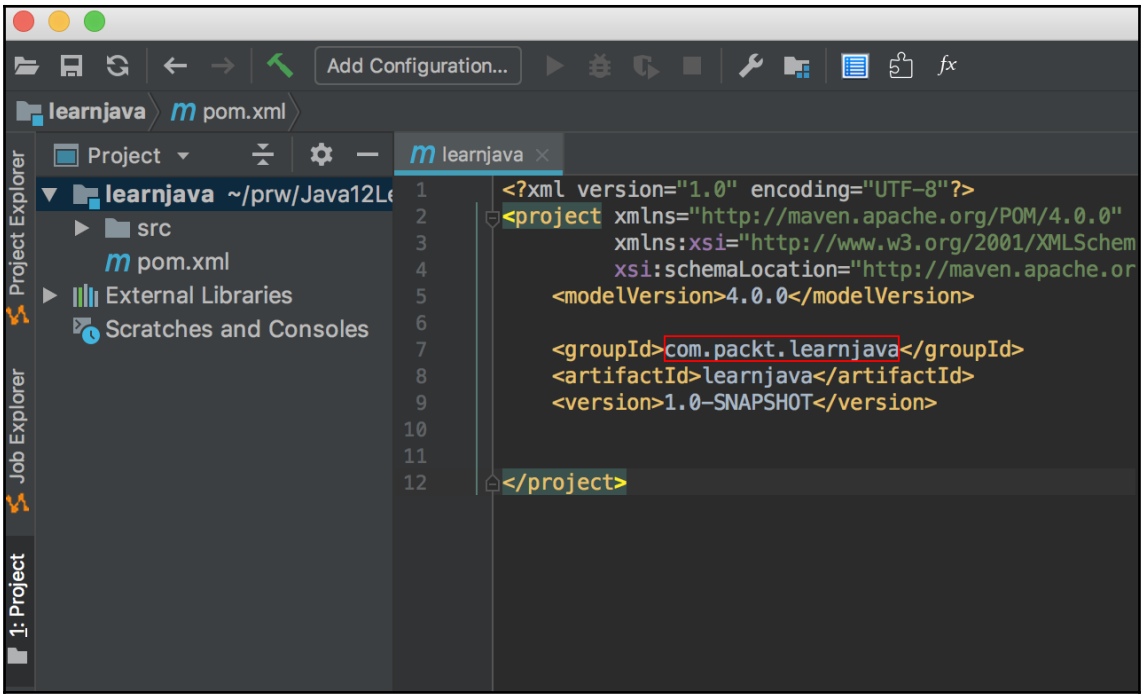
```
demo>
demo> java -version
java version "12" 2019-03-19
Java(TM) SE Runtime Environment (build 12+33)
Java HotSpot(TM) 64-Bit Server VM (build 12+33, mixed mode, sharing)
demo>
```

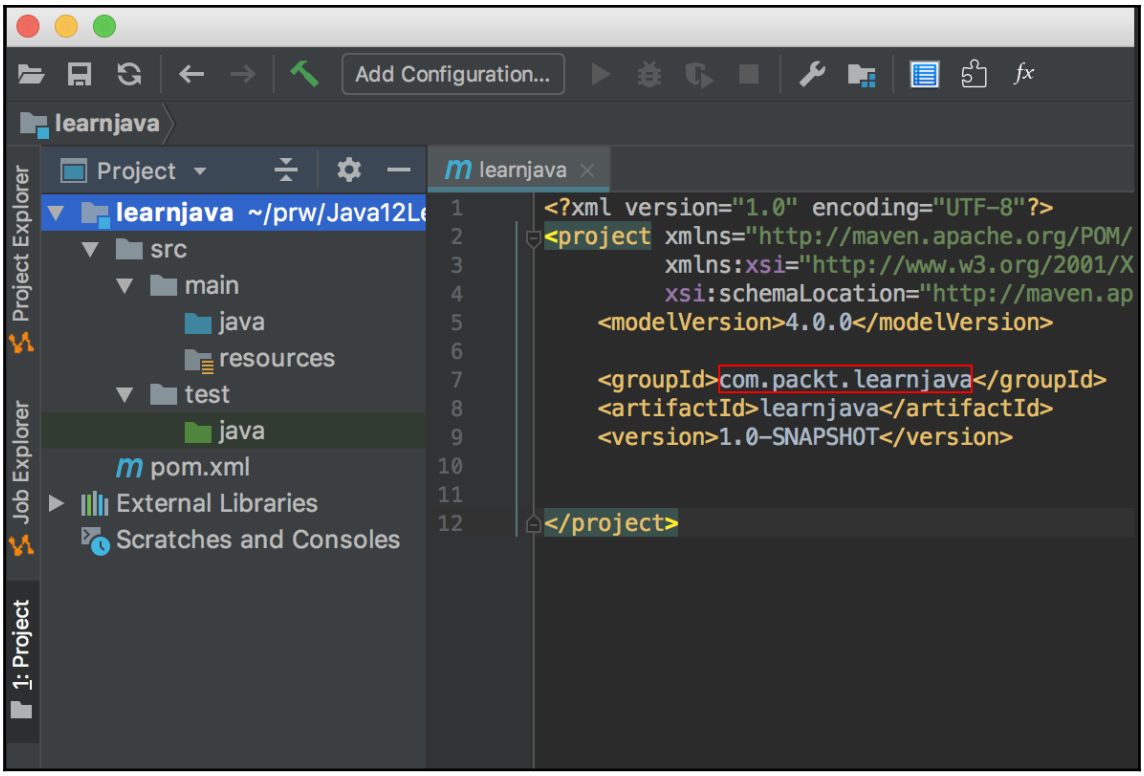


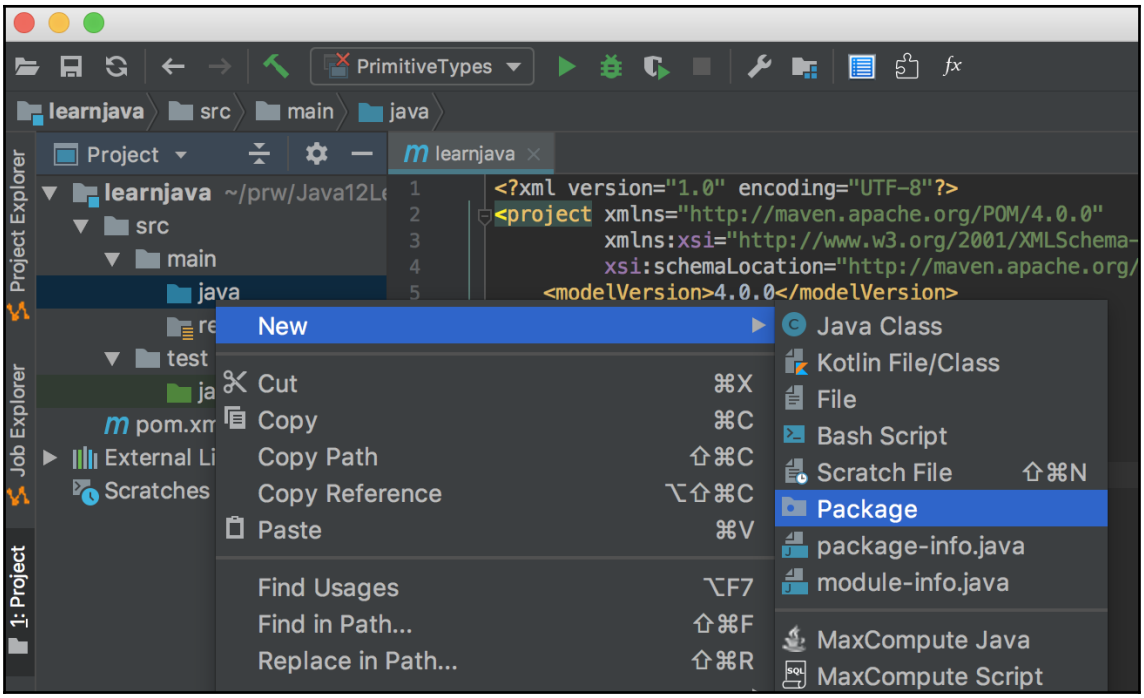

Add Configuration...
learnjava
Project
learnjava ~/prw/Java12Learn/learnjava
src
External Libraries
Scratches and Consoles
Add Frame
Please select the desired technologies.
This will download all needed libraries and create
Kotlin/JVM
Maven
Project Explorer
Job Explorer
1: Project

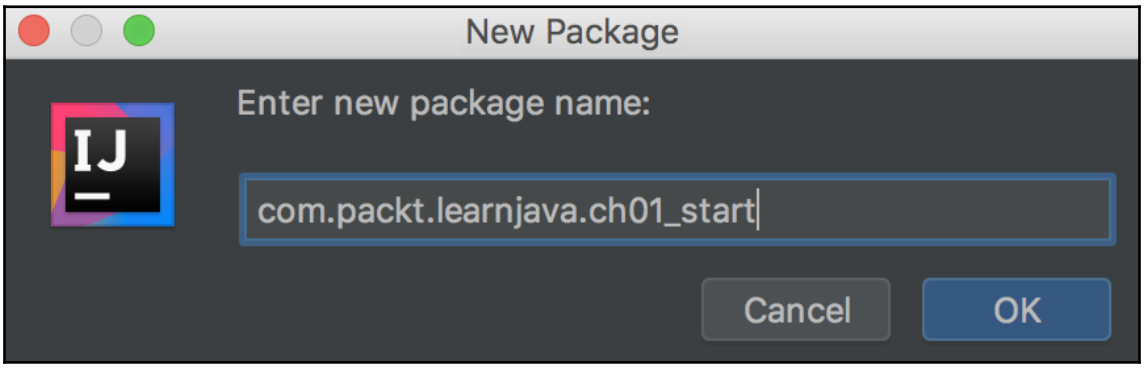

Add Configuration...
learnjava
Project
learnjava ~/prw/Java12L
src
pom.xml
External Libraries
Scratches and Consoles
Unknown
Project Explorer
Job Explorer
1: Project
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchem
xsi:schemaLocation="http://maven.apache.or
<modelVersion>4.0.0</modelVersion>
<groupId>groupId</groupId>
<artifactId>learnjava</artifactId>
<version>1.0-SNAPSHOT</version>
</project>

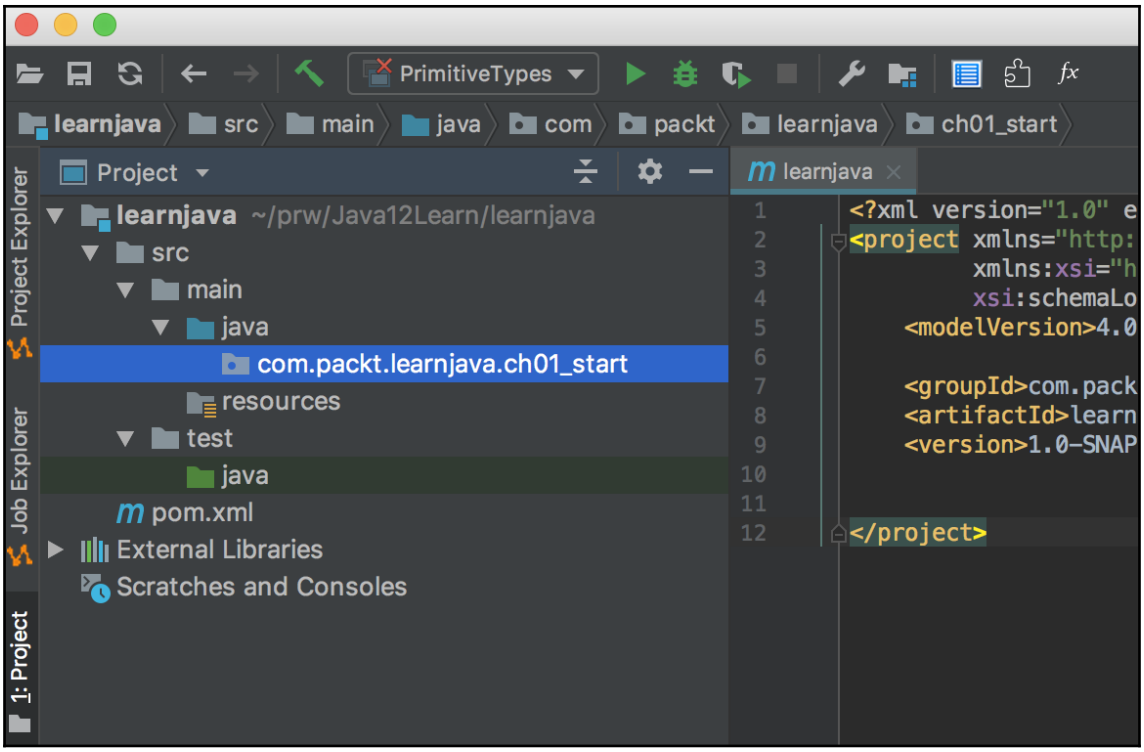

Maven projects need to be imported
Import Changes
Enable Auto-Import
1 Event Log
12:11
n/a
UTF-8

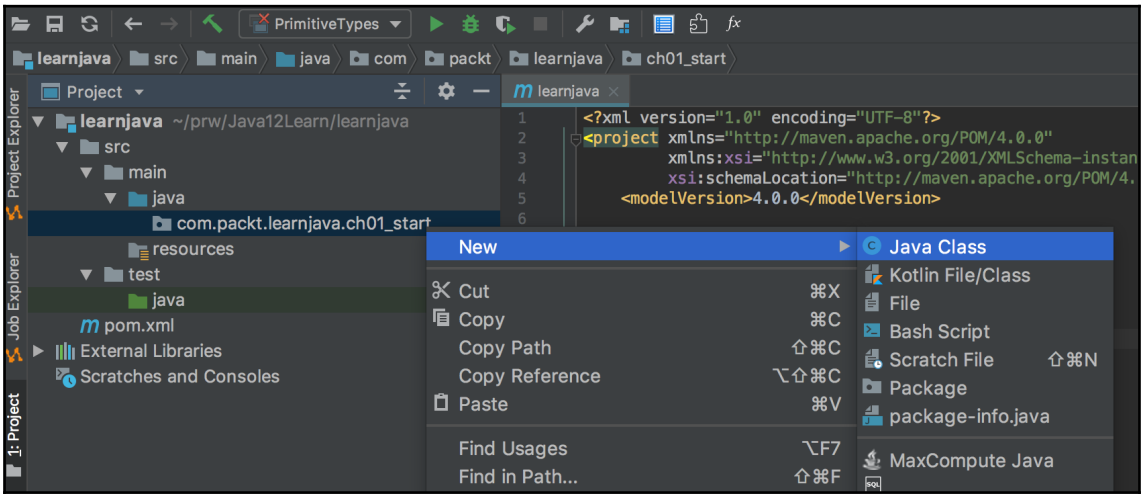

Add Configuration...
learnjava
pom.xml
Project
learnjava ~/prw/Java12Le
src
pom.xml
External Libraries
Scratches and Consoles
Project Explorer
Job Explorer
1: Project
learnjava
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchem
xsi:schemaLocation="http://maven.apache.or
<modelVersion>4.0.0</modelVersion>
<groupId>com.packt.learnjava</groupId>
<artifactId>learnjava</artifactId>
<version>1.0-SNAPSHOT</version>
</project>


Add Configuration...
learnjava
Project
learnjava ~/prw/Java12Le
src
main
java
resources
test
java
pom.xml
External Libraries
Scratches and Consoles
Project Explorer
Job Explorer
1: Project
learnjava
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/
xmlns:xsi="http://www.w3.org/2001/X
xsi:schemaLocation="http://maven.ap
<modelVersion>4.0.0</modelVersion>
<groupId>com.packt.learnjava</groupId>
<artifactId>learnjava</artifactId>
<version>1.0-SNAPSHOT</version>
</project>


PrimitiveTypes
learnjava
src
main
java
Project
learnjava
Project Explorer
Job Explorer
1: Project
learnjava ~/prw/Java12Le
src
main
java
test
pom.xm
External Li
Scratches
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-
xsi:schemaLocation="http://maven.apache.org/
<modelVersion>4.0.0</modelVersion>
New
Cut ⌘X
Copy ⌘C
Copy Path ⇧⌘C
Copy Reference ⌥⇧⌘C
Paste ⌘V
Find Usages ⌥F7
Find in Path... ⇧⌘F
Replace in Path... ⇧⌘R
Java Class
Kotlin File/Class
File
Bash Script
Scratch File ⇧⌘N
Package
package-info.java
module-info.java
MaxCompute Java
MaxCompute Script


New Package
Enter new package name:
com.packt.learnjava.ch01_start
Cancel
OK


PrimitiveTypes
learnjava
src
main
java
com
packt
learnjava
ch01_start
Project
learnjava ~/prw/Java12Learn/learnjava
src
main
java
com.packt.learnjava.ch01_start
resources
test
java
pom.xml
External Libraries
Scratches and Consoles
learnjava
<?xml version="1.0" e
<project xmlns="http:
xmlns:xsi="h
xsi:schemaLo
<modelVersion>4.0
<groupId>com.pack
<artifactId>learn
<version>1.0-SNAP
</project>
Project Explorer
Job Explorer
1: Project


PrimitiveTypes
learnjava
src
main
java
com
packt
learnjava
ch01_start
Project
learnjava ~/prw/Java12Learn/learnjava
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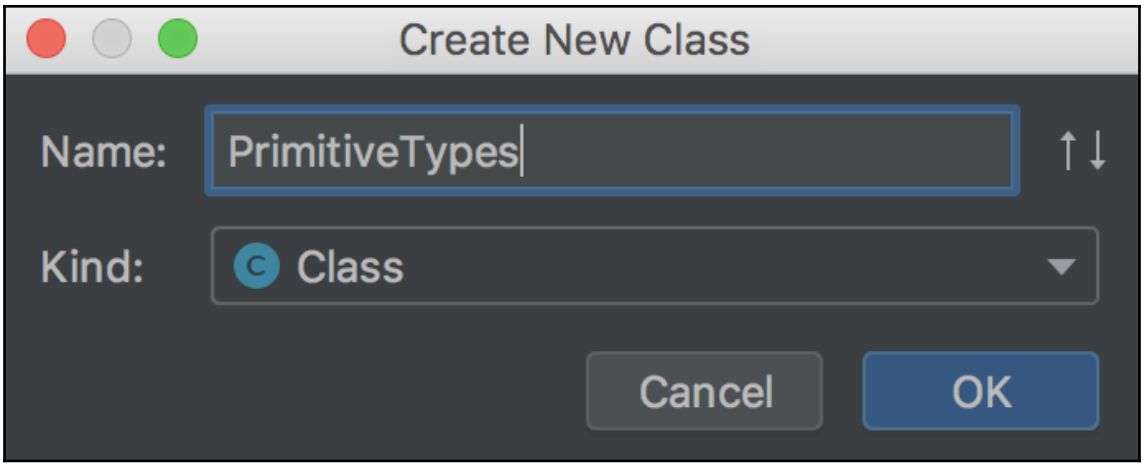
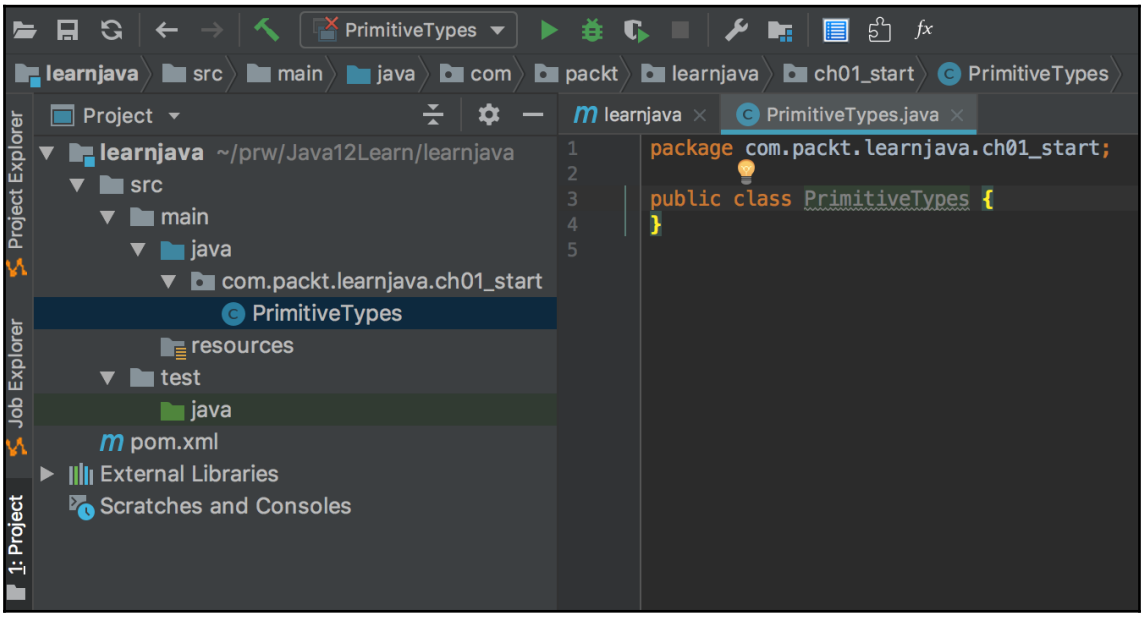
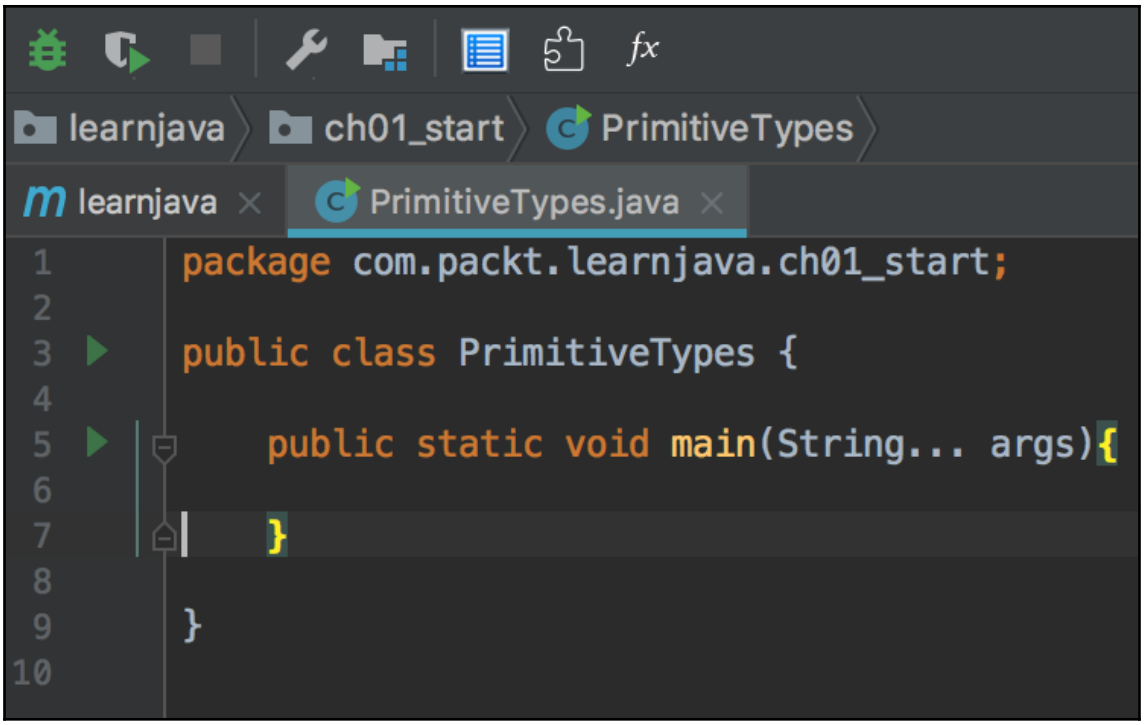
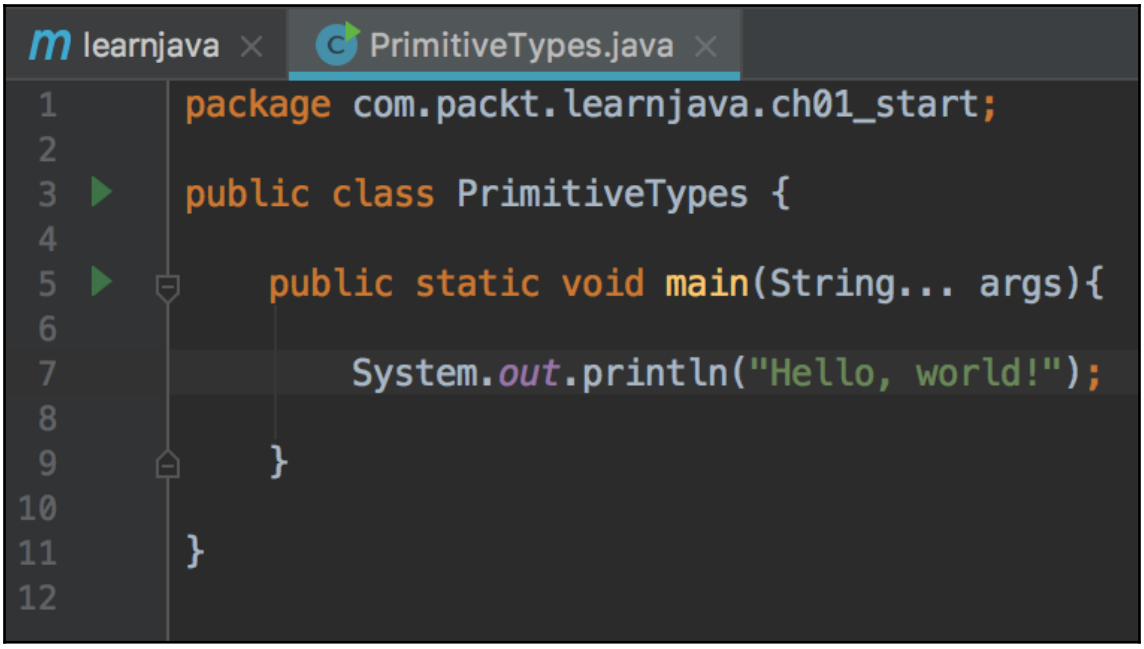
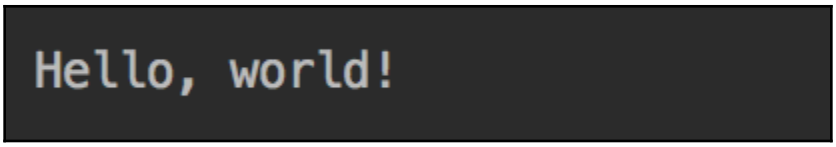
java
com.packt.learnjava.ch01_start
resources
test
java
pom.xml
External Libraries
Scratches and Consoles
learnjava
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instan
xsi:schemaLocation="http://maven.apache.org/POM/4.
<modelVersion>4.0.0</modelVersion>
New
Cut ⌘X
Copy ⌘C
Copy Path ⇧⌘C
Copy Reference ⌥⇧⌘C
Paste ⌘V
Find Usages ⌥F7
Find in Path... ⇧⌘F
Java Class
Kotlin File/Class
File
Bash Script
Scratch File ⇧⌘N
Package
package-info.java
MaxCompute Java
Project Explorer
Job Explorer
1: Project

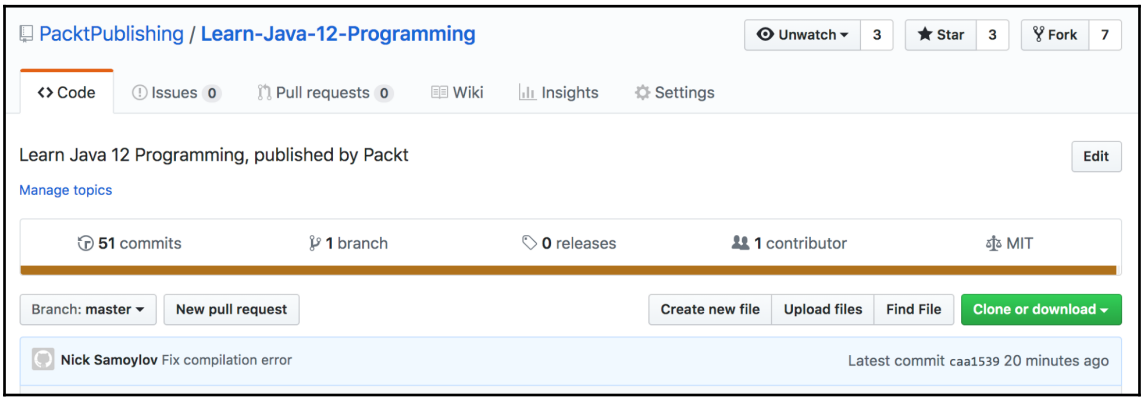

Create New Class
Name:
PrimitiveTypes
Kind:
Class
Cancel
OK

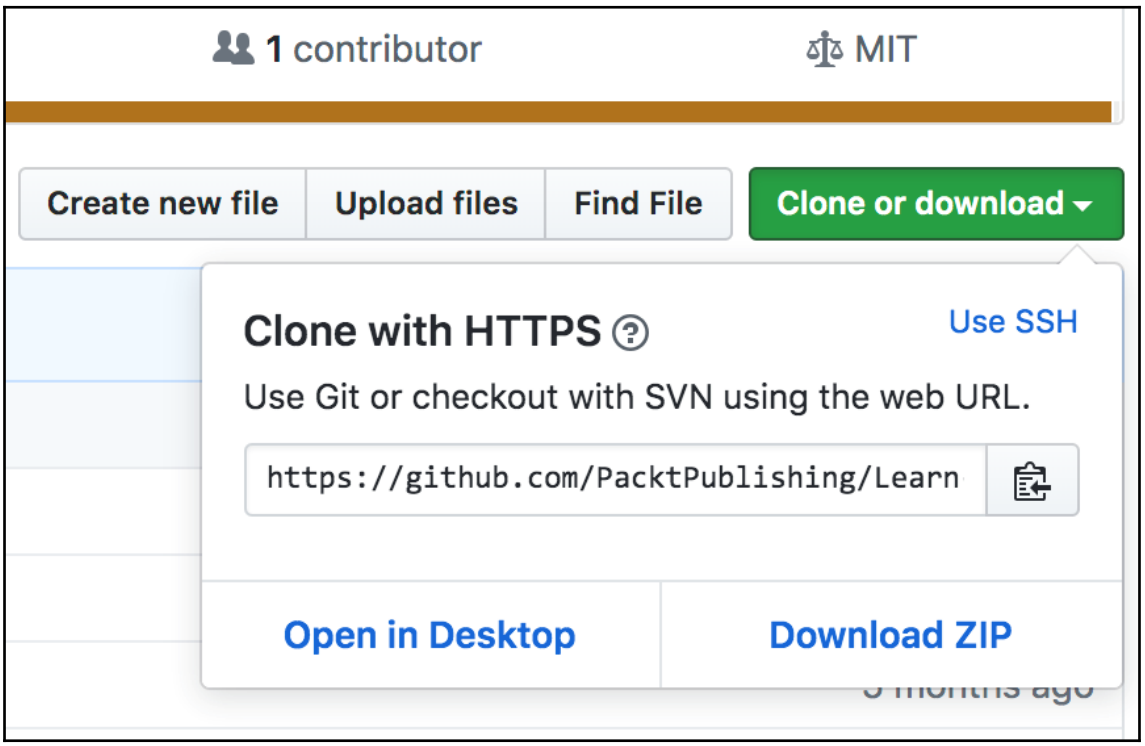

PrimitiveTypes
learnjava
src
main
java
com
packt
learnjava
ch01_start
PrimitiveTypes
Project
learnjava ~/prw/Java12Learn/learnjava
src
main
java
com.packt.learnjava.ch01_start
PrimitiveTypes
resources
test
java
pom.xml
External Libraries
Scratches and Consoles
learnjava
PrimitiveTypes.java
1 package com.packt.learnjava.ch01_start;
2
3 public class PrimitiveTypes {
4 }
5
Project Explorer
Job Explorer
1: Project


learnjava
ch01_start
PrimitiveTypes
learnjava
PrimitiveTypes.java
1 package com.packt.learnjava.ch01_start;
2
3 public class PrimitiveTypes {
4
5 public static void main(String... args){
6
7 }
8
9 }
10


learnjava
PrimitiveTypes.java
1 package com.packt.learnjava.ch01_start;
2
3 public class PrimitiveTypes {
4
5 public static void main(String... args){
6
7 System.out.println("Hello, world!");
8
9 }
10
11 }
12

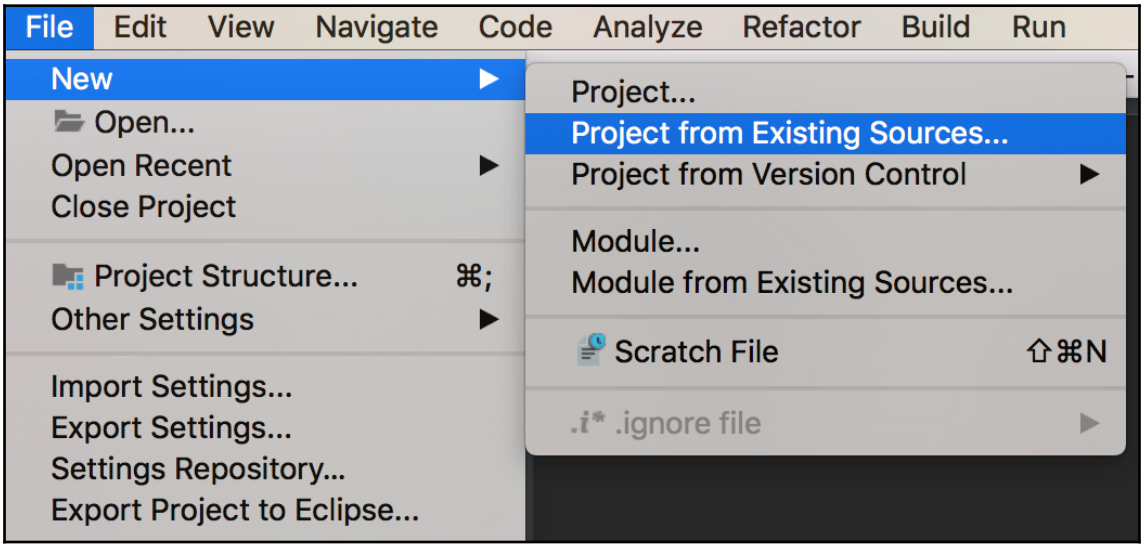

Hello, world!

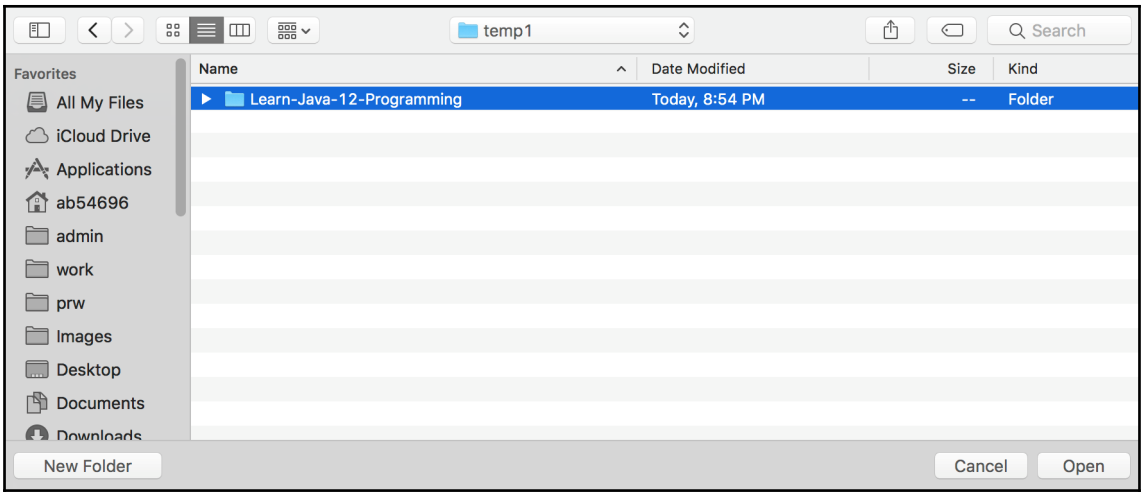

PacktPublishing / Learn-Java-12-Programming
Unwatch 3
Star 3
Fork 7
Code
Issues 0
Pull requests 0
Wiki
Insights
Settings
Learn Java 12 Programming, published by Packt
Edit
Manage topics
51 commits
1 branch
0 releases
1 contributor
MIT
Branch: master
New pull request
Create new file
Upload files
Find File
Clone or download
Nick Samoylov Fix compilation error
Latest commit caa1539 20 minutes ago

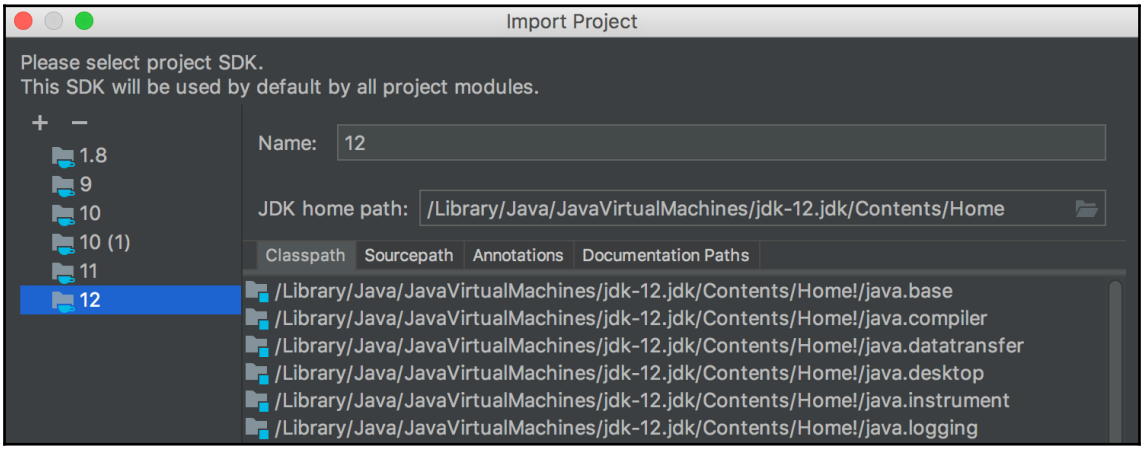

1 contributor
MIT
Create new file
Upload files
Find File
Clone or download
Clone with HTTPS
Use SSH
Use Git or checkout with SVN using the web URL.
https://github.com/PacktPublishing/Learn
Open in Desktop
Download ZIP

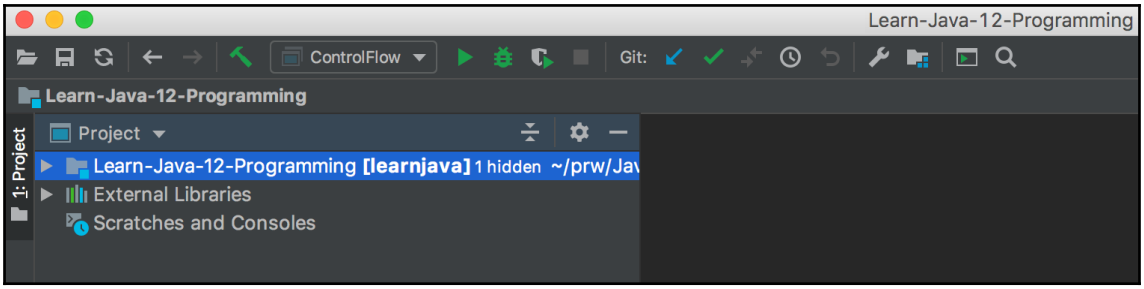
```
demo>
demo> git clone https://github.com/PacktPublishing/Learn-Java-12-Programming.git
```

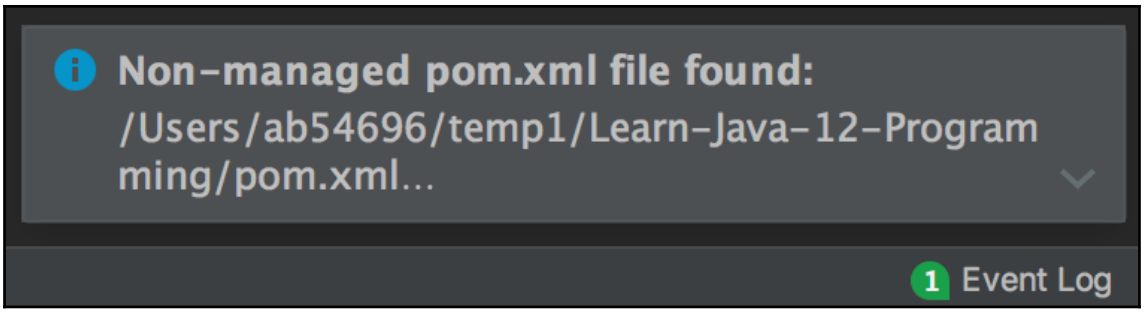
```
demo>
demo> git clone https://github.com/PacktPublishing/Learn-Java-12-Programming.git
Cloning into 'Learn-Java-12-Programming'...
remote: Enumerating objects: 13, done.
remote: Counting objects: 100% (13/13), done.
remote: Compressing objects: 100% (10/10), done.
remote: Total 735 (delta 0), reused 6 (delta 0), pack-reused 722
Receiving objects: 100% (735/735), 3.36 MiB | 3.06 MiB/s, done.
Resolving deltas: 100% (268/268), done.
demo> ls
Learn-Java-12-Programming
demo>
```

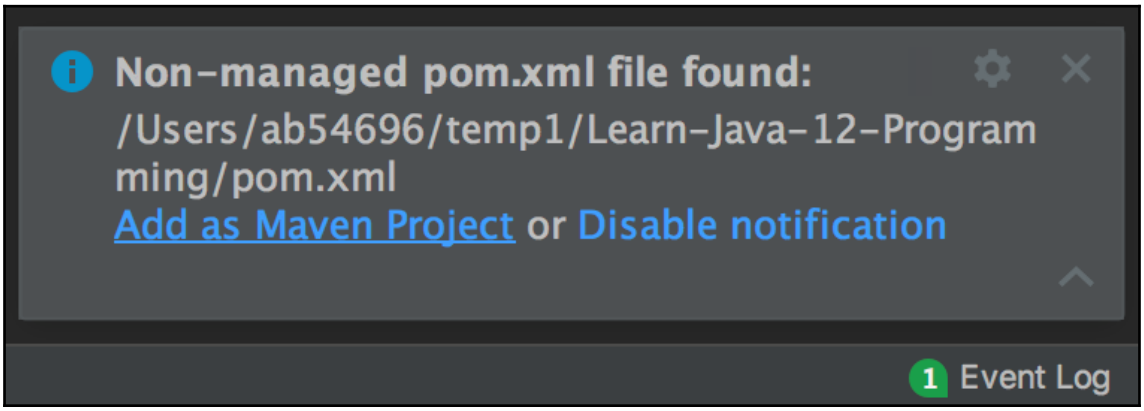


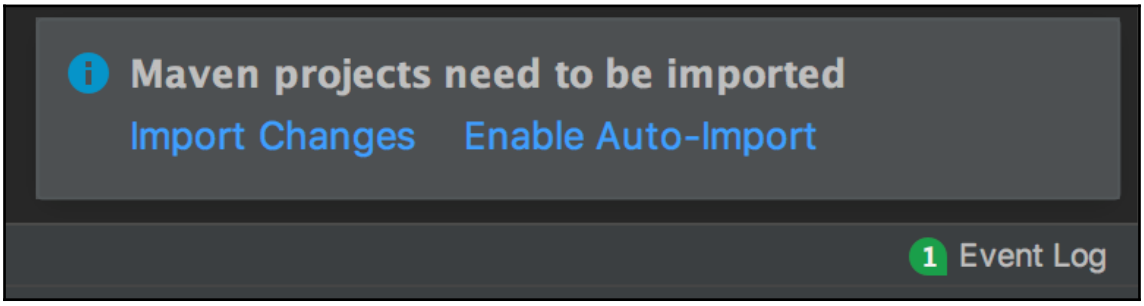

temp1
Search
Favorites
All My Files
iCloud Drive
Applications
ab54696
admin
work
prw
Images
Desktop
Documents
Downloads
Name
Date Modified
Size
Kind
Learn-Java-12-Programming
Today, 8:54 PM
--
Folder
New Folder
Cancel
Open

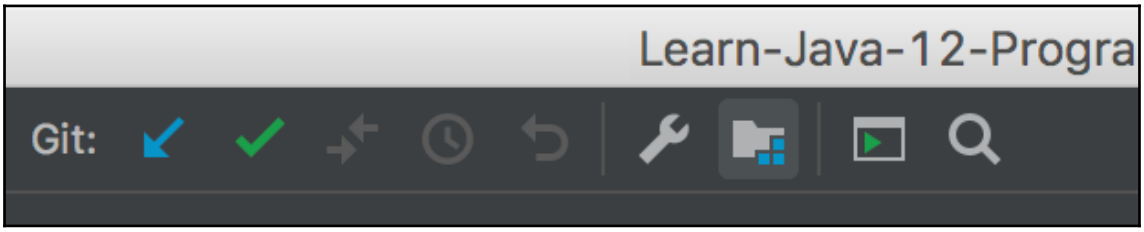

Import Project
Please select project SDK.
This SDK will be used by default by all project modules.
1.8
9
10
10 (1)
11
12
Name:
12
JDK home path:
/Library/Java/JavaVirtualMachines/jdk-12.jdk/Contents/Home
Classpath
Sourcepath
Annotations
Documentation Paths
/Library/Java/JavaVirtualMachines/jdk-12.jdk/Contents/Home!/java.base
/Library/Java/JavaVirtualMachines/jdk-12.jdk/Contents/Home!/java.compiler
/Library/Java/JavaVirtualMachines/jdk-12.jdk/Contents/Home!/java.datatransfer
/Library/Java/JavaVirtualMachines/jdk-12.jdk/Contents/Home!/java.desktop
/Library/Java/JavaVirtualMachines/jdk-12.jdk/Contents/Home!/java.instrument
/Library/Java/JavaVirtualMachines/jdk-12.jdk/Contents/Home!/java.logging

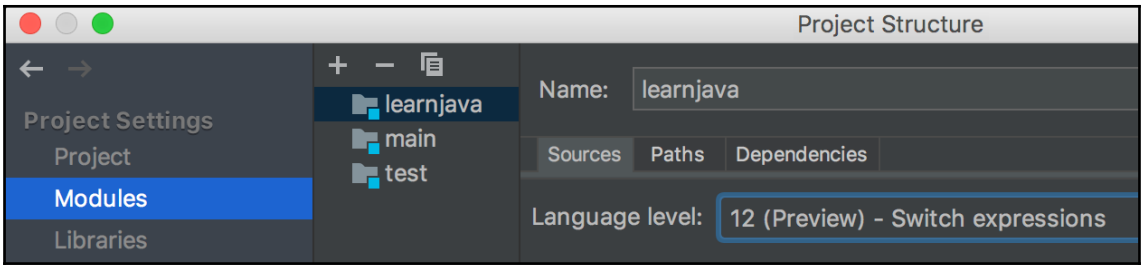

Learn-Java-12-Programming
ControlFlow
Git:
Learn-Java-12-Programming
1: Project
Project
Learn-Java-12-Programming [learnjava] 1 hidden ~/prw/Jav
External Libraries
Scratches and Consoles

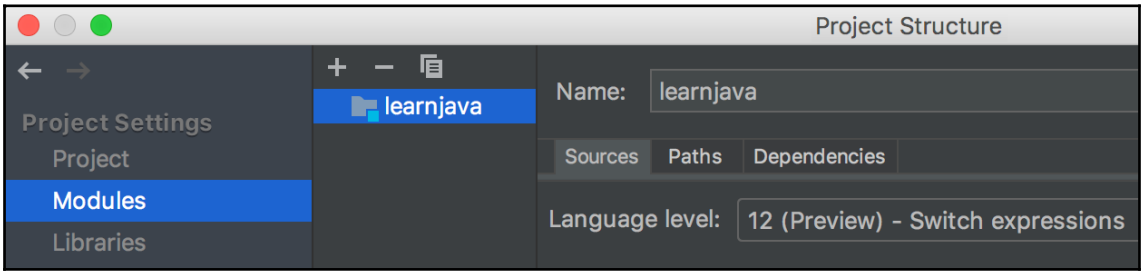

Non-managed pom.xml file found:
/Users/ab54696/temp1/Learn-Java-12-Programming/pom.xml...
1 Event Log

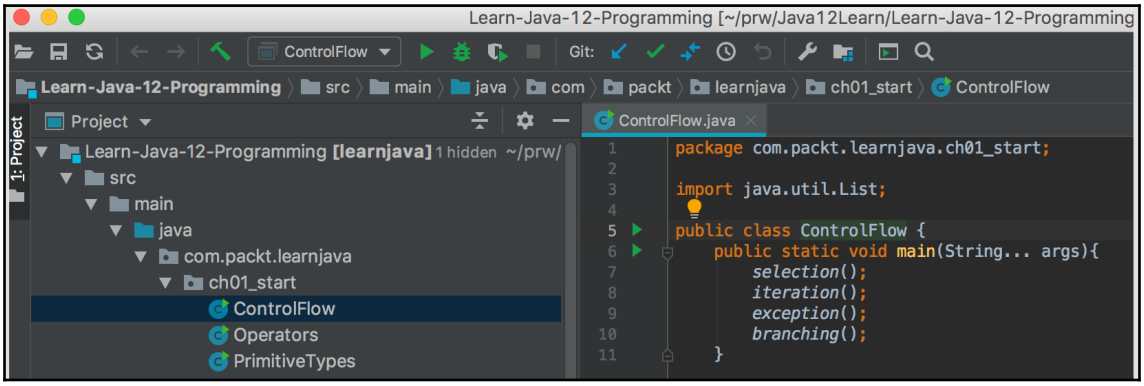

Non-managed pom.xml file found:
/Users/ab54696/temp1/Learn-Java-12-Programming/pom.xml
Add as Maven Project or Disable notification
1 Event Log

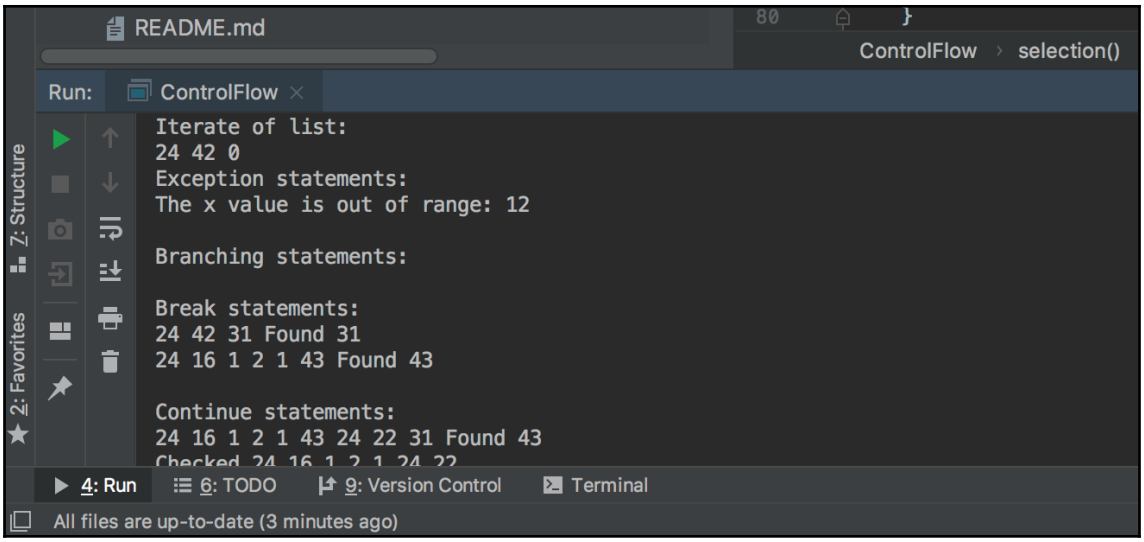

Maven projects need to be imported
Import Changes Enable Auto-Import
1 Event Log


Learn-Java-12-Progra
Git:


Project Structure
Project Settings
Project
Modules
Libraries
learnjava
main
test
Name:
learnjava
Sources
Paths
Dependencies
Language level:
12 (Preview) - Switch expressions


Project Structure
Project Settings
Project
Modules
Libraries
learnjava
Name:
learnjava
Sources
Paths
Dependencies
Language level:
12 (Preview) - Switch expressions

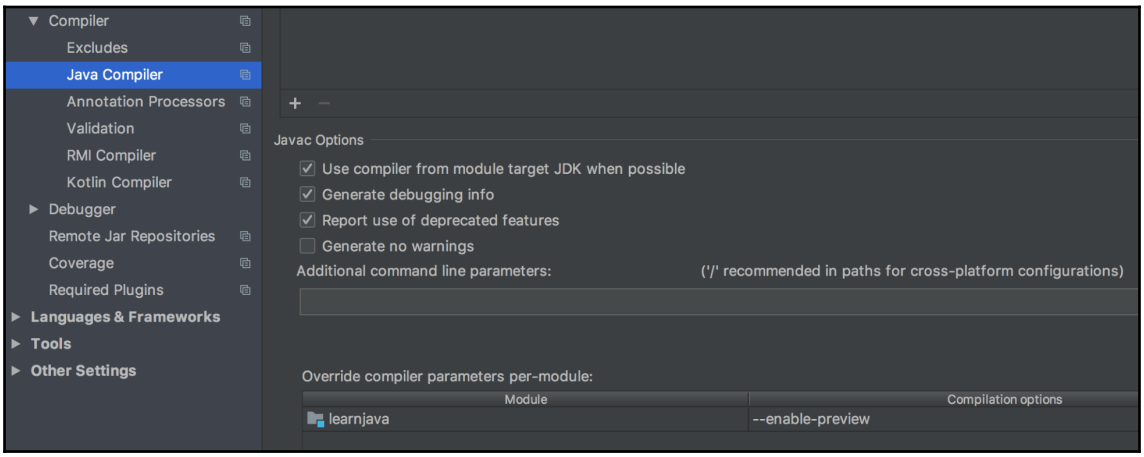

Learn-Java-12-Programming [~/prw/Java12Learn/Learn-Java-12-Programming
ControlFlow
Git:
Learn-Java-12-Programming
src
main
java
com
packt
learnjava
ch01_start
ControlFlow
Project
1: Project
Learn-Java-12-Programming [learnjava] 1 hidden ~/prw/
src
main
java
com.packt.learnjava
ch01_start
ControlFlow
Operators
PrimitiveTypes
ControlFlow.java
package com.packt.learnjava.ch01_start;
import java.util.List;
public class ControlFlow {
public static void main(String... args){
selection();
iteration();
exception();
branching();
}

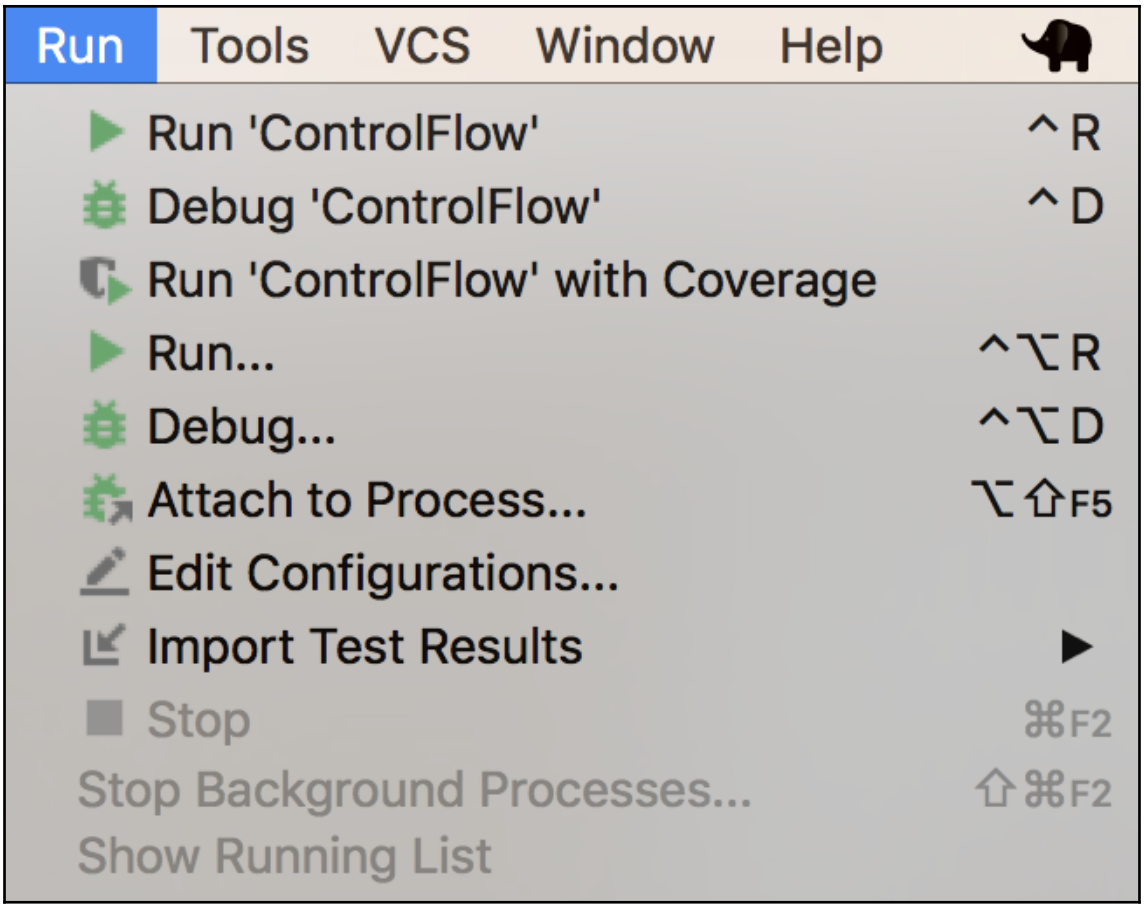


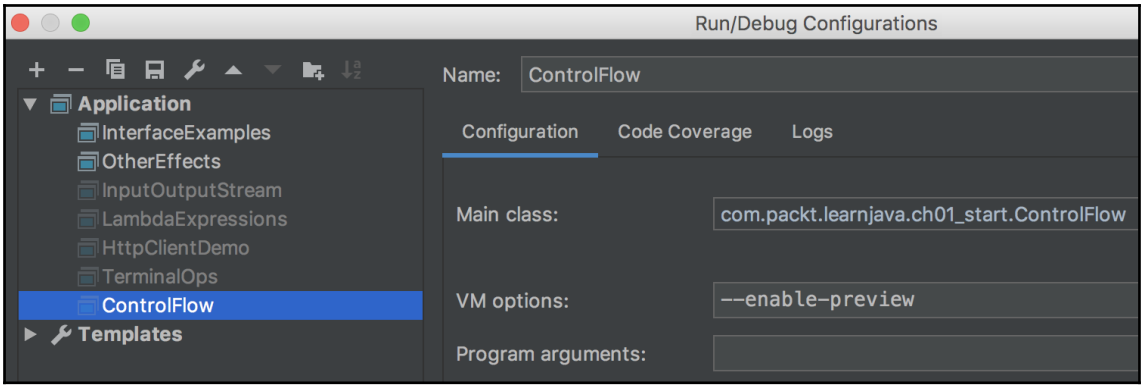

```
demo>
demo> cd Learn-Java-12-Programming
demo> ls
LICENSE         README.md       learnjava.iml   pom.xml         src             target
demo> mvn clean package
[INFO] Scanning for projects...
[INFO]
[INFO] -------------------< com.packt.learnjava:learnjava >--------------------
[INFO] Building learnjava 1.0-SNAPSHOT
[INFO] --------------------------------[ jar ]---------------------------------
```

```
demo>
demo> java -cp target/learnjava-1.0-SNAPSHOT.jar:target/libs/* com.packt.learnjava.ch01_start.ControlFlow

Selection statements:

Iteration statements:
0 1 2 3 4
0 1 2 3 4
0 1 2
```

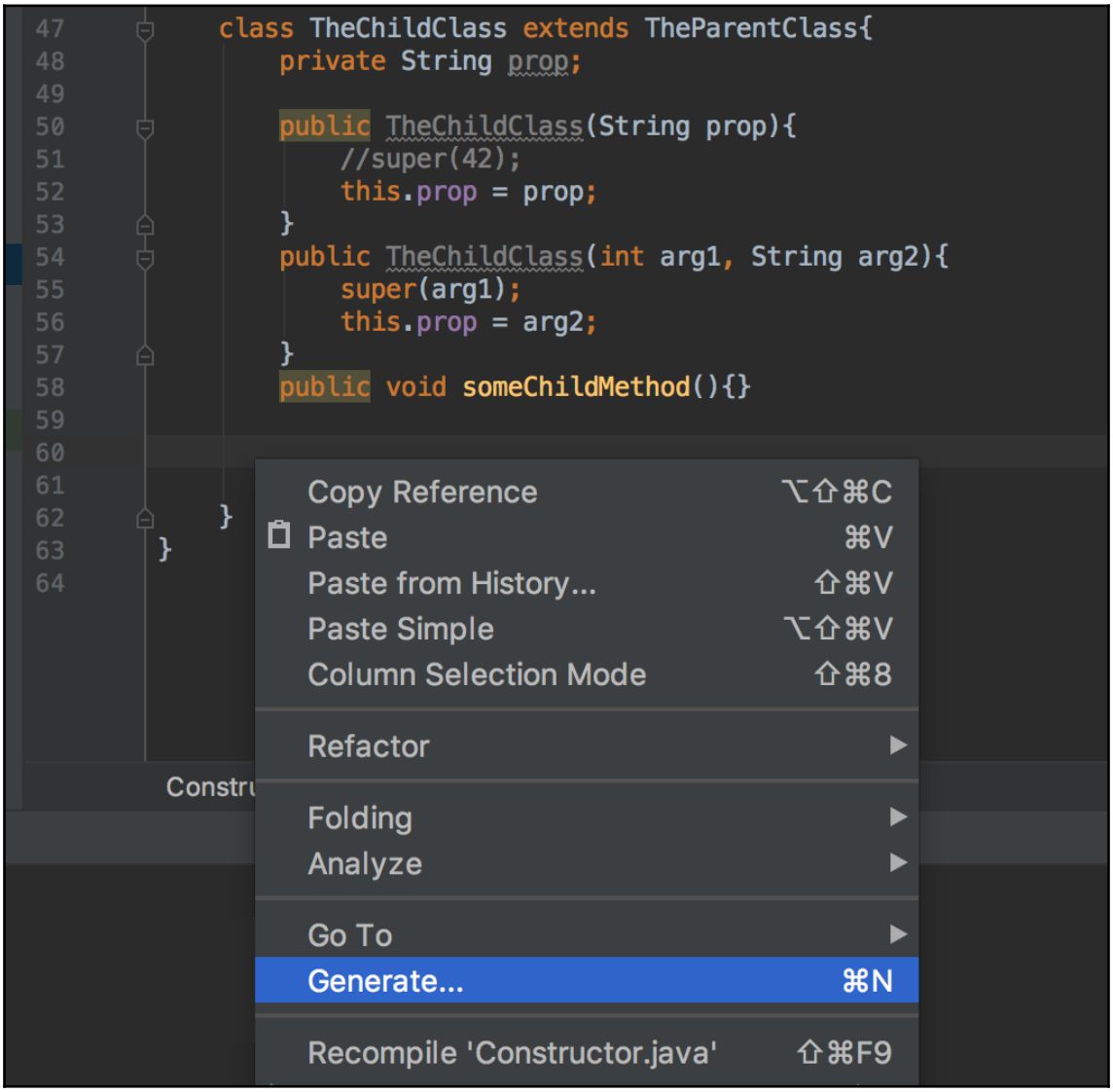
```
demo>
demo> java -cp target/learnjava-1.0-SNAPSHOT.jar:target/libs/* com.packt.learnjava.ch05_stringsIoStreams.Files

dir1.list(): demo2
dir1.listFiles(): demo1/demo2
dir.list(): file1.txt file2.txt
dir.listFiles(): demo1/demo2/file1.txt demo1/demo2/file2.txt
File.listRoots(): /
```

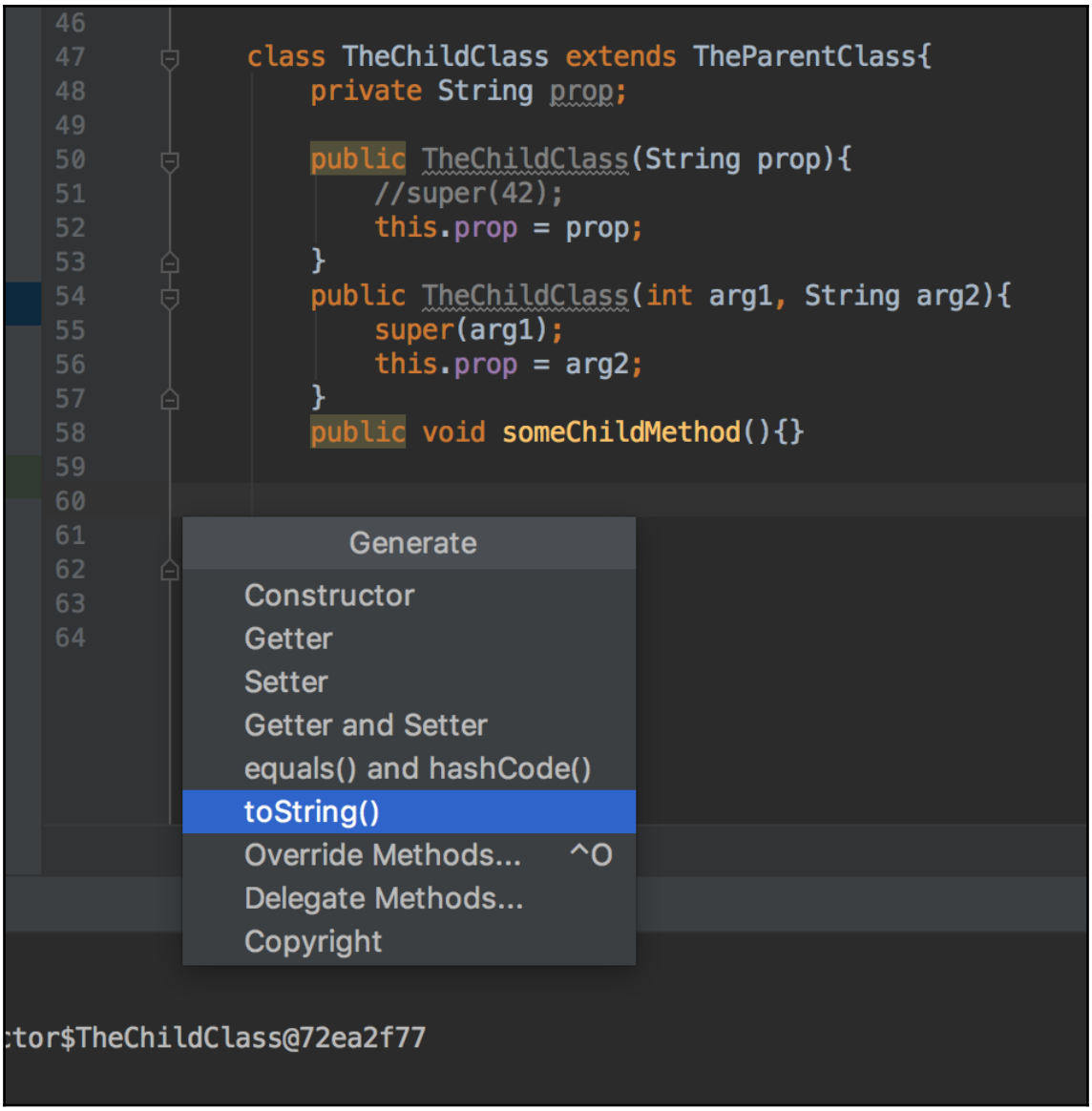


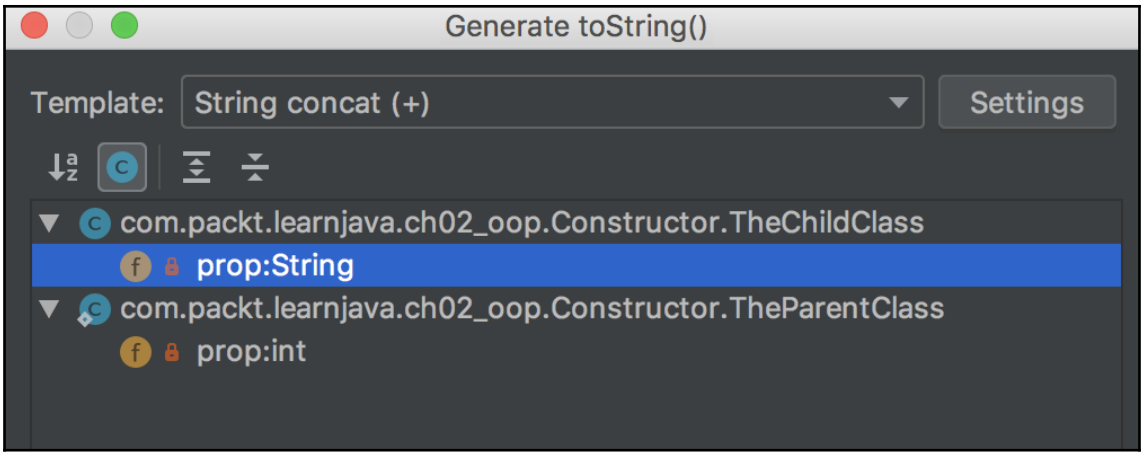

Run
Tools
VCS
Window
Help
Run 'ControlFlow' ^R
Debug 'ControlFlow' ^D
Run 'ControlFlow' with Coverage
Run... ^⌥R
Debug... ^⌥D
Attach to Process... ⌥⇧F5
Edit Configurations...
Import Test Results
Stop ⌘F2
Stop Background Processes... ⇧⌘F2
Show Running List


Run/Debug Configurations
Application
InterfaceExamples
OtherEffects
InputOutputStream
LambdaExpressions
HttpClientDemo
TerminalOps
ControlFlow
Templates
Name: ControlFlow
Configuration
Code Coverage
Logs
Main class: com.packt.learnjava.ch01_start.ControlFlow
VM options: --enable-preview
Program arguments:

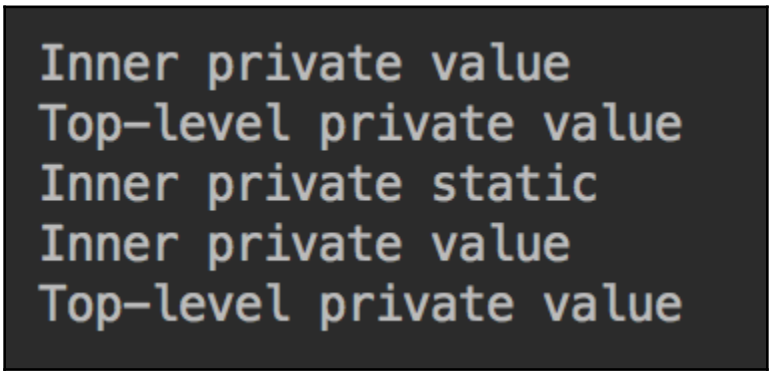
Chapter 2: Java Object-Oriented Programming (OOP)




class TheChildClass extends TheParentClass{
private String prop;
public TheChildClass(String prop){
//super(42);
this.prop = prop;
}
public TheChildClass(int arg1, String arg2){
super(arg1);
this.prop = arg2;
}
public void someChildMethod(){}
Generate
Constructor
Getter
Setter
Getter and Setter
equals() and hashCode()
toString()
Override Methods... ^O
Delegate Methods...
Copyright
tor$TheChildClass@72ea2f77


Generate toString()
Template:
String concat (+)
Settings
com.packt.learnjava.ch02_oop.Constructor.TheChildClass
prop:String
com.packt.learnjava.ch02_oop.Constructor.TheParentClass
prop:int

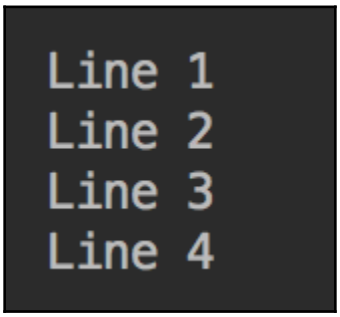
Chapter 3: Java Fundamentals

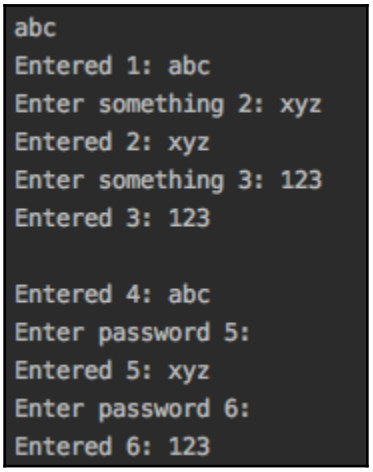


Chapter 4: Exception Handling

```
java.lang.NullPointerException
java.lang.NullPointerException
    at com.packt.learnjava.ch04_exceptions.Framework.method(Framework.java:12)
    at com.packt.learnjava.ch04_exceptions.Framework.catchException1(Framework.java:22)
    at com.packt.learnjava.ch04_exceptions.Framework.main(Framework.java:6)
```

Chapter 5: Strings, Input/Output, and Files





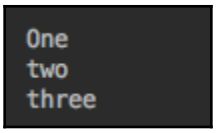
```
Enter something: Hi!
Entered: Hi!
Hello!
```

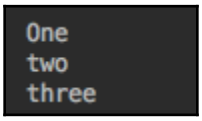
```
class com.packt.learnjava.ch05_stringsIoStreams.Person1
Class name: com.packt.learnjava.ch05_stringsIoStreams.Person1
SerialVersionUID: -2546904836625458265
Serialized fields:
age:
    int
    I
    null
name:
    class java.lang.String
    L
    Ljava/lang/String;
```

```
class com.packt.learnjava.ch05_stringsIoStreams.Person2
Class name: com.packt.learnjava.ch05_stringsIoStreams.Person2
SerialVersionUID: 0
Serialized fields:
```

```
Enter something: type
type
one line
one line
at a time
at a time
end

Process finished with exit code 0
```

```
There
happened
42
events.
```






```
dir1.list(): demo2
dir1.listFiles(): demo1/demo2
dir.list(): file1.txt file2.txt
dir.listFiles(): demo1/demo2/file1.txt demo1/demo2/file2.txt
File.listRoots(): /
```

Chapter 8: Multithreading and Concurrent Processing

```
daemon thread Thread-1(id=14) parameter: Two
  user thread Thread-0(id=13) parameter: One
daemon thread Thread-1(id=14) parameter: Two
  user thread Thread-0(id=13) parameter: exit
Main thread exists
```

```
thread Two, parameter: null
thread One, parameter: null
thread Two, parameter: null
thread One, parameter: exit
Main thread exists
```

```
One is working...
Three is working...
Two is working...
Before shutdown: isShutdown()=false, isTerminated()=false
After shutdown: isShutdown()=true, isTerminated()=false
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
One was interrupted
One Thread.currentThread().isInterrupted()=false
Two was interrupted
Two Thread.currentThread().isInterrupted()=false
Three was interrupted
Three Thread.currentThread().isInterrupted()=false
Exiting
```

```
Two is working...
Three is working...
One is working...
Before shutdown: isShutdown()=false, isTerminated()=false
After shutdown: isShutdown()=true, isTerminated()=false
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
Two was interrupted
Two Thread.currentThread().isInterrupted()=true
One was interrupted
One Thread.currentThread().isInterrupted()=true
Three was interrupted
Three Thread.currentThread().isInterrupted()=true
Exiting
```

```
false
false
One is working...
One is done
null
true
false
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
Exiting
```

```
false
false
Two is working...
Two is done
Result{name=Two, result=42.0}
true
false
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
Exiting
```

```
false
false
Three is working...
Three is done
Result{name=Three, result=42.42}
true
false
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
Exiting
```

```
Without synchronization:
Result{name=One, result=81.43661054438327}
Result{name=Two, result=83.13051012374216}
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
Exiting
```

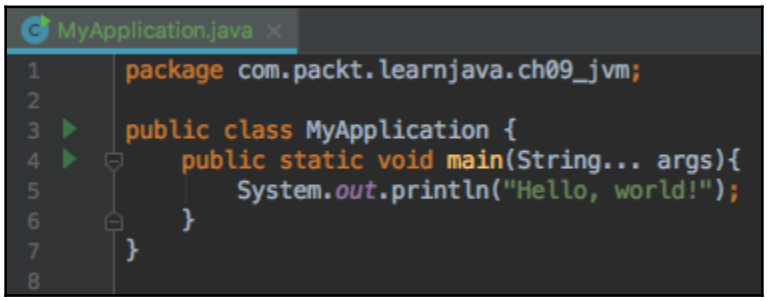
```
Using AtomicReference:
Result{name=One, result=80.88430683757149}
Result{name=Two, result=80.88430683757149}
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
Exiting
```

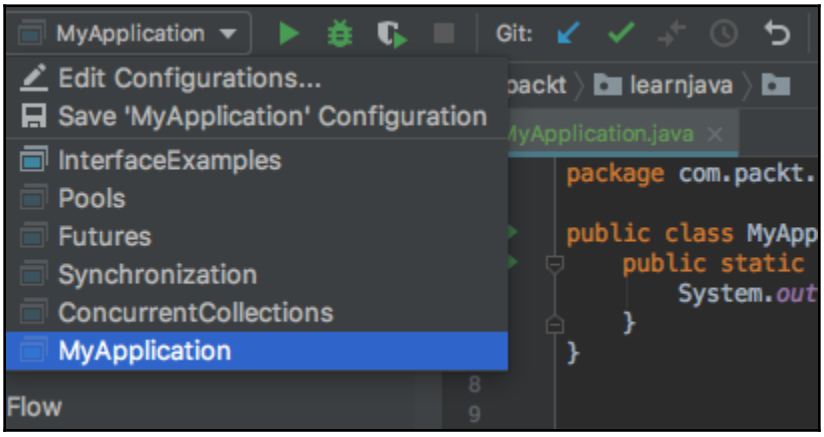
```
Using synchronized method:
Result{name=One, result=80.88430683757149}
Result{name=Two, result=80.88430683757149}
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
Exiting
```

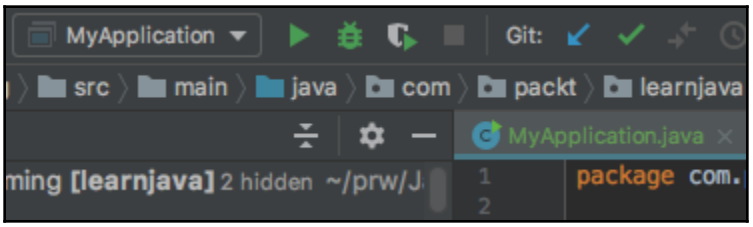
```
Using synchronized block:
Result{name=One, result=80.88430683757149}
Result{name=Two, result=80.88430683757149}
Waiting all threads completion for 100 MILLISECONDS...
isTerminated()=false
Calling shutdownNow()...
0 threads running
Exiting
```

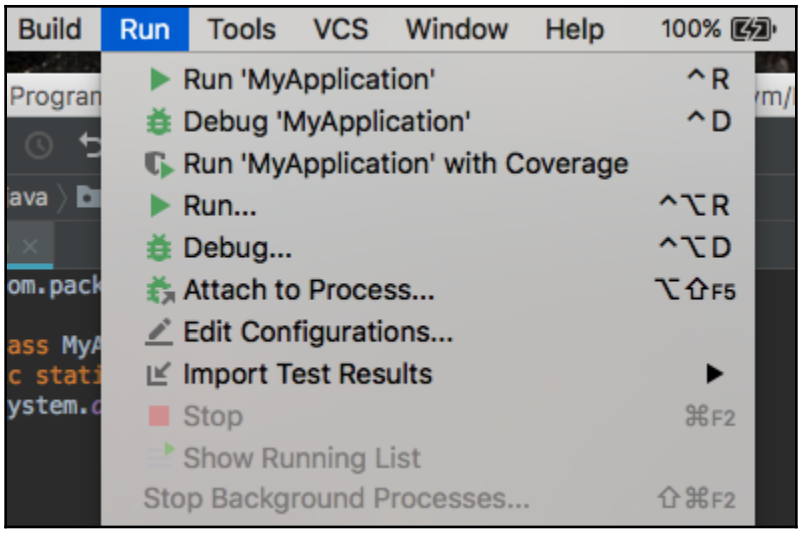
```
[One, Two]
One Two
[One, Two, Three, Three]
```

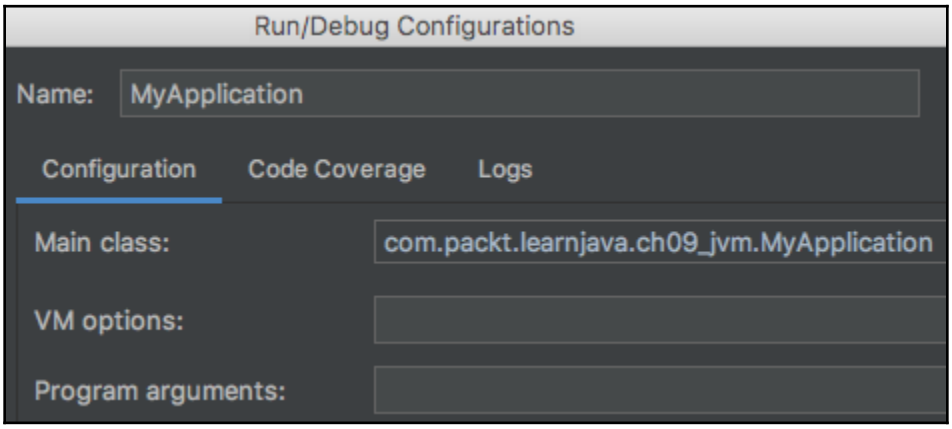
Chapter 9: JVM Structure and Garbage Collection

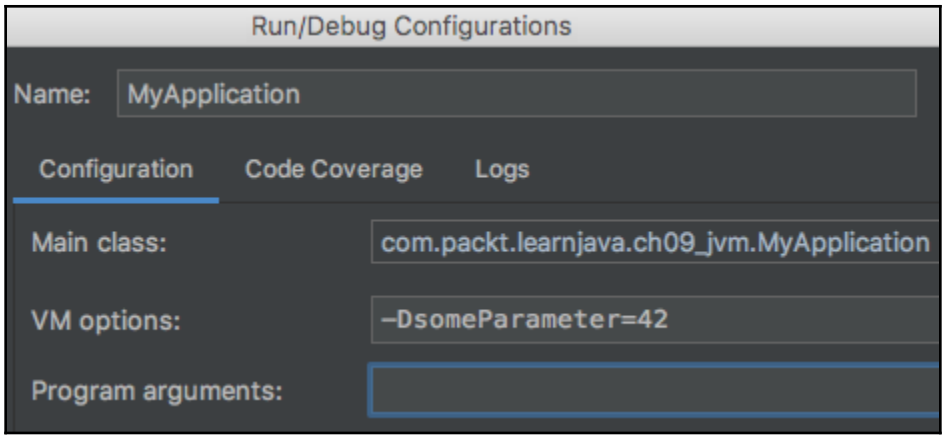


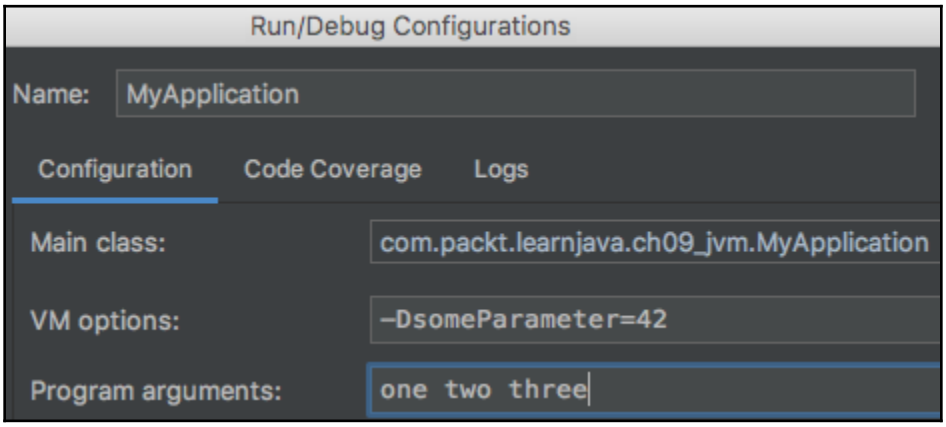


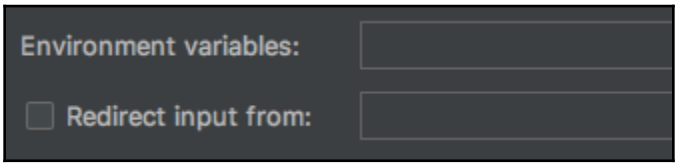


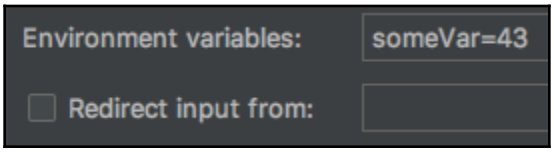

Build
Run
Tools
VCS
Window
Help
100%
Run 'MyApplication' ^R
Debug 'MyApplication' ^D
Run 'MyApplication' with Coverage
Run... ^⌥R
Debug... ^⌥D
Attach to Process... ⌥⇧F5
Edit Configurations...
Import Test Results
Stop ⌘F2
Show Running List
Stop Background Processes... ⇧⌘F2


Run/Debug Configurations
Name: MyApplication
Configuration
Code Coverage
Logs
Main class: com.packt.learnjava.ch09_jvm.MyApplication
VM options:
Program arguments:


Run/Debug Configurations
Name: MyApplication
Configuration
Code Coverage
Logs
Main class: com.packt.learnjava.ch09_jvm.MyApplication
VM options: -DsomeParameter=42
Program arguments:


Run/Debug Configurations
Name: MyApplication
Configuration
Code Coverage
Logs
Main class: com.packt.learnjava.ch09_jvm.MyApplication
VM options: -DsomeParameter=42
Program arguments: one two three


Environment variables:
Redirect input from:

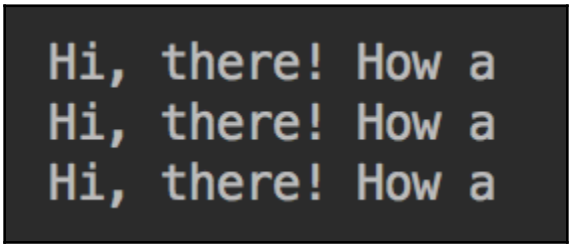

Environment variables: someVar=43
Redirect input from:

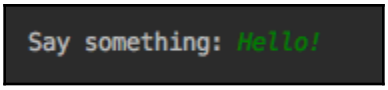
```
Hello, world!
one two three
42
```

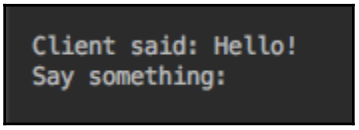
```
import com.packt.learnjava.ch09_jvm.example.ExampleClass;
                                          ^
src/main/java/com/packt/learnjava/ch09_jvm/MyApplication.java:14: error: cannot find symbol
        int i = ExampleClass.multiplyByTwo(2);
                ^
  symbol:   variable ExampleClass
  location: class MyApplication
2 errors
```

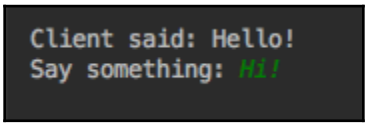
```
Hello, world!
null
4
```

Chapter 11: Network Programming





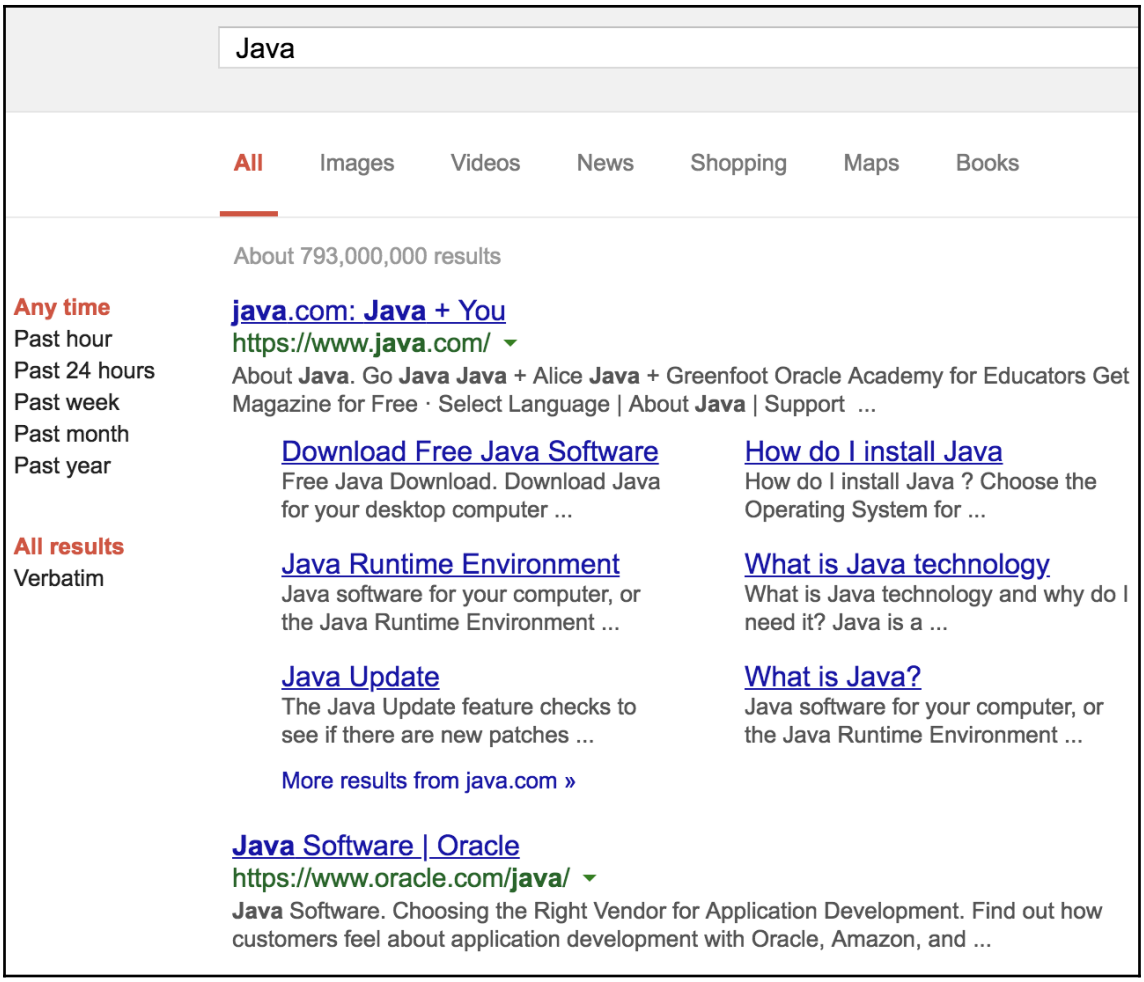




```
Say something: Hello!
Server said: Hi!
Say something:
```

```
Say something: Hello!
Server said: Hi!
Say something: end

Process finished with exit code 0
```

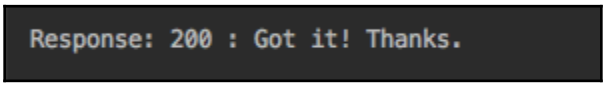
```
Client said: Hello!
Say something: Hi!
Client said: end

Process finished with exit code 0
```

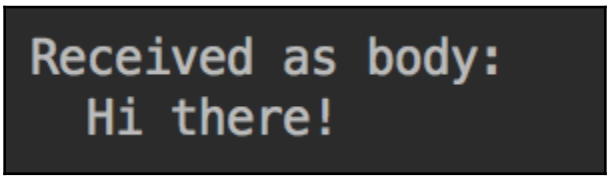


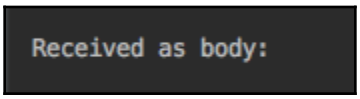

```
/something
/something
Received as body:
  parameter1=value1&parameter2=value2
```

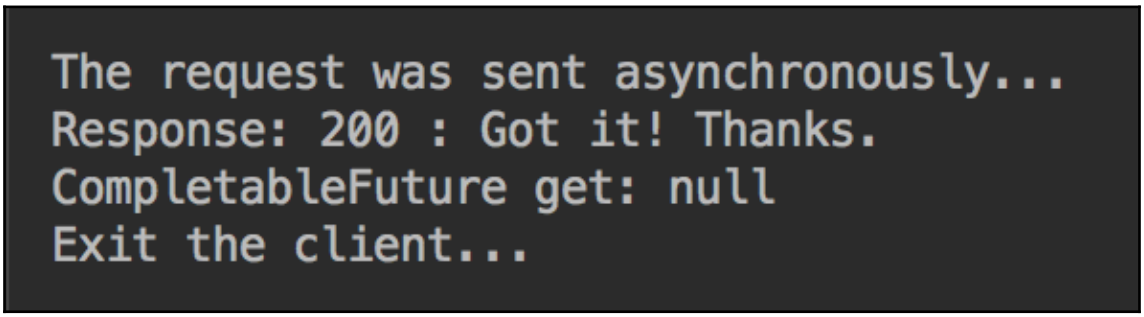
```
Got it! Thanks.

Process finished with exit code 0
```

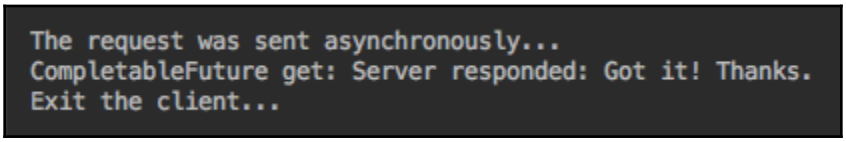
Received as body:

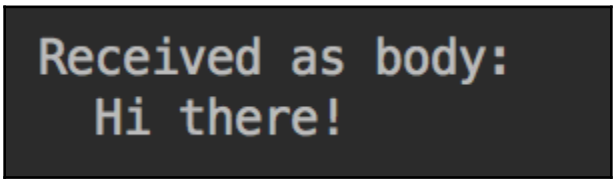

Response: 200 : Got it! Thanks.


Received as body:
Hi there!


Received as body:


The request was sent asynchronously...
Response: 200 : Got it! Thanks.
CompletableFuture get: null
Exit the client...


The request was sent asynchronously...
CompletableFuture get: Server responded: Got it! Thanks.
Exit the client...

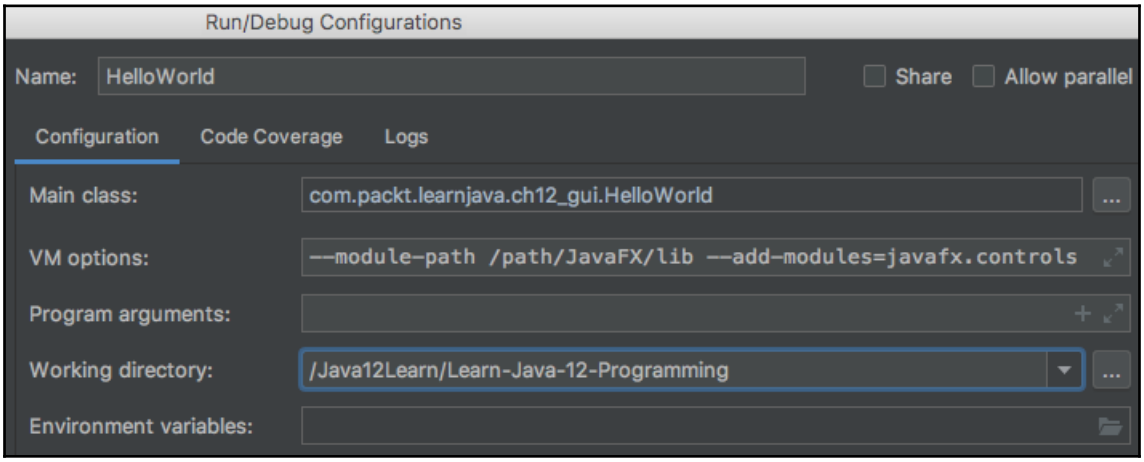

Received as body:
Hi there!

```
The request was sent asynchronously...
CompletableFuture get: Server responded: Got it! Thanks.
Exit the client...
```

```
Received as body:
  Hi! My name is 2.

Received as body:
  Hi! My name is 3.

Received as body:
  Hi! My name is 1.
```

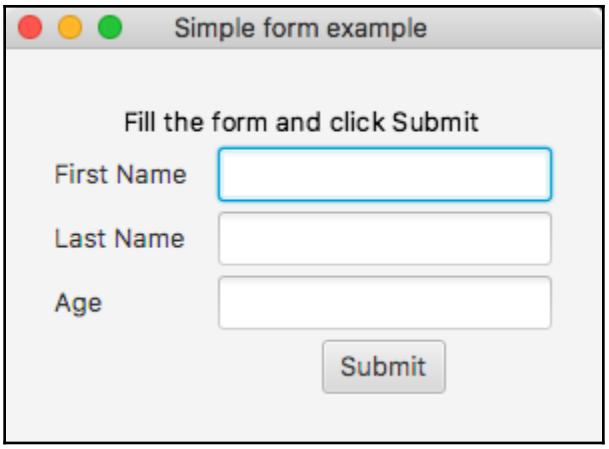
```
Connection established.
The WebSocket was created and ran asynchronously.
Method onText() got data: Some message
Method onText() got data: Another message
Method onText() got data: Another message
Method onText() got data: Another message
Close is sent.
```

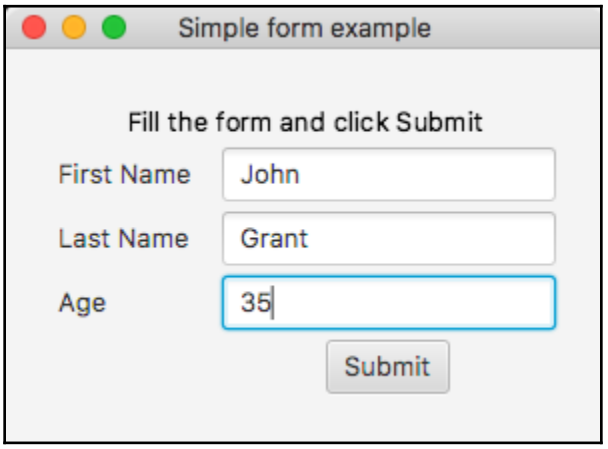
Chapter 12: Java GUI Programming



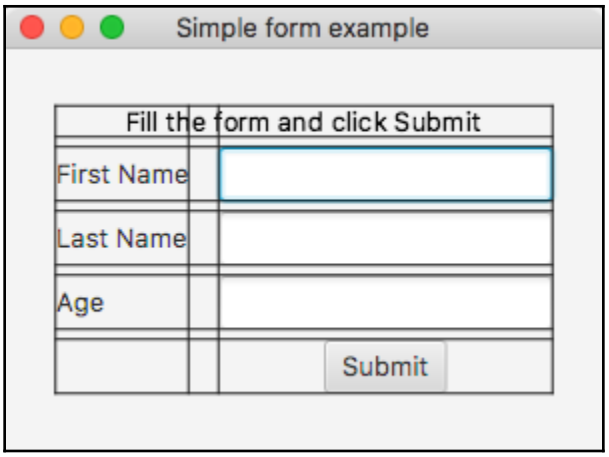
```
Bye! See you later!
```

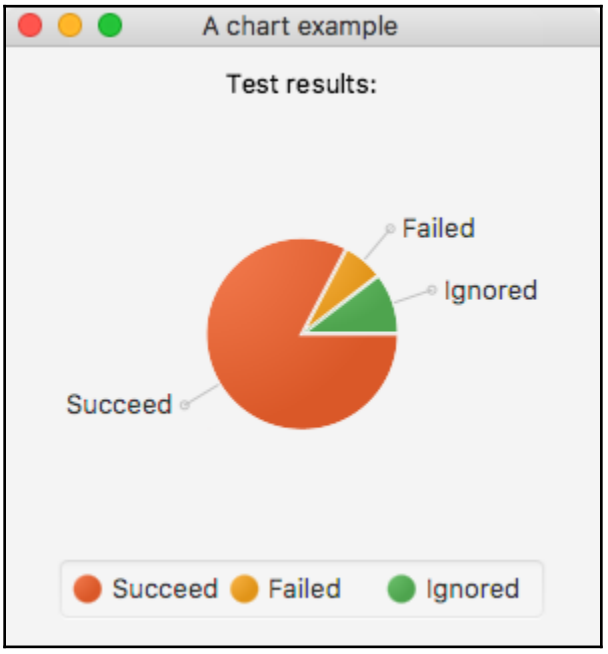
```
Bye! See you later!
Doing what has to be done before closing
```





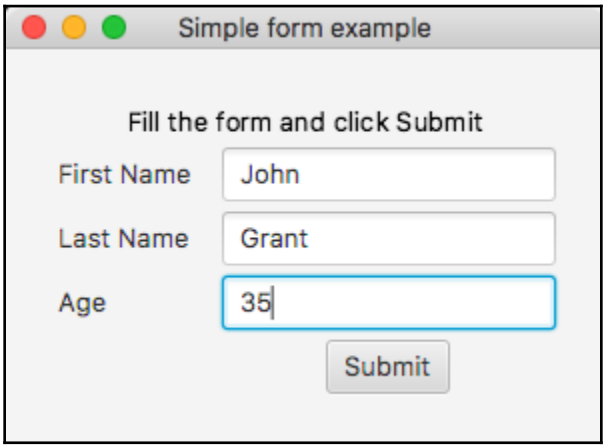

```
Hello, John Grant, age 35!
```

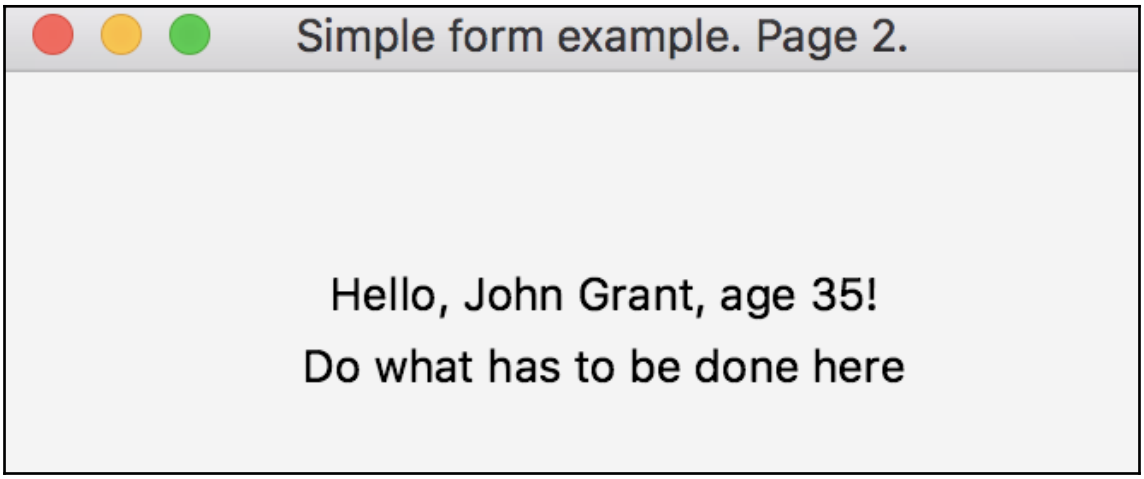

Simple form example
Fill the form and click Submit
First Name
Last Name
Age
Submit


A chart example
Test results:
Failed
Ignored
Succeed
Succeed
Failed
Ignored

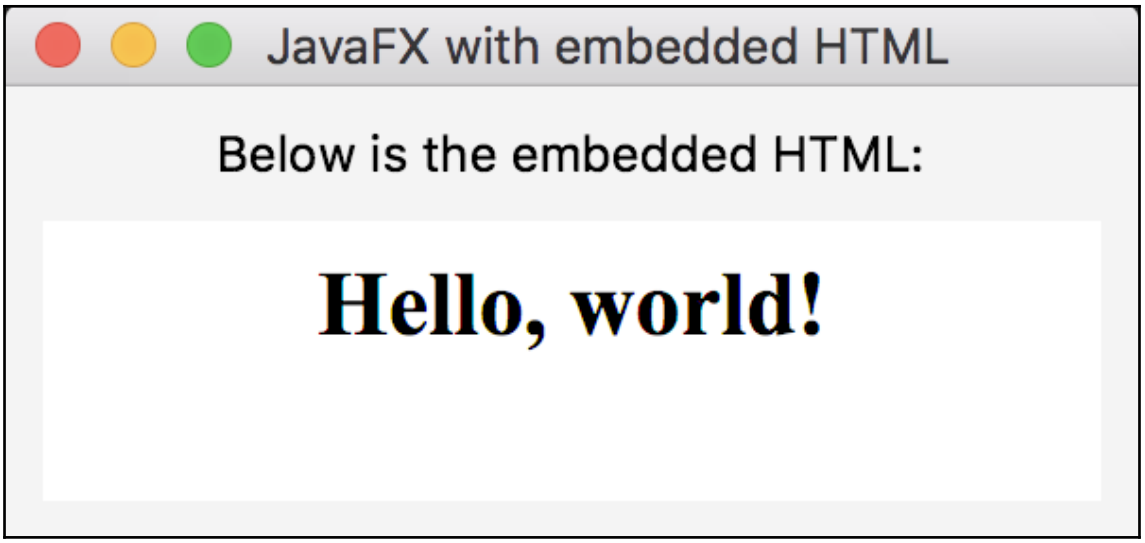
The primary stage (top-level container)
Hello, world!
Exit

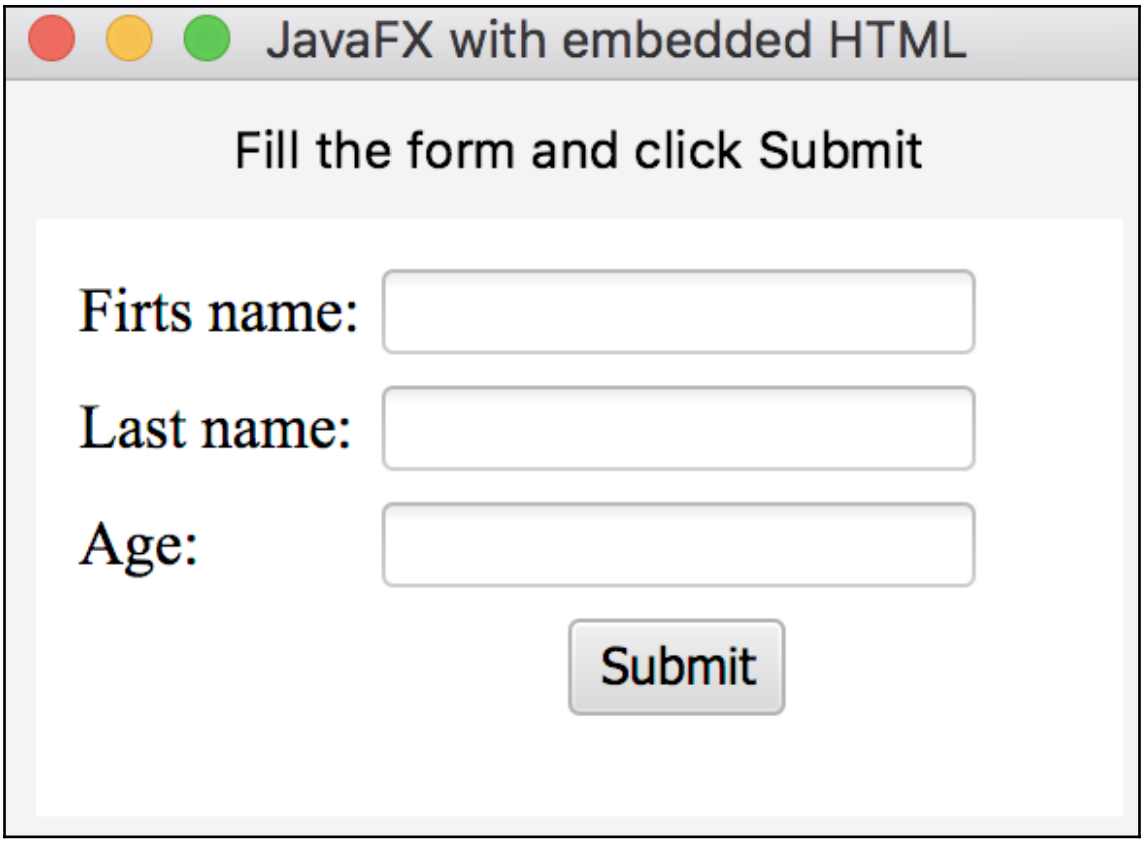
The primary stage (top-level container)
Hello, world!
Exit

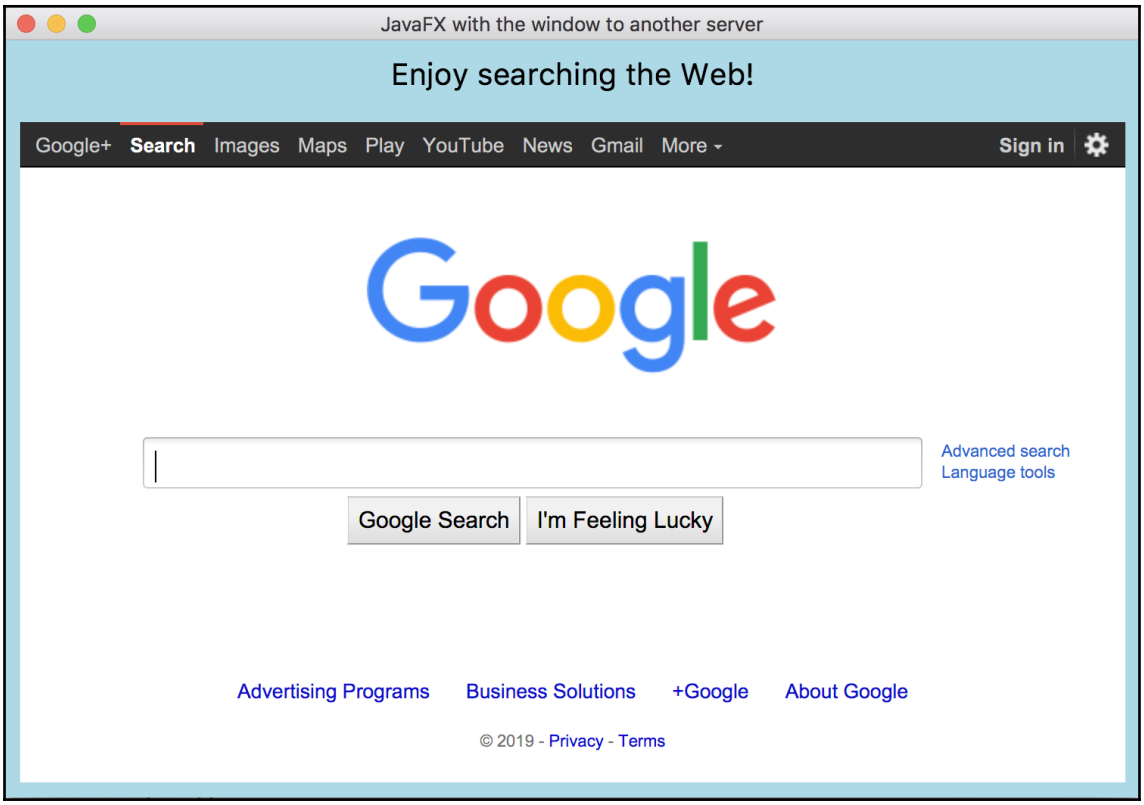

Simple form example
Fill the form and click Submit
First Name
John
Last Name
Grant
Age
35
Submit




```
Bye! See you later!
Doing what has to be done before closing
```

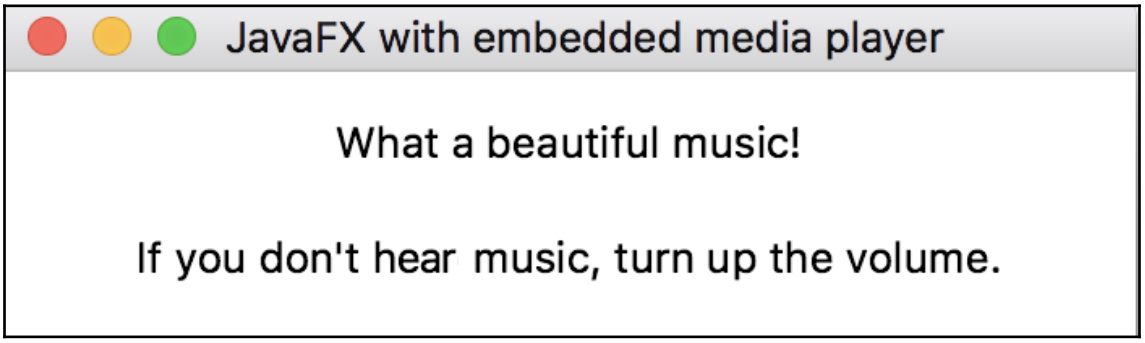

JavaFX with embedded HTML
Below is the embedded HTML:
Hello, world!

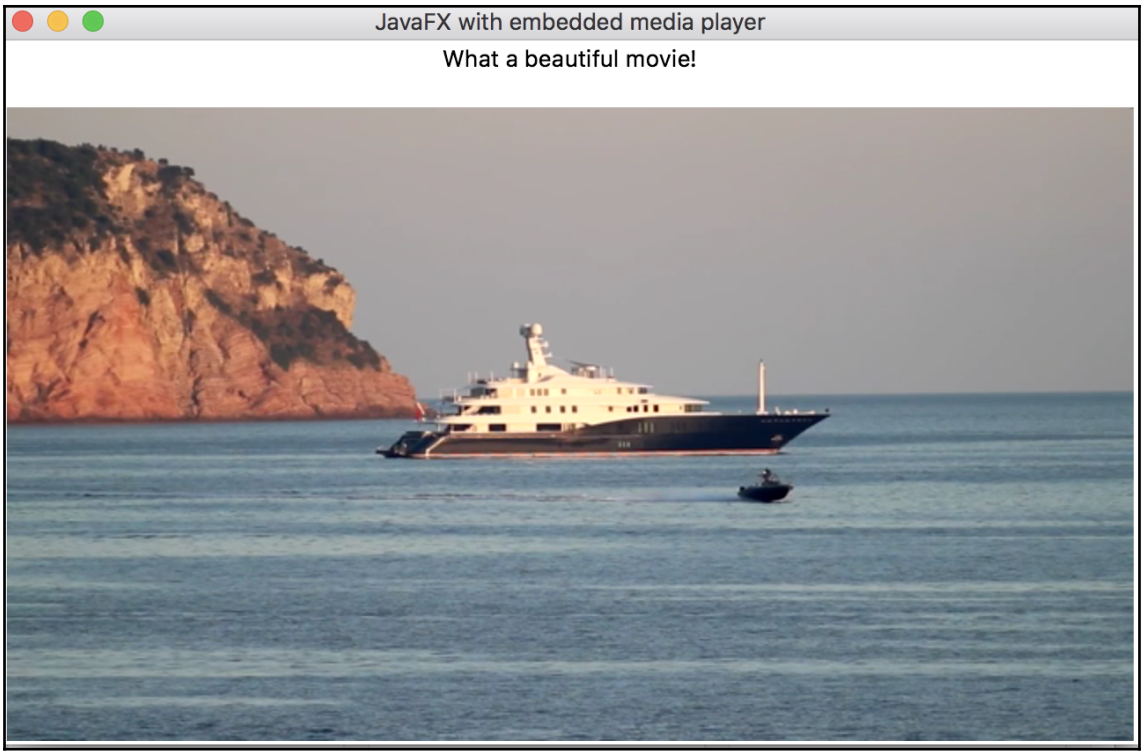

JavaFX with embedded HTML
Fill the form and click Submit
Firts name:
Last name:
Age:
Submit

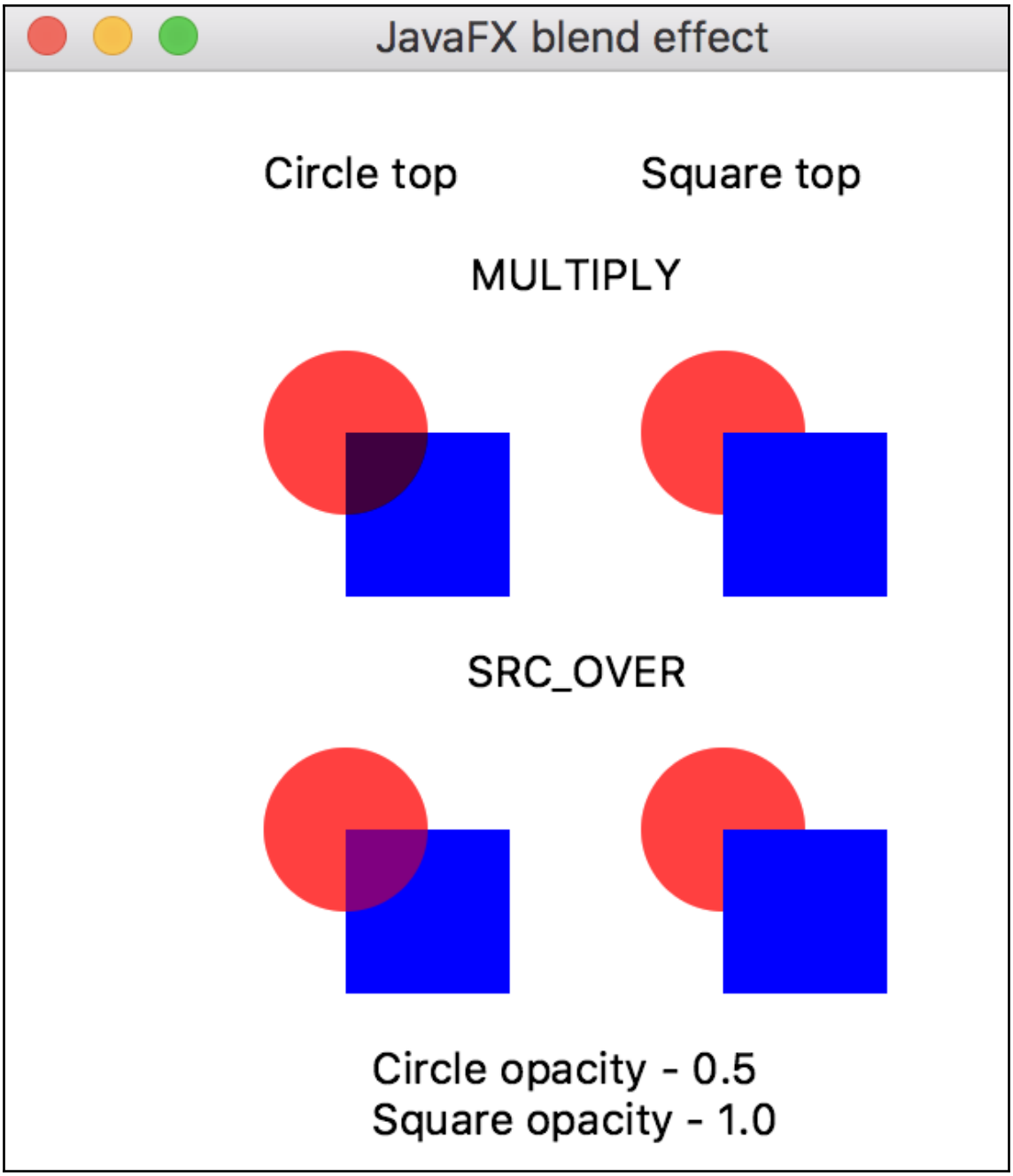

JavaFX with the window to another server
Enjoy searching the Web!
Google+ Search Images Maps Play YouTube News Gmail More
Sign in
Google
Advanced search
Language tools
Google Search
I'm Feeling Lucky
Advertising Programs
Business Solutions
+Google
About Google
© 2019 - Privacy - Terms

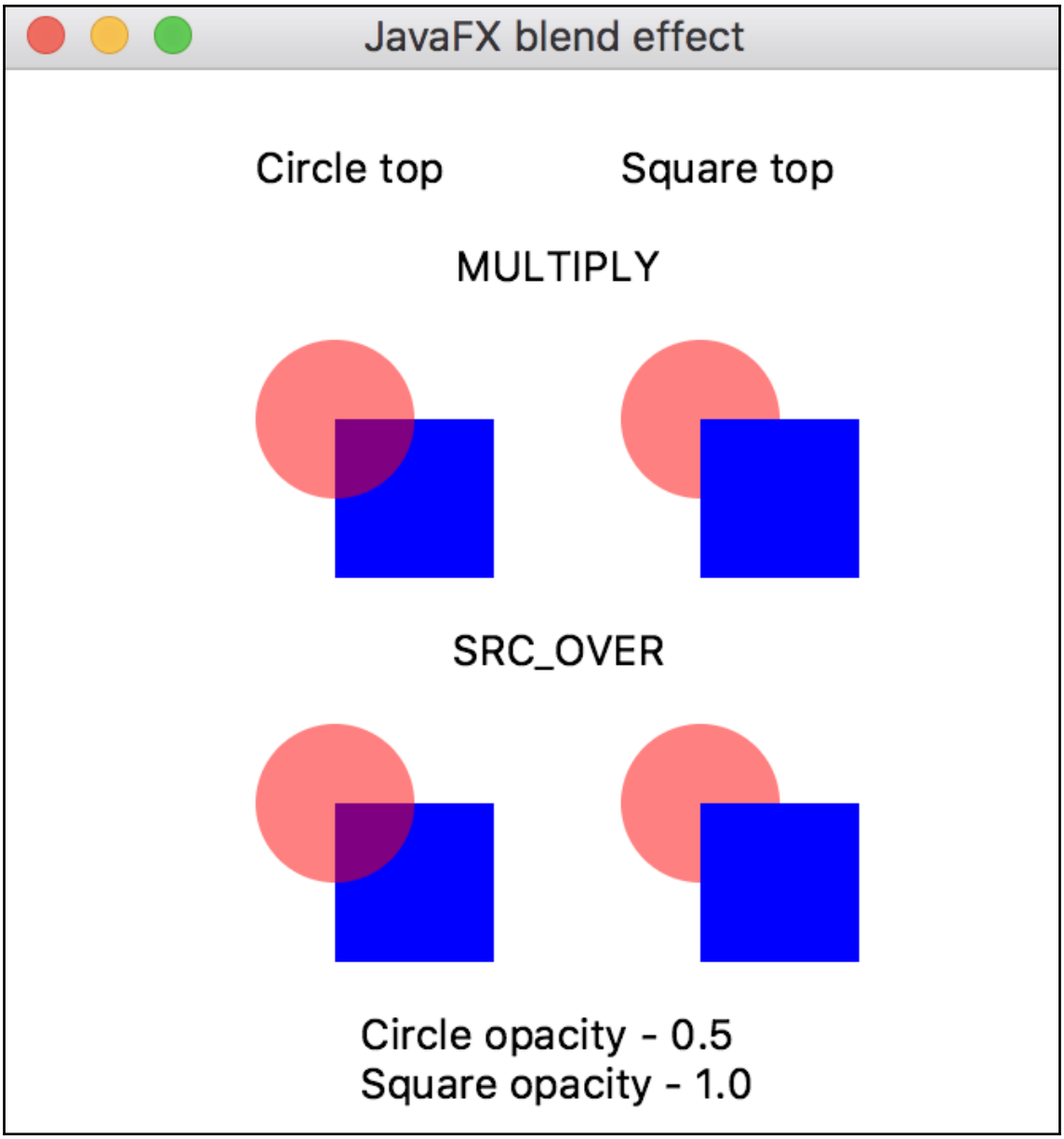
JavaFX with the window to another server
Enjoy searching the Web!
Google+
Search
Images
Maps
Play
YouTube
News
Google
Google Search
I'm Feeling Lucky

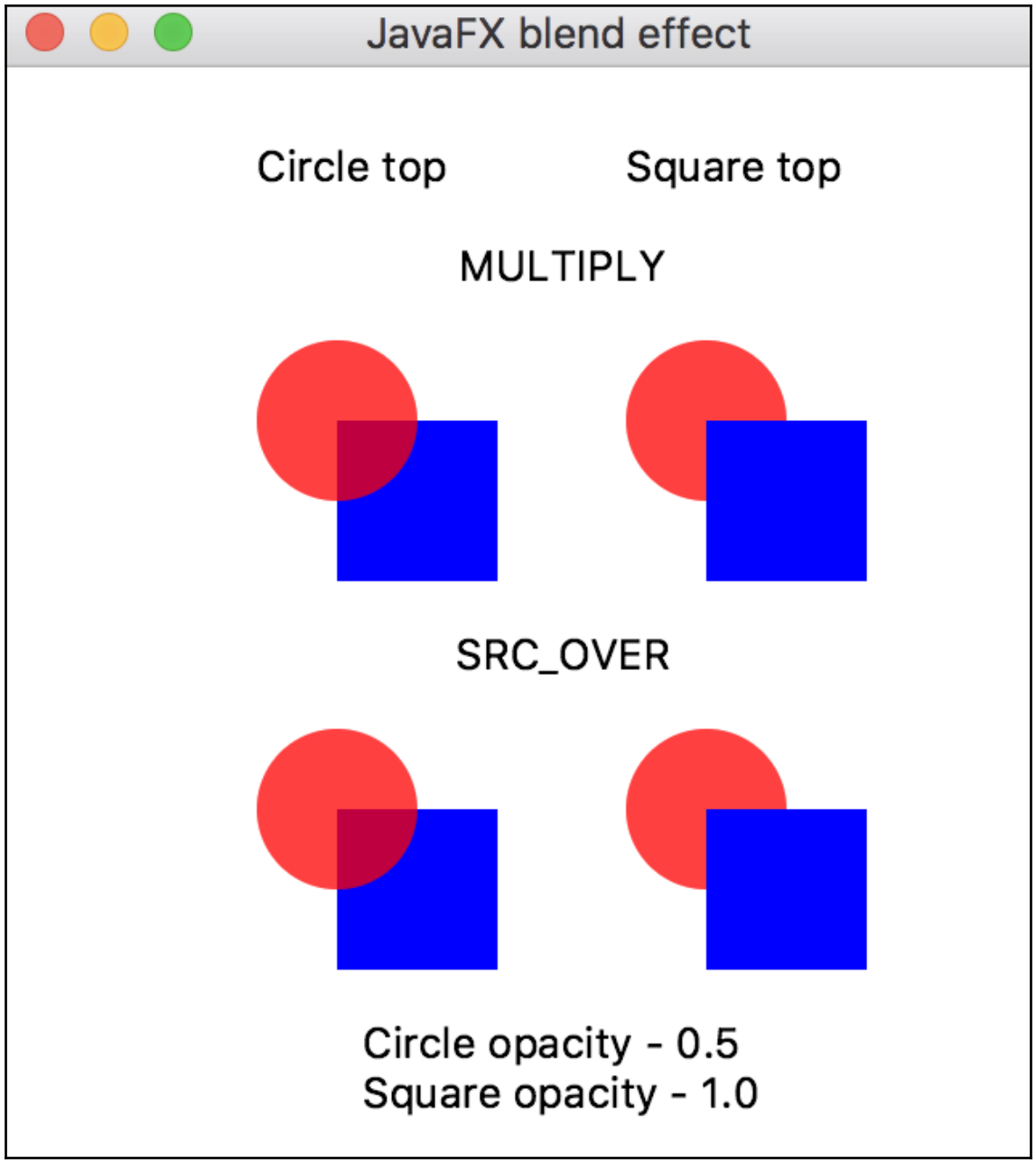
JavaFX with embedded image
What a beautiful image!
Packt

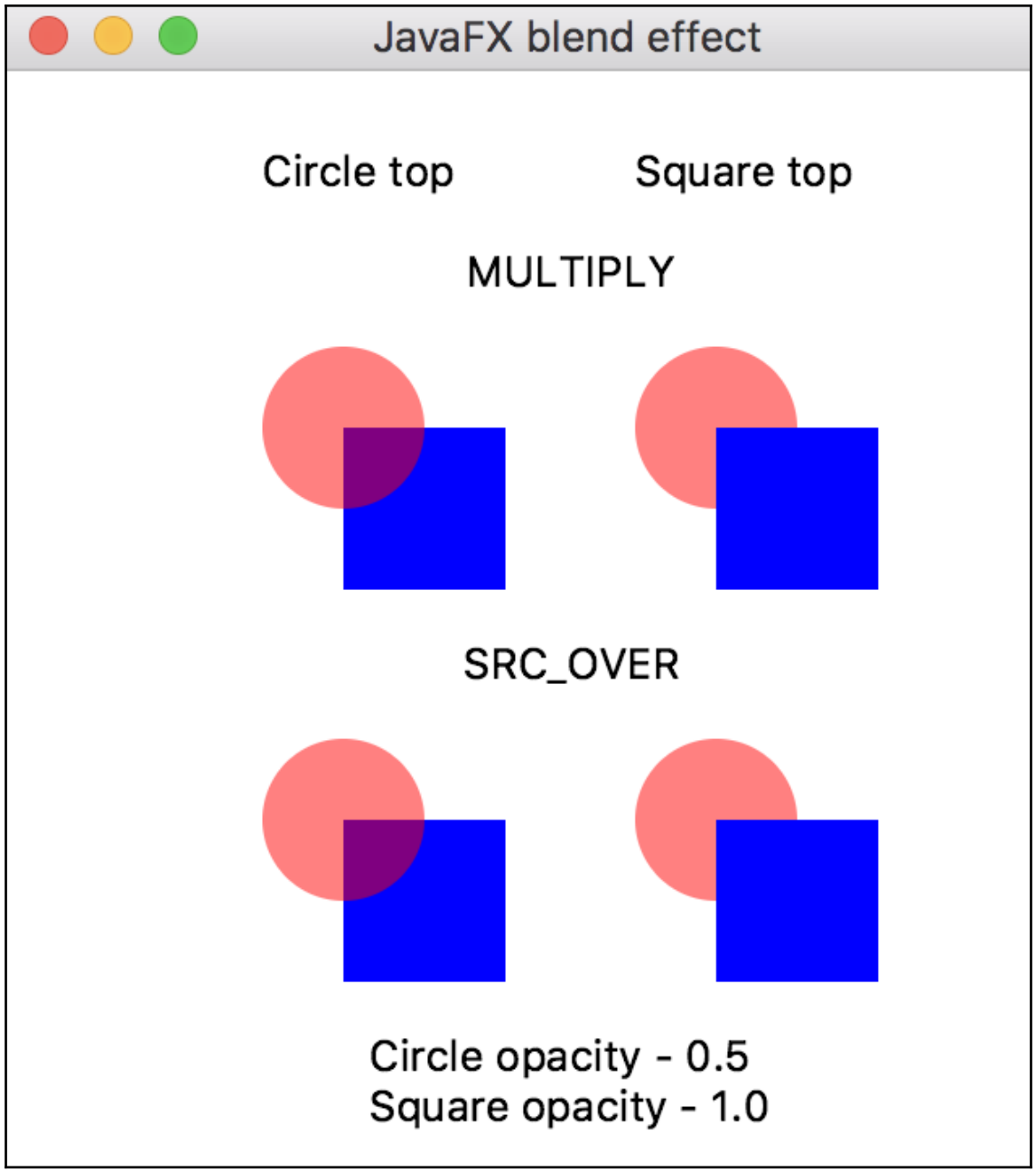

JavaFX with embedded media player
What a beautiful music!
If you don't hear music, turn up the volume.

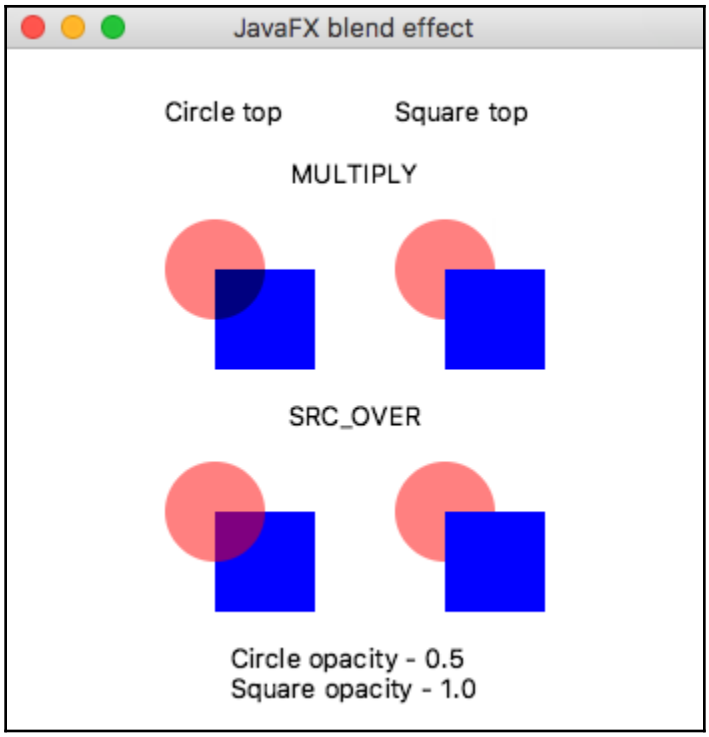

JavaFX with embedded media player
What a beautiful movie!

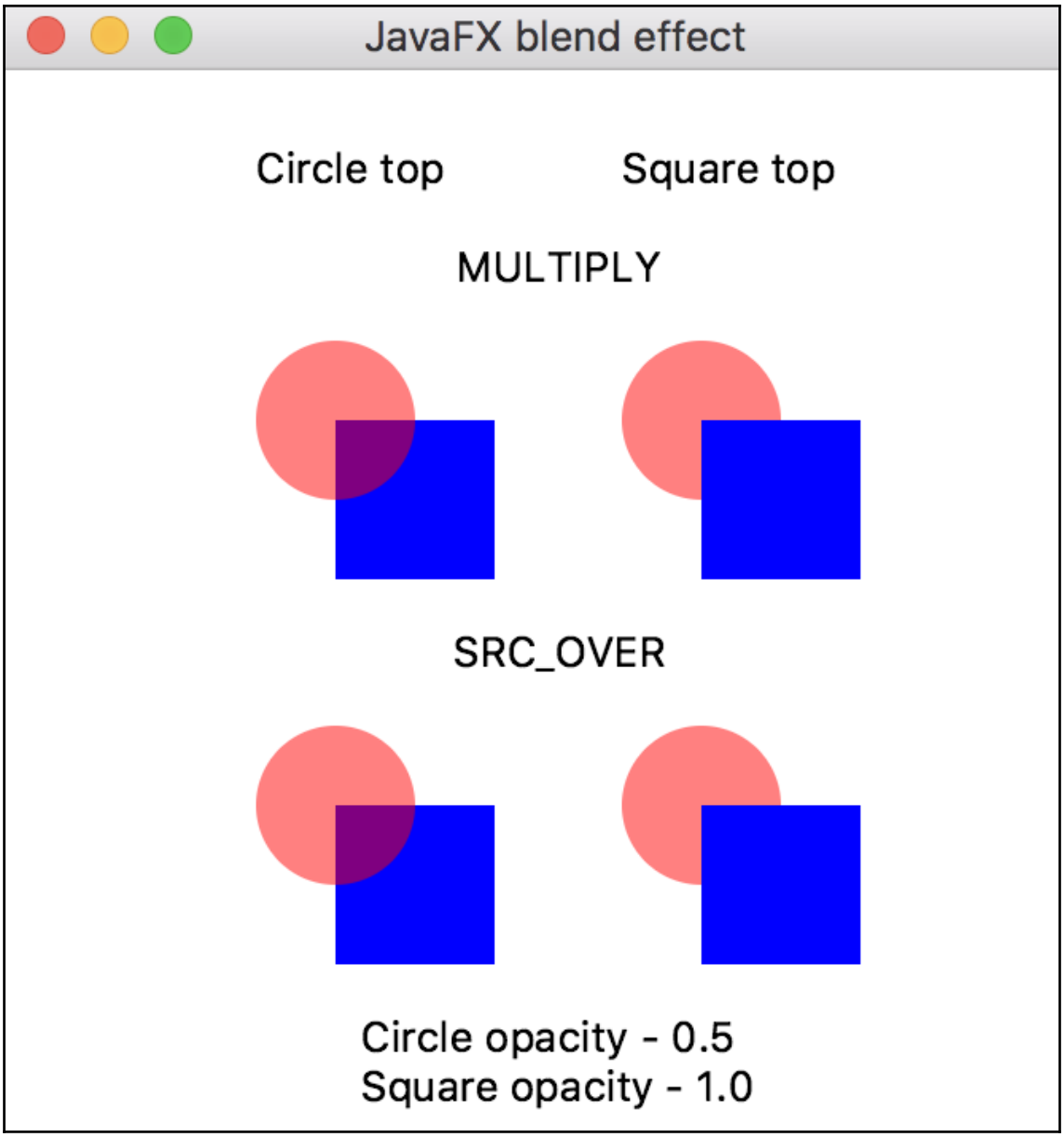

JavaFX blend effect
Circle top
Square top
MULTIPLY
SRC_OVER
Circle opacity - 0.5
Square opacity - 1.0

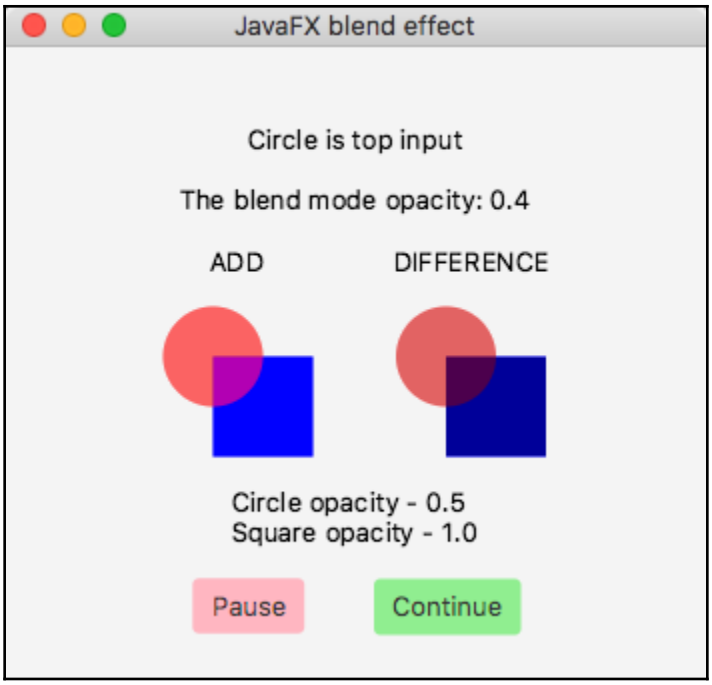

JavaFX blend effect
Circle top
Square top
MULTIPLY
SRC_OVER
Circle opacity - 0.5
Square opacity - 1.0

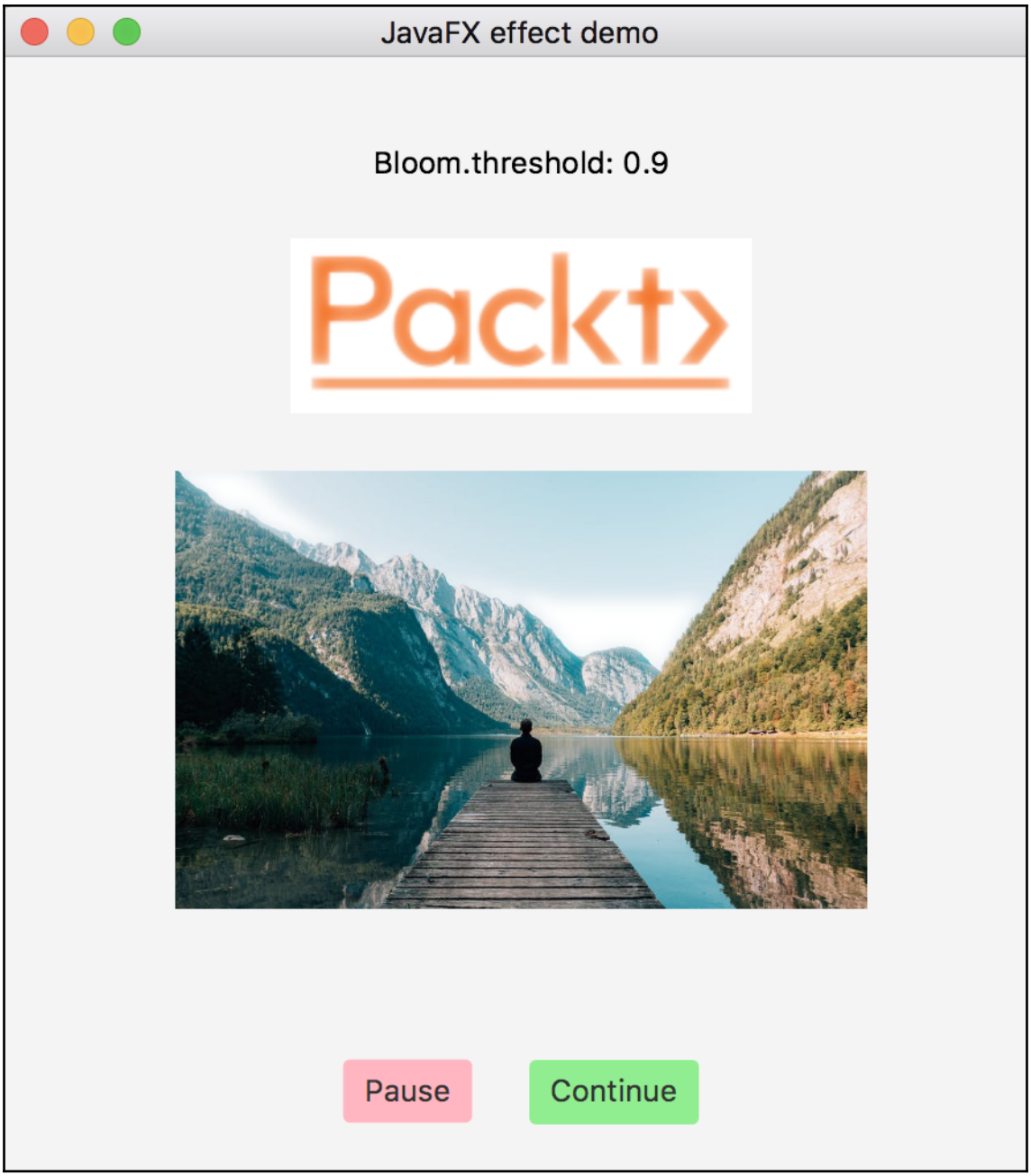

JavaFX blend effect
Circle top
Square top
MULTIPLY
SRC_OVER
Circle opacity - 0.5
Square opacity - 1.0

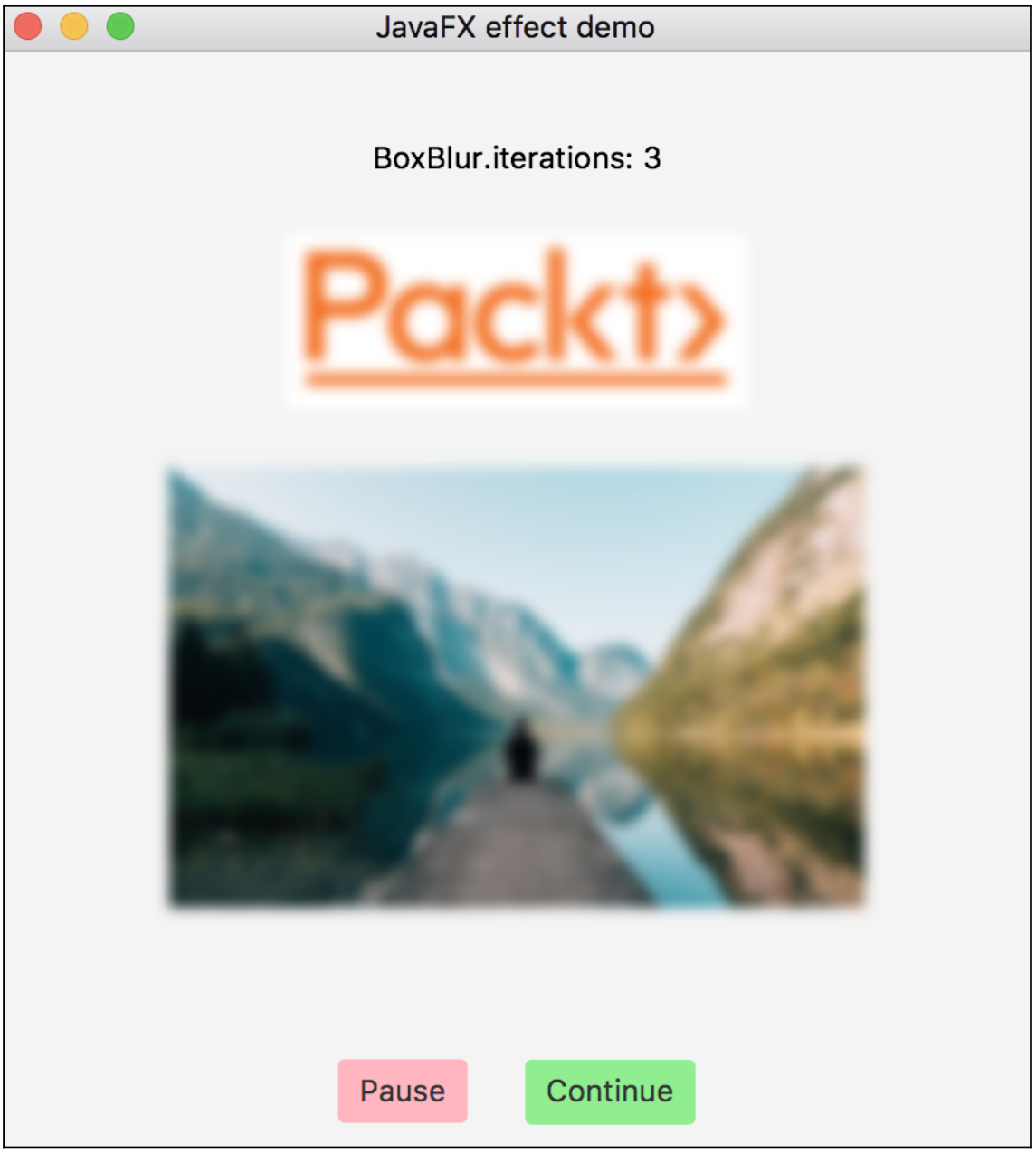

JavaFX blend effect
Circle top
Square top
MULTIPLY
SRC_OVER
Circle opacity - 0.5
Square opacity - 1.0

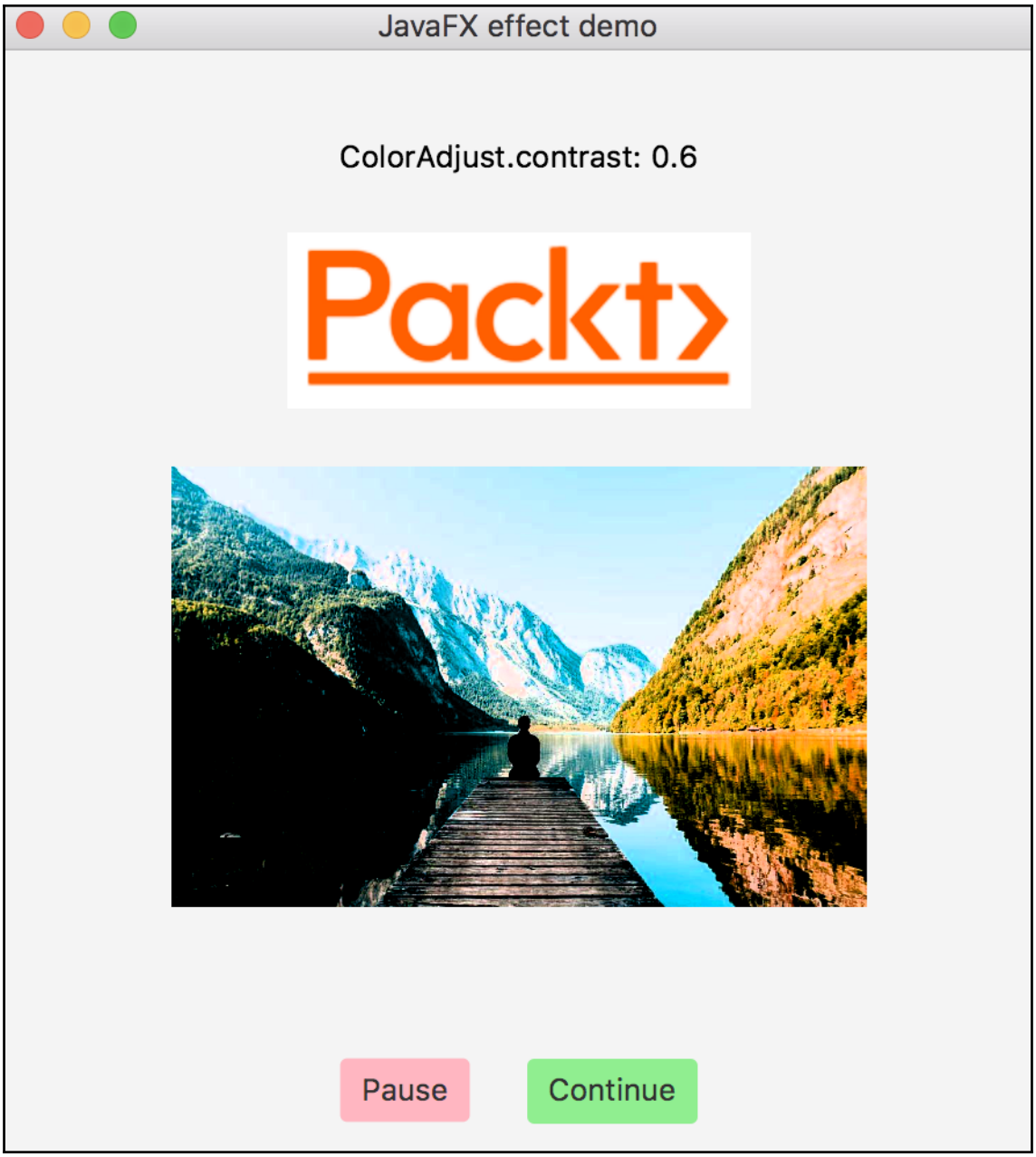

JavaFX blend effect
Circle top
Square top
MULTIPLY
SRC_OVER
Circle opacity - 0.5
Square opacity - 1.0


JavaFX blend effect
Circle top
Square top
MULTIPLY
SRC_OVER
Circle opacity - 0.5
Square opacity - 1.0

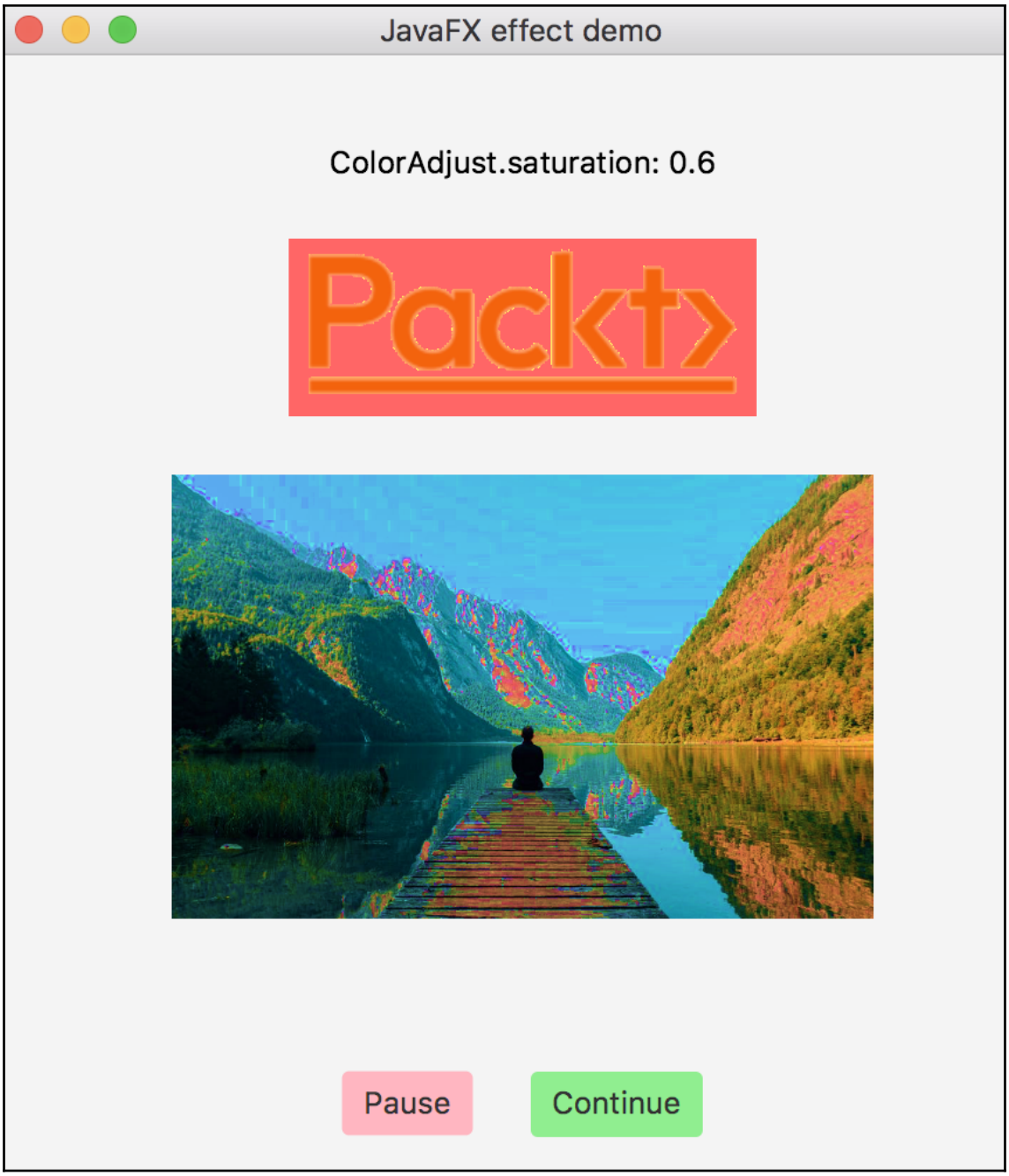

JavaFX blend effect
Circle is top input
The blend mode opacity: 0.4
ADD
DIFFERENCE
Circle opacity - 0.5
Square opacity - 1.0
Pause
Continue

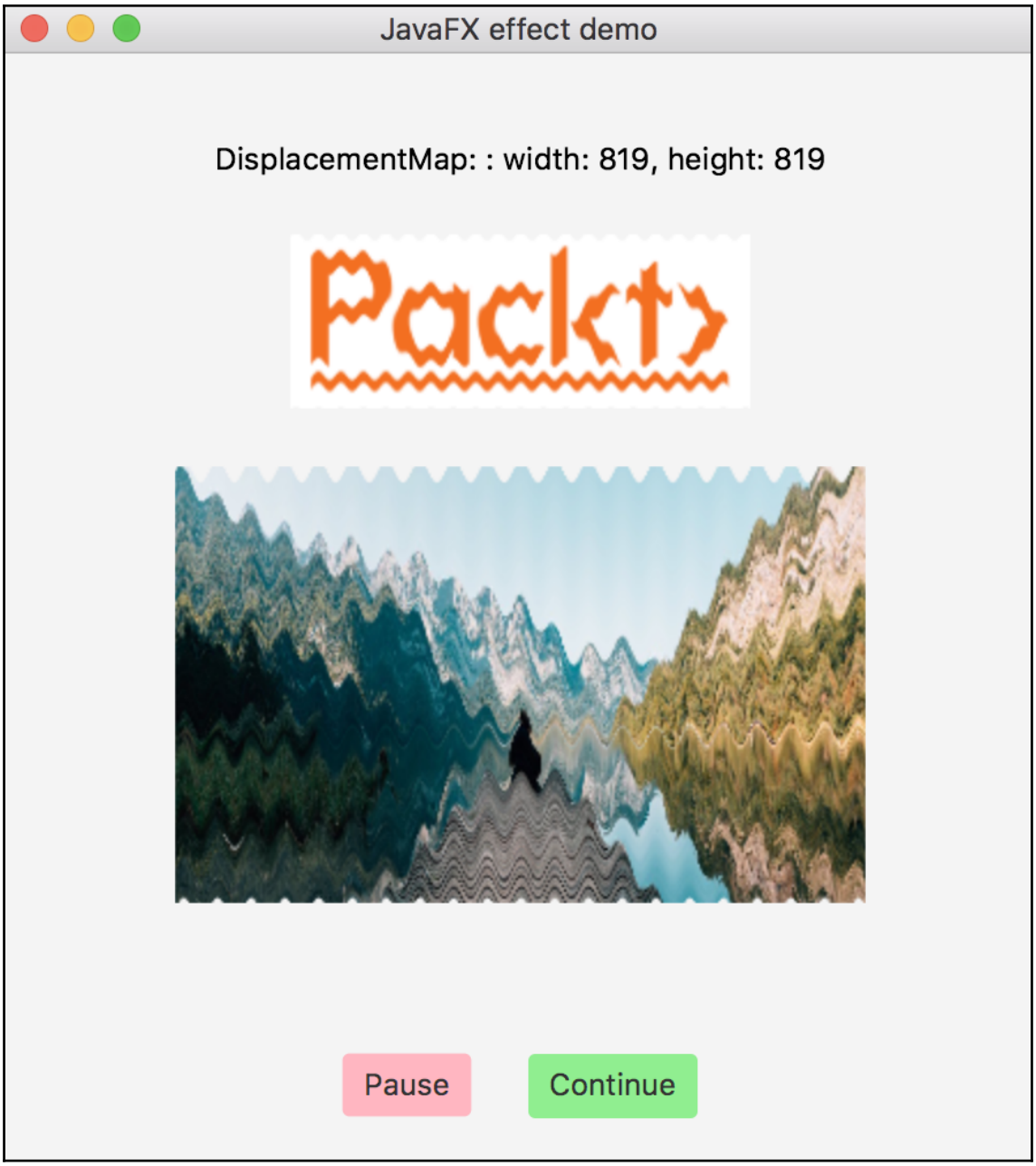

JavaFX effect demo
Bloom.threshold: 0.9
Pause
Continue

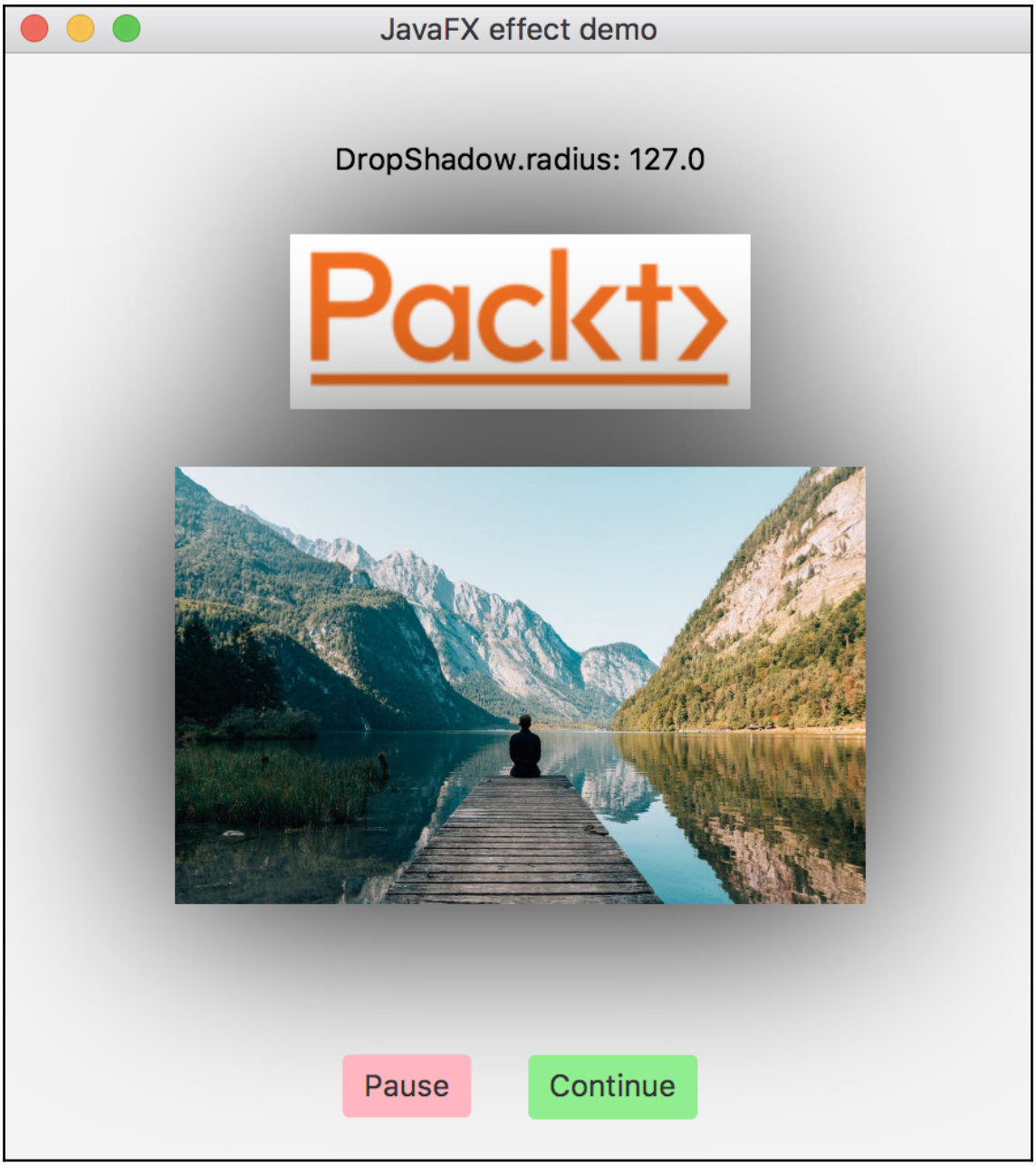

JavaFX effect demo
BoxBlur.iterations: 3
Pack
Pause
Continue

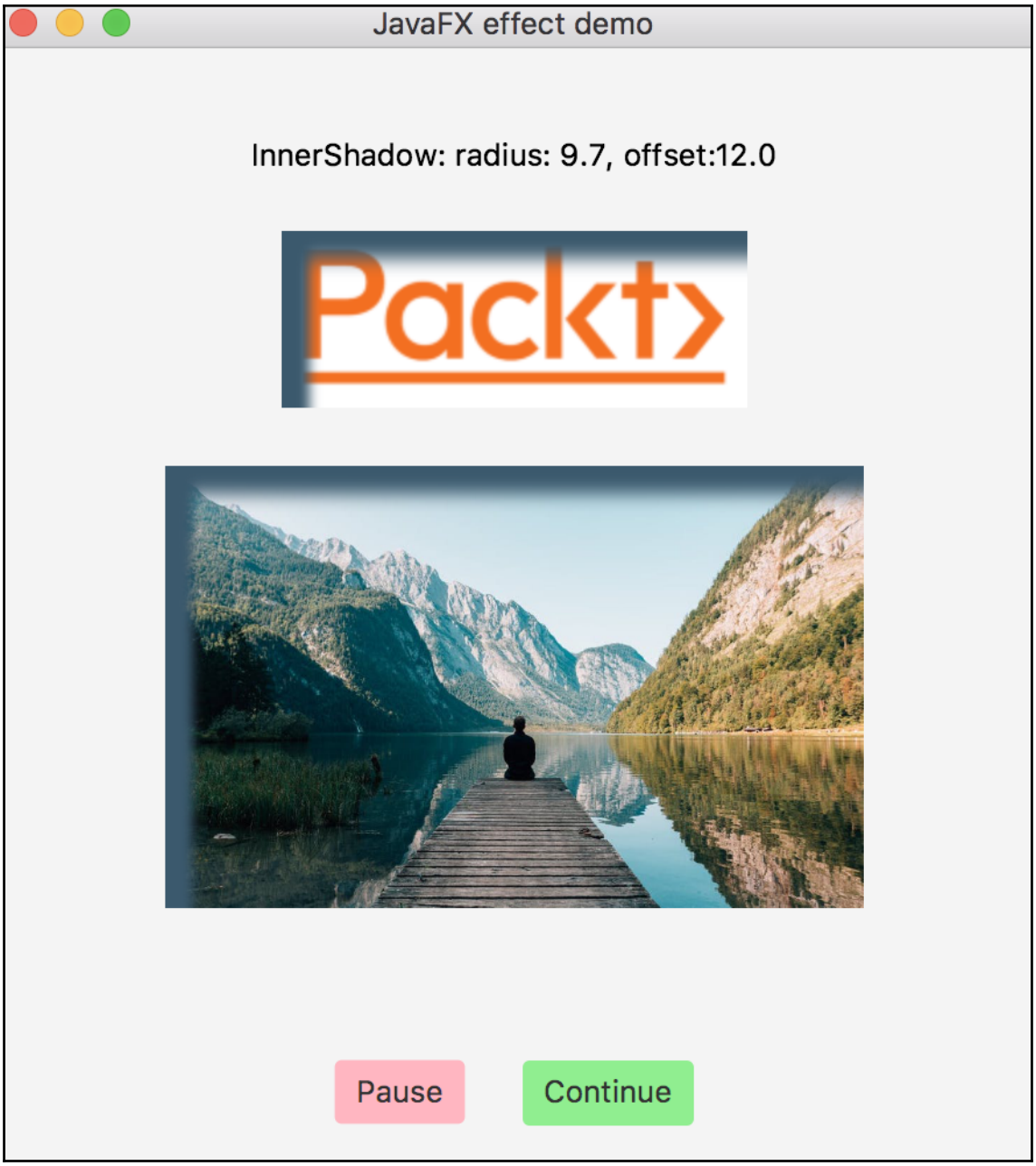

JavaFX effect demo
ColorAdjust.contrast: 0.6
Pause
Continue

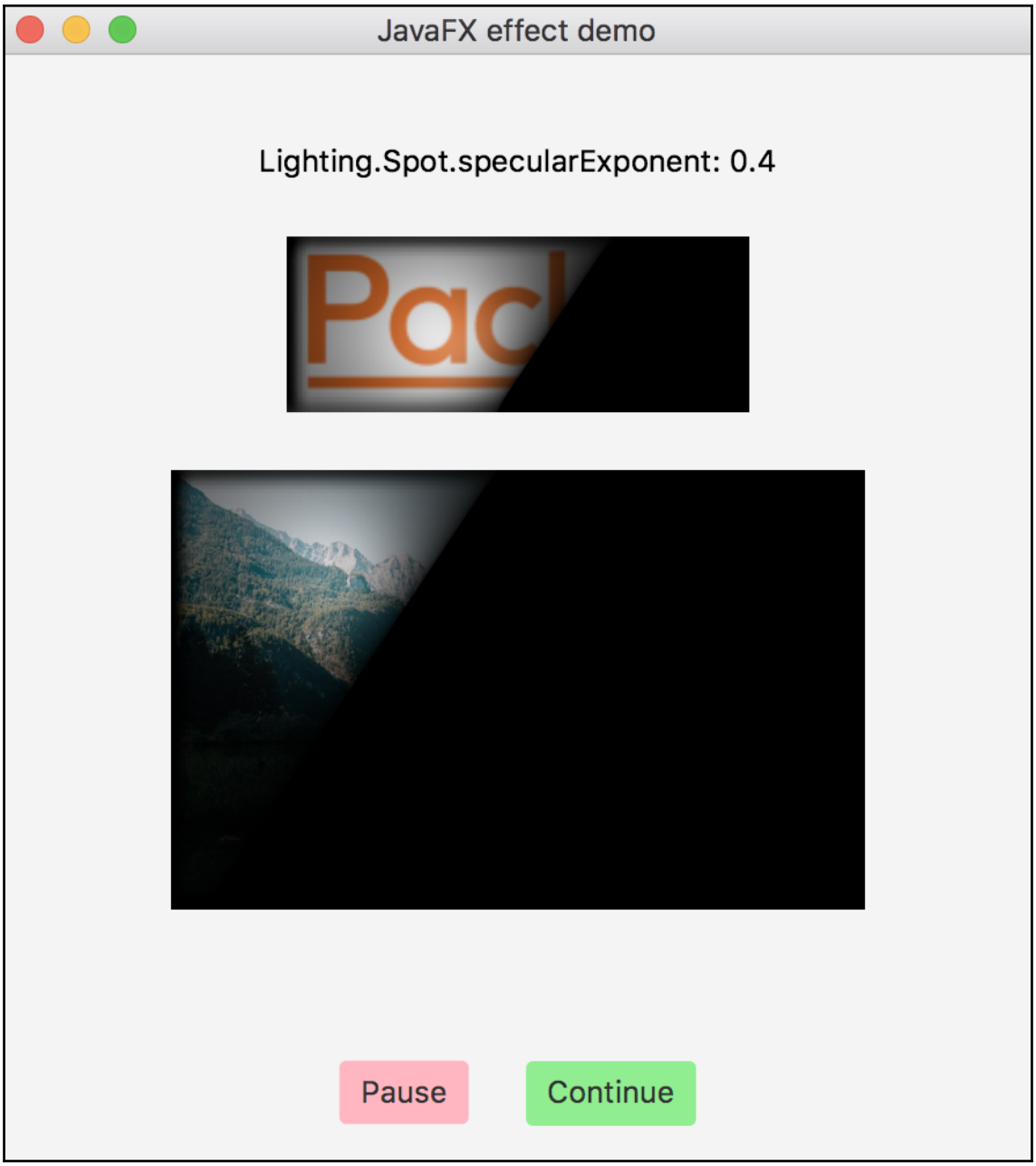
JavaFX effect demo
ColorAdjust.hue: 0.6
Pause
Continue

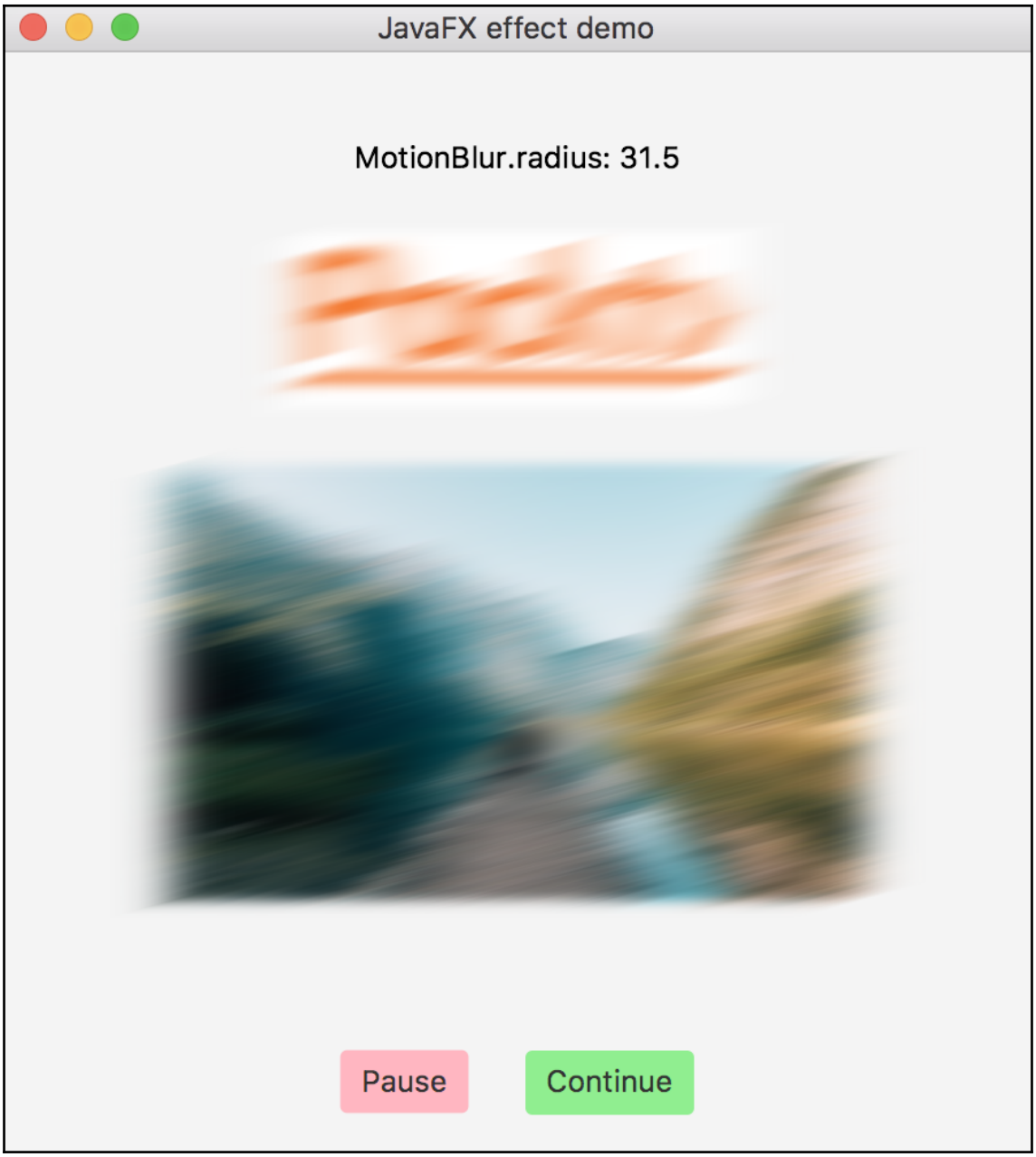

JavaFX effect demo
ColorAdjust.saturation: 0.6
Pause
Continue

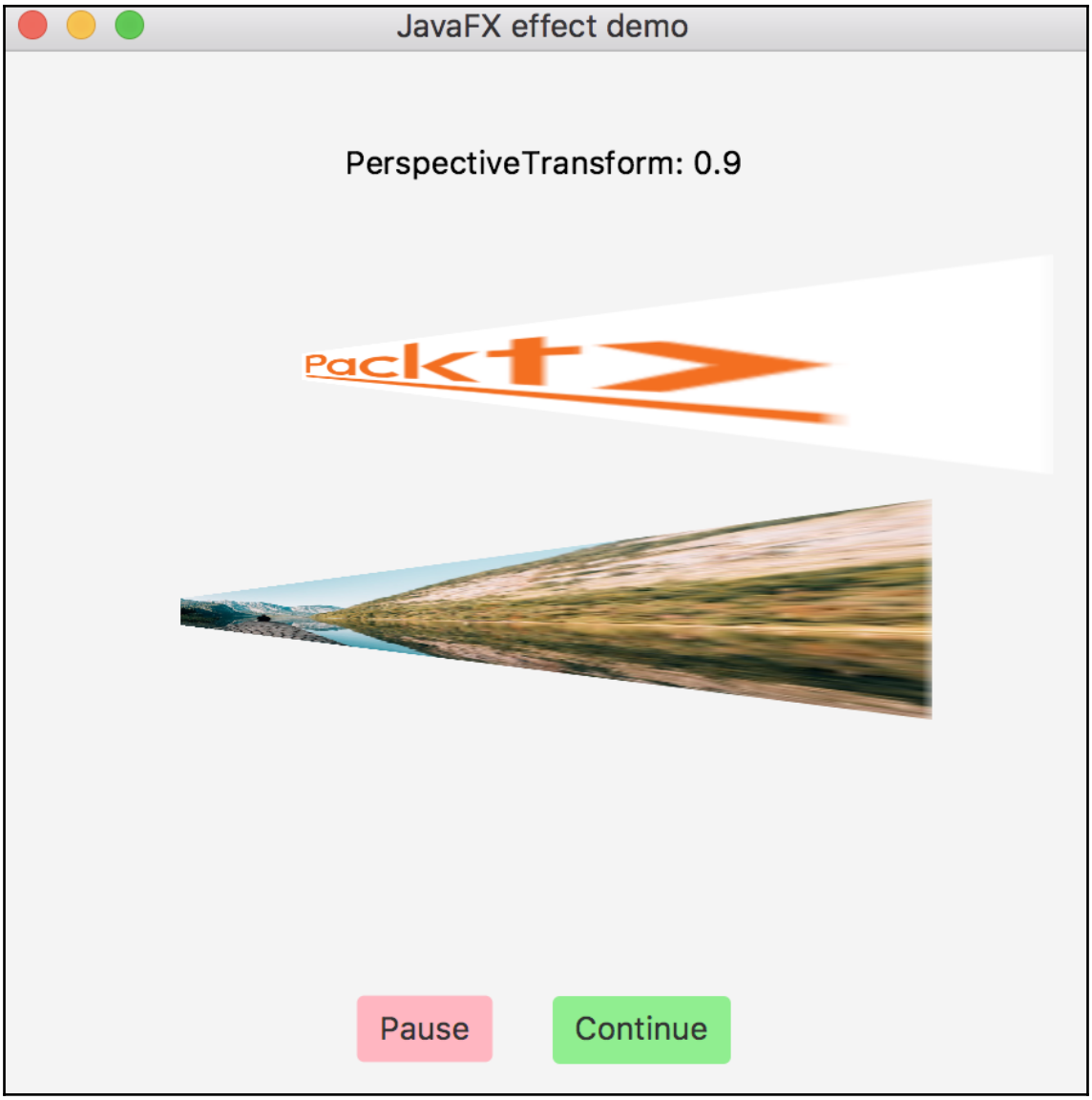

JavaFX effect demo
DdisplacementMap: : width: 819, height: 819
Pause
Continue

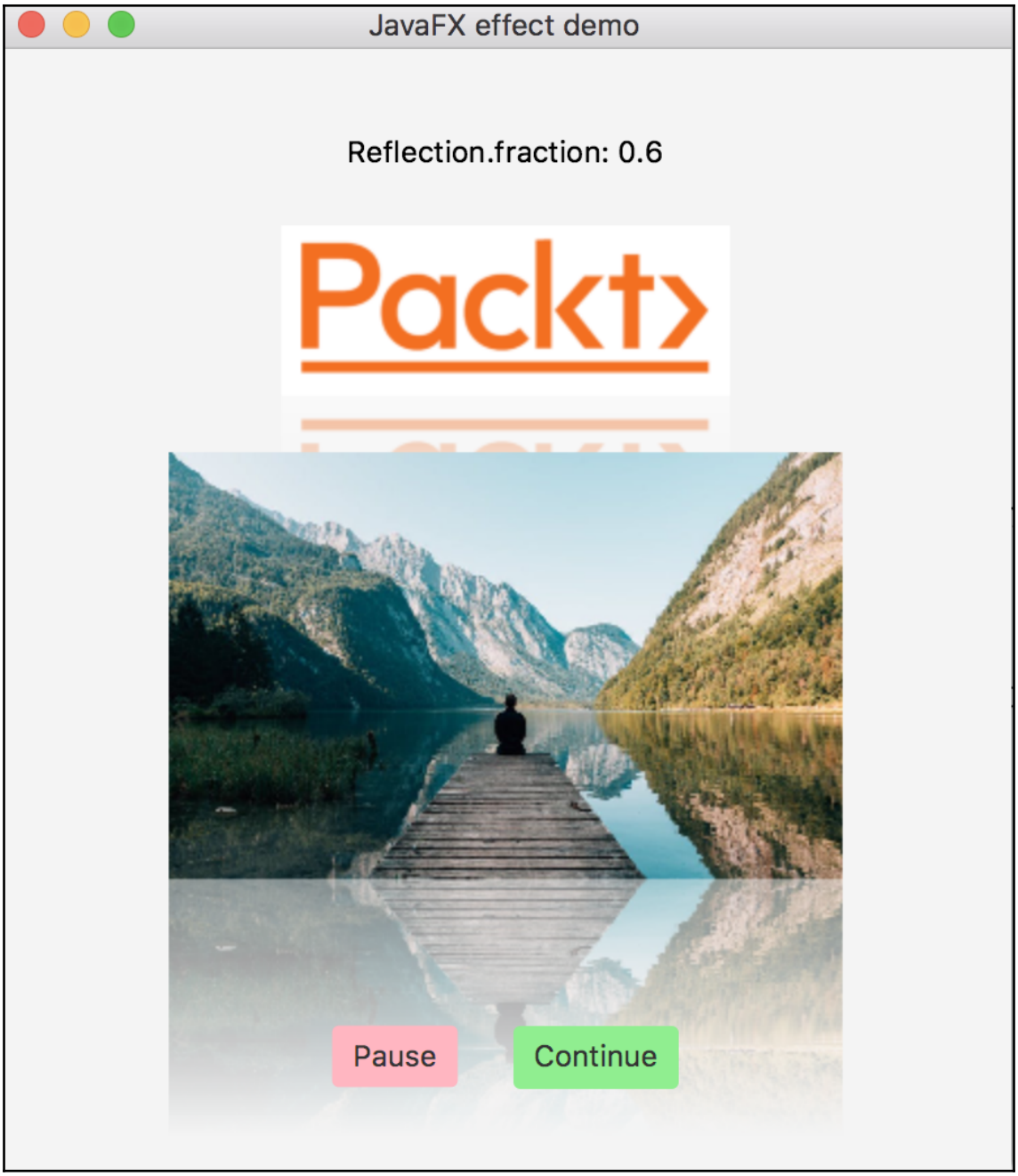

JavaFX effect demo
DropShadow.radius: 127.0
Pause
Continue


JavaFX effect demo
InnerShadow: radius: 9.7, offset:12.0
Pack
Pause
Continue


JavaFX effect demo
Lighting.Spot.specularExponent: 0.4
Pause
Continue

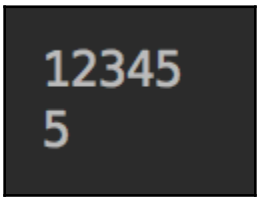

JavaFX effect demo
MotionBlur.radius: 31.5
Pause
Continue


JavaFX effect demo
PerspectiveTransform: 0.9
Pause
Continue

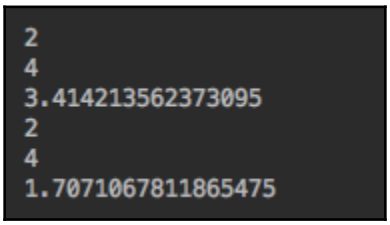

JavaFX effect demo
Reflection.fraction: 0.6
Pause
Continue

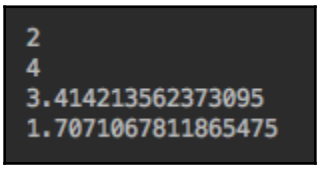
JavaFX effect demo
SepiaTone.level: 1.0
Packt
Pause
Continue

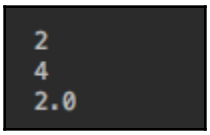
Chapter 14: Java Standard Streams

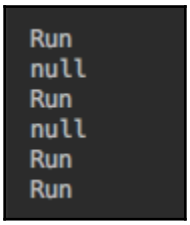


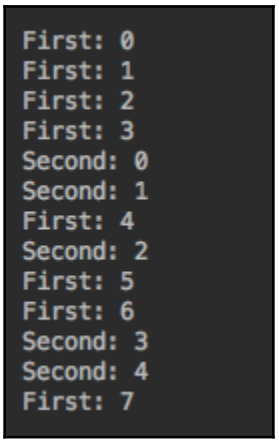
Chapter 15: Reactive Programming











```
First: 0
First: 1
First: 2
First: 3
Second: 3
First: 4
Second: 4
First: 5
Second: 5
First: 6
Second: 6
First: 7
Second: 7
```

```
126
127
io.reactivex.exceptions.MissingBackpressureException: Could not emit value due to lack of requests
    at io.reactivex.processors.PublishProcessor$PublishSubscription.onNext(PublishProcessor.java:364)
    at io.reactivex.processors.PublishProcessor.onNext(PublishProcessor.java:243)
    at com.packt.learnjava.ch15_reactive.HotObservable.hot(HotObservable.java:31)
    at com.packt.learnjava.ch15_reactive.HotObservable.main(HotObservable.java:14)
```

```
905991
905992
905993
905994
905995
905996
Dropped: 906093
Dropped: 906094
Dropped: 906095
Dropped: 906096
Dropped: 906097
Dropped: 906098
```

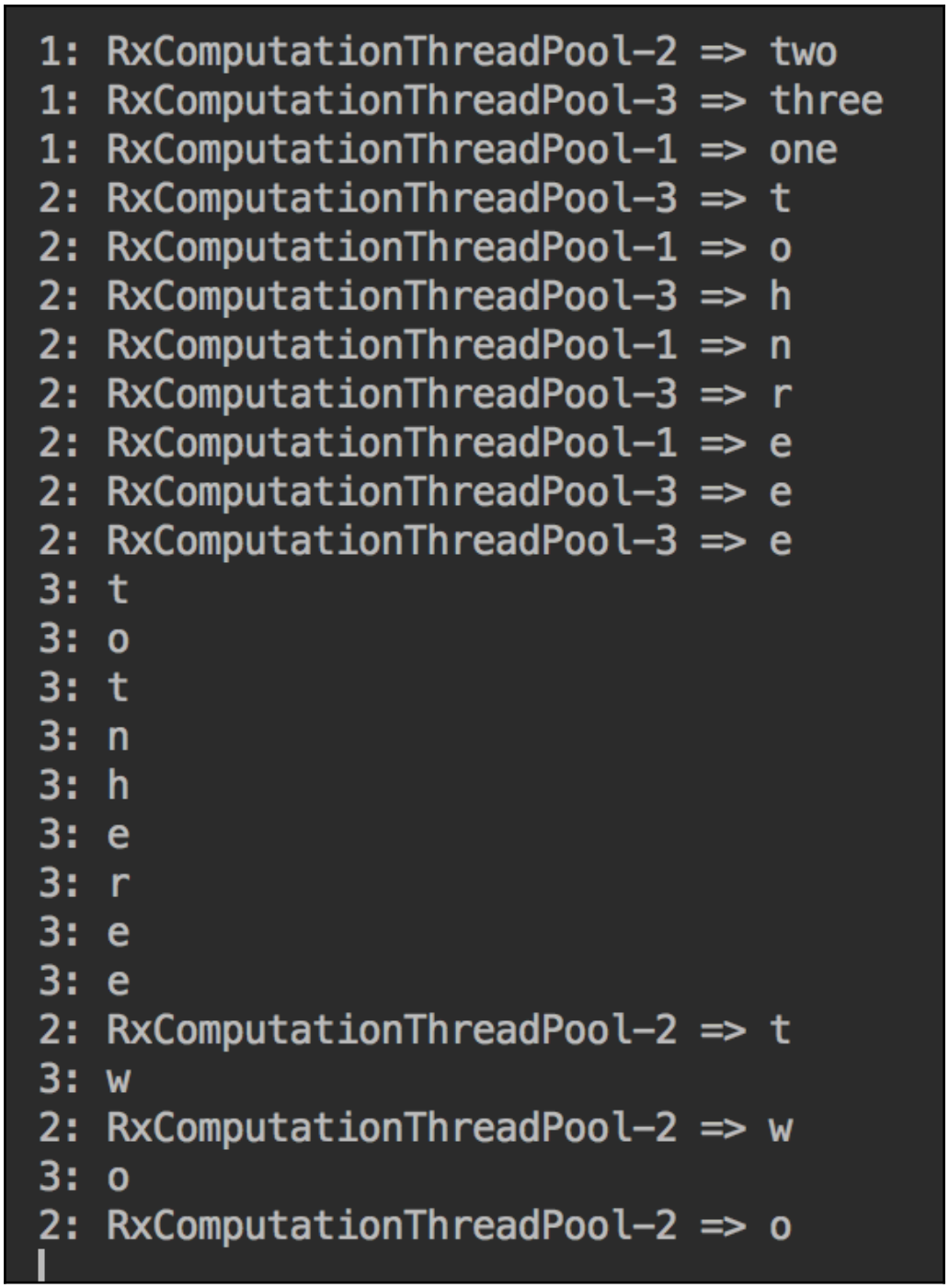
```
Two
Completed
```

```
Subscribe onNext: o
Subscribe onNext: n
Subscribe onNext: e
Completed!
```

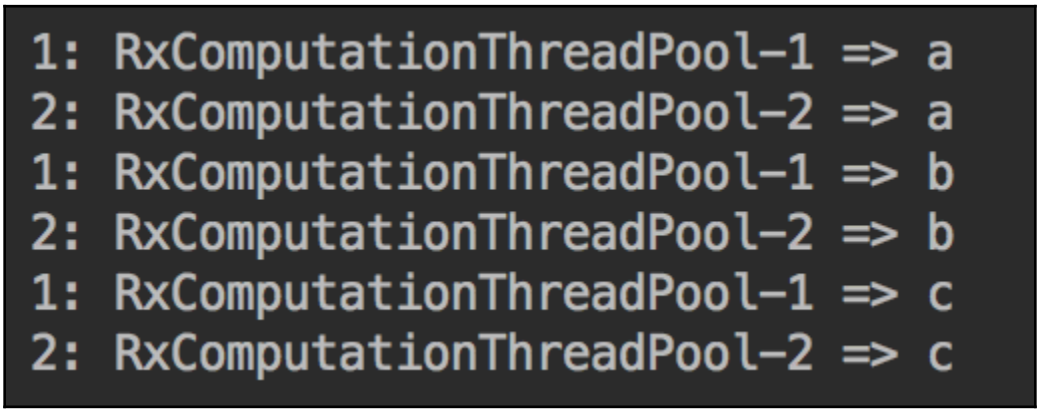
```
one
12345Disposed: DISPOSED
```

```
3: o
1: main => one
2: RxComputationThreadPool-1 => o
3: n
2: RxComputationThreadPool-1 => n
3: e
2: RxComputationThreadPool-1 => e
1: main => two
3: t
2: RxComputationThreadPool-2 => t
3: w
2: RxComputationThreadPool-2 => w
3: o
2: RxComputationThreadPool-2 => o
1: main => three
3: t
2: RxComputationThreadPool-3 => t
3: h
2: RxComputationThreadPool-3 => h
3: r
2: RxComputationThreadPool-3 => r
3: e
2: RxComputationThreadPool-3 => e
3: e
2: RxComputationThreadPool-3 => e
```

```
3: o
2: RxComputationThreadPool-2 => o
1: RxComputationThreadPool-1 => one
3: n
2: RxComputationThreadPool-2 => n
3: e
2: RxComputationThreadPool-2 => e
1: RxComputationThreadPool-1 => two
3: t
2: RxComputationThreadPool-3 => t
3: w
2: RxComputationThreadPool-3 => w
1: RxComputationThreadPool-1 => three
3: o
2: RxComputationThreadPool-3 => o
3: t
2: RxComputationThreadPool-4 => t
3: h
2: RxComputationThreadPool-4 => h
3: r
2: RxComputationThreadPool-4 => r
3: e
2: RxComputationThreadPool-4 => e
3: e
2: RxComputationThreadPool-4 => e
```


1: RxComputationThreadPool-2 => two
1: RxComputationThreadPool-3 => three
1: RxComputationThreadPool-1 => one
2: RxComputationThreadPool-3 => t
2: RxComputationThreadPool-1 => o
2: RxComputationThreadPool-3 => h
2: RxComputationThreadPool-1 => n
2: RxComputationThreadPool-3 => r
2: RxComputationThreadPool-1 => e
2: RxComputationThreadPool-3 => e
2: RxComputationThreadPool-3 => e
3: t
3: o
3: t
3: n
3: h
3: e
3: r
3: e
3: e
2: RxComputationThreadPool-2 => t
3: w
2: RxComputationThreadPool-2 => w
3: o
2: RxComputationThreadPool-2 => o

2: RxComputationThreadPool-1 => a
1: RxComputationThreadPool-1 => a
2: RxComputationThreadPool-1 => b
1: RxComputationThreadPool-1 => b
2: RxComputationThreadPool-1 => c
1: RxComputationThreadPool-1 => c


1: RxComputationThreadPool-1 => a
2: RxComputationThreadPool-2 => a
1: RxComputationThreadPool-1 => b
2: RxComputationThreadPool-2 => b
1: RxComputationThreadPool-1 => c
2: RxComputationThreadPool-2 => c

Chapter 16: Microservices

```
HttpServerVert(vert.x-eventloop-thread-0, localhost:8082) is waiting...
```

```
demo> curl localhost:8082
Hello from HttpServerVert(vert.x-eventloop-thread-0, localhost:8082)!
demo>
```

```
demo>
demo> curl localhost:8082/some/path
Got into processGetSomePath using /some/path
demo> curl localhost:8082/some/path/send
<html><body><h1>Resource not found</h1></body></html>demo>
demo> curl -X POST localhost:8082/some/path/send
Got into processPostSomePathSend using /some/path/send
demo> curl -X POST localhost:8082/some/path/publish
Got into processPostSomePathPublish using /some/path/publish
demo>
```

```
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) is waiting...
```

```
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) is waiting...
HttpServerVert(vert.x-eventloop-thread-1, localhost:8082) is waiting...
```

```
demo> curl localhost:8082/some/path/Nick/One/someValue
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'. Thank you.
demo>
```

```
HttpServerVert(vert.x-eventloop-thread-1, localhost:8082): Nick called.
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'.
HttpServerVert(vert.x-eventloop-thread-1, localhost:8082): got message
    MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'. Thank you.
```

```
demo>
demo> curl -X POST localhost:8082/some/path/send -d '{"name":"Nick","address":"One","anotherParam":"someValue"}'
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'. Thank you.
demo>
```

```
HttpServerVert(vert.x-eventloop-thread-1, localhost:8082): got payload
    {"name":"Nick","address":"One","anotherParam":"someValue"}
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'.
HttpServerVert(vert.x-eventloop-thread-1, localhost:8082): got message
    MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'. Thank you.
```

```
demo>
demo> curl -X POST localhost:8082/some/path/publish -d '{"name":"Nick","address":"One","anotherParam":"someValue"}'
The message was published to address One.
demo>
```

```
HttpServerVert(vert.x-eventloop-thread-1, localhost:8082): got payload
    {"name":"Nick","address":"One","anotherParam":"someValue"}
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'.
```

```
MessageRcvVert(vert.x-eventloop-thread-2, 3, Two) is waiting...
MessageRcvVert(vert.x-eventloop-thread-1, 2, One) is waiting...
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) is waiting...
HttpServerVert(vert.x-eventloop-thread-3, localhost:8082) is waiting...
```

```
demo>
demo> curl localhost:8082/some/path/Nick/One/someValue
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'. Thank you.
demo>
demo> curl localhost:8082/some/path/Nick/One/someValue
MessageRcvVert(vert.x-eventloop-thread-1, 2, One) got message 'Nick called with value someValue'. Thank you.
demo>
demo> curl localhost:8082/some/path/Nick/One/someValue
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'. Thank you.
demo>
```

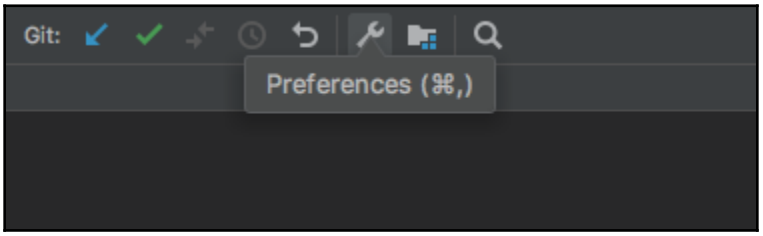
```
demo>
demo> curl -X POST localhost:8082/some/path/send -d '{"name":"Nick","address":"One","anotherParam":"someValue"}'
MessageRcvVert(vert.x-eventloop-thread-1, 2, One) got message 'Nick called with value someValue'. Thank you.
demo>
demo> curl -X POST localhost:8082/some/path/send -d '{"name":"Nick","address":"One","anotherParam":"someValue"}'
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'. Thank you.
demo>
demo> curl -X POST localhost:8082/some/path/send -d '{"name":"Nick","address":"One","anotherParam":"someValue"}'
MessageRcvVert(vert.x-eventloop-thread-1, 2, One) got message 'Nick called with value someValue'. Thank you.
demo>
```

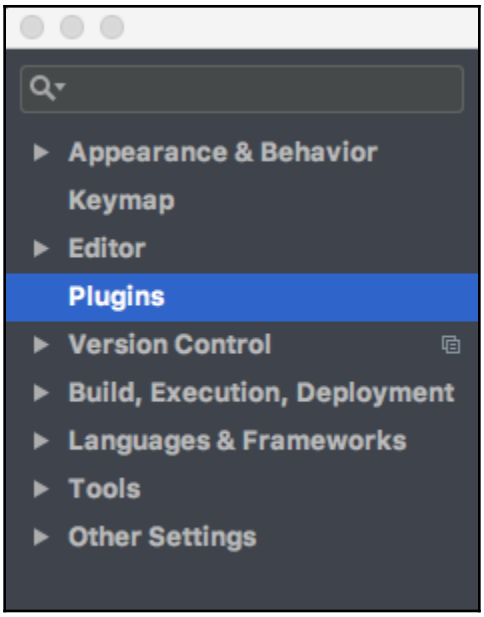
```
demo>
demo> curl -X POST localhost:8082/some/path/publish -d '{"name":"Nick","address":"One","anotherParam":"someValue"}'
The message was published to address One.
demo>
demo> curl -X POST localhost:8082/some/path/publish -d '{"name":"Nick","address":"One","anotherParam":"someValue"}'
The message was published to address One.
demo>
```

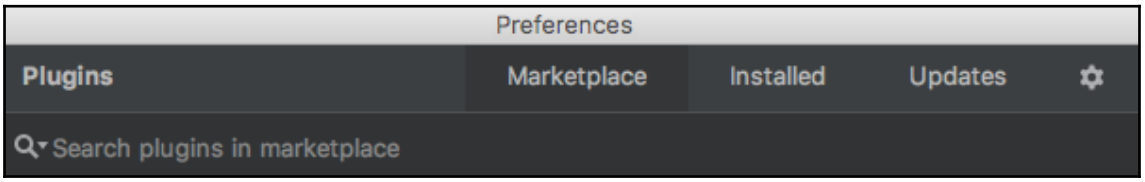
```
HttpServerVert(vert.x-eventloop-thread-3, localhost:8082): got payload
    {"name":"Nick","address":"One","anotherParam":"someValue"}
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'.
MessageRcvVert(vert.x-eventloop-thread-1, 2, One) got message 'Nick called with value someValue'.

HttpServerVert(vert.x-eventloop-thread-3, localhost:8082): got payload
    {"name":"Nick","address":"One","anotherParam":"someValue"}
MessageRcvVert(vert.x-eventloop-thread-1, 2, One) got message 'Nick called with value someValue'.
MessageRcvVert(vert.x-eventloop-thread-0, 1, One) got message 'Nick called with value someValue'.
```

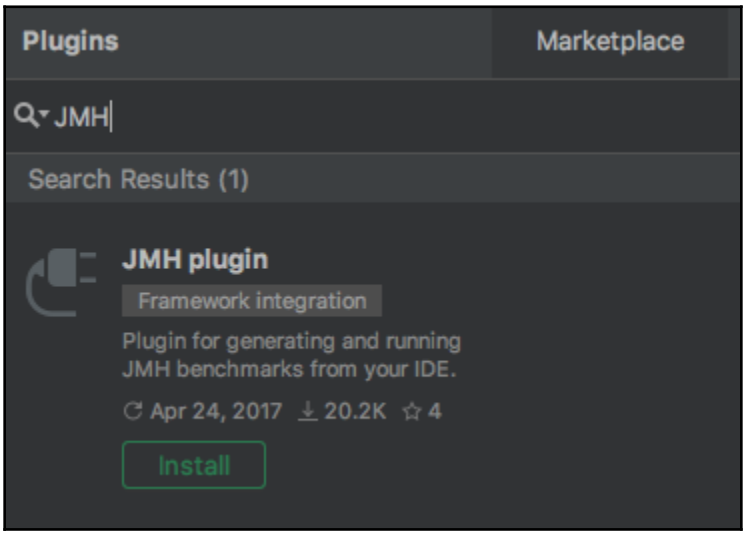
Chapter 17: Java Microbenchmark Harness

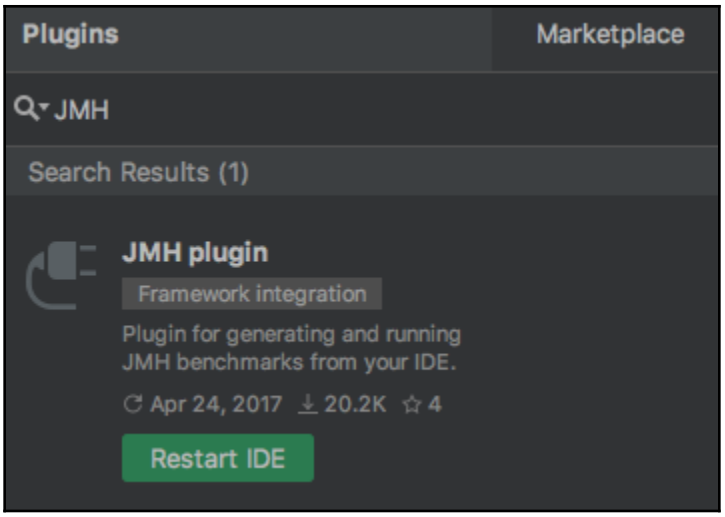
```
# Run progress: 40.00% complete, ETA 00:15:49
# Fork: 2 of 5
# Warmup Iteration   1: ≈ 10⁻⁹ s/op
# Warmup Iteration   2: ≈ 10⁻⁹ s/op
# Warmup Iteration   3: ≈ 10⁻⁹ s/op
# Warmup Iteration   4: ≈ 10⁻⁹ s/op
# Warmup Iteration   5: ≈ 10⁻⁹ s/op
Iteration   1: ≈ 10⁻⁹ s/op
Iteration   2: ≈ 10⁻⁹ s/op
Iteration   3: ≈ 10⁻⁹ s/op
Iteration   4: ≈ 10⁻⁹ s/op
Iteration   5: ≈ 10⁻⁹ s/op
```

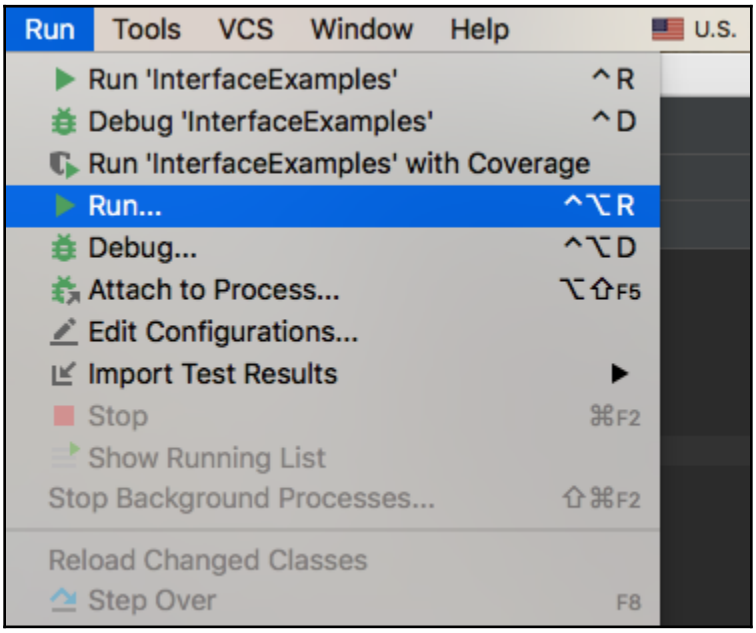


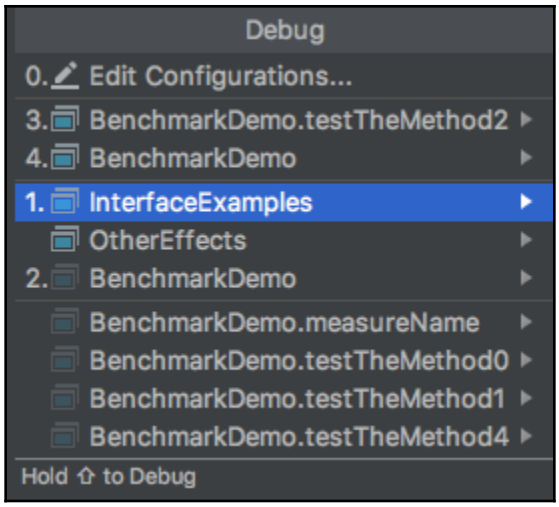

Appearance & Behavior
Keymap
Editor
Plugins
Version Control
Build, Execution, Deployment
Languages & Frameworks
Tools
Other Settings

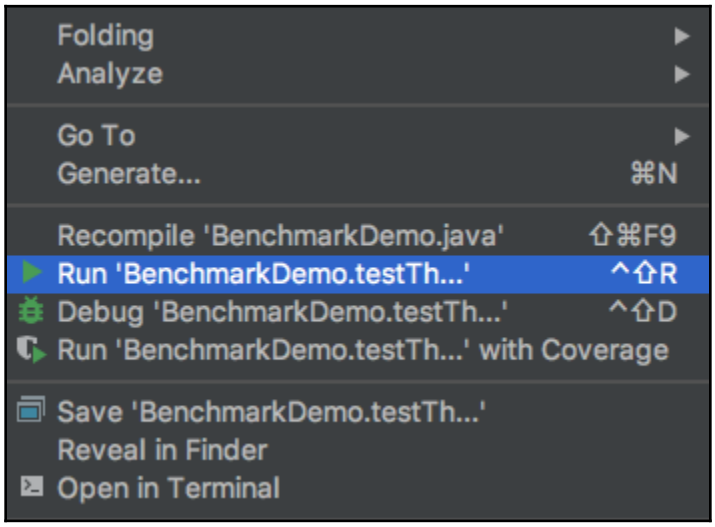

Preferences
Plugins
Marketplace
Installed
Updates
Search plugins in marketplace


Plugins
Marketplace
JMH
Search Results (1)
JMH plugin
Framework integration
Plugin for generating and running
JMH benchmarks from your IDE.
Apr 24, 2017
20.2K
4
Install


Plugins
Marketplace
JMH
Search Results (1)
JMH plugin
Framework integration
Plugin for generating and running
JMH benchmarks from your IDE.
Apr 24, 2017 20.2K 4
Restart IDE


Run
Tools
VCS
Window
Help
U.S.
Run 'InterfaceExamples' ^R
Debug 'InterfaceExamples' ^D
Run 'InterfaceExamples' with Coverage
Run... ^⌥R
Debug... ^⌥D
Attach to Process... ⌥⇧F5
Edit Configurations...
Import Test Results
Stop ⌘F2
Show Running List
Stop Background Processes... ⇧⌘F2
Reload Changed Classes
Step Over F8


Debug
0. Edit Configurations...
3. BenchmarkDemo.testTheMethod2
4. BenchmarkDemo
1. InterfaceExamples
OtherEffects
2. BenchmarkDemo
BenchmarkDemo.measureName
BenchmarkDemo.testTheMethod0
BenchmarkDemo.testTheMethod1
BenchmarkDemo.testTheMethod4
Hold ⇧ to Debug


Folding
Analyze
Go To
Generate... ⌘N
Recompile 'BenchmarkDemo.java' ⇧⌘F9
Run 'BenchmarkDemo.testTh...' ^⇧R
Debug 'BenchmarkDemo.testTh...' ^⇧D
Run 'BenchmarkDemo.testTh...' with Coverage
Save 'BenchmarkDemo.testTh...'
Reveal in Finder
Open in Terminal

```
Benchmark                                                  Mode      Cnt       Score       Error   Units
BenchmarkDemo.testTheMethod0                              thrpt       25       0.001 ±     0.001  ops/ns
BenchmarkDemo.testTheMethod0                               avgt       25    1041.096 ±    18.841   ns/op
BenchmarkDemo.testTheMethod0                             sample  7406325    1107.536 ±     1.555   ns/op
BenchmarkDemo.testTheMethod0:testTheMethod0·p0.00        sample              929.000                ns/op
BenchmarkDemo.testTheMethod0:testTheMethod0·p0.50        sample             1020.000                ns/op
BenchmarkDemo.testTheMethod0:testTheMethod0·p0.90        sample             1210.000                ns/op
BenchmarkDemo.testTheMethod0:testTheMethod0·p0.95        sample             1230.000                ns/op
BenchmarkDemo.testTheMethod0:testTheMethod0·p0.99        sample             1860.000                ns/op
BenchmarkDemo.testTheMethod0:testTheMethod0·p0.999       sample            18496.000                ns/op
BenchmarkDemo.testTheMethod0:testTheMethod0·p0.9999      sample            41792.000                ns/op
BenchmarkDemo.testTheMethod0:testTheMethod0·p1.00        sample           582656.000                ns/op
BenchmarkDemo.testTheMethod0                                ss         5   29973.000 ± 10585.906   ns/op
```

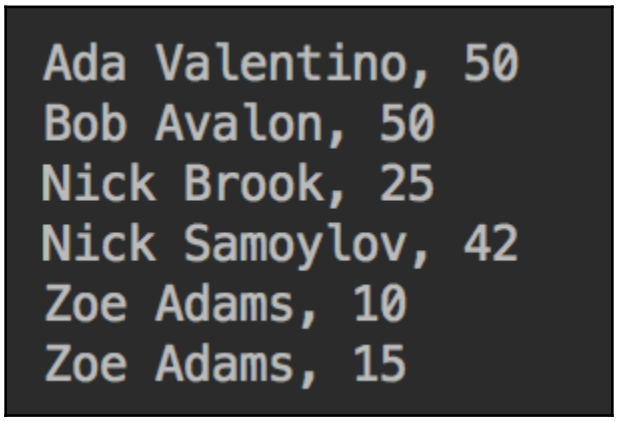
```
Benchmark                                                  Mode      Cnt       Score       Error   Units
BenchmarkDemo.testTheMethod1                              thrpt       25       0.001 ±     0.001  ops/ns
BenchmarkDemo.testTheMethod1                               avgt       25    1037.961 ±    22.561   ns/op
BenchmarkDemo.testTheMethod1                             sample  7531674    1091.872 ±     2.760   ns/op
BenchmarkDemo.testTheMethod1:testTheMethod1·p0.00        sample              898.000                ns/op
BenchmarkDemo.testTheMethod1:testTheMethod1·p0.50        sample              991.000                ns/op
BenchmarkDemo.testTheMethod1:testTheMethod1·p0.90        sample             1200.000                ns/op
BenchmarkDemo.testTheMethod1:testTheMethod1·p0.95        sample             1228.000                ns/op
BenchmarkDemo.testTheMethod1:testTheMethod1·p0.99        sample             1860.000                ns/op
BenchmarkDemo.testTheMethod1:testTheMethod1·p0.999       sample            18720.000                ns/op
BenchmarkDemo.testTheMethod1:testTheMethod1·p0.9999      sample            40256.000                ns/op
BenchmarkDemo.testTheMethod1:testTheMethod1·p1.00        sample          3874816.000                ns/op
BenchmarkDemo.testTheMethod1                                ss         5   303431.200 ± 185625.725   ns/op
```

```
Benchmark                                                  Mode      Cnt       Score       Error   Units
BenchmarkDemo.testTheMethod3                              thrpt       25      ≈ 10⁻³                  ops/ns
BenchmarkDemo.testTheMethod3                               avgt       25    3064.479 ±    58.388   ns/op
BenchmarkDemo.testTheMethod3                             sample  5893288    3342.995 ±     7.652   ns/op
BenchmarkDemo.testTheMethod3:testTheMethod3·p0.00        sample             2624.000                ns/op
BenchmarkDemo.testTheMethod3:testTheMethod3·p0.50        sample             3072.000                ns/op
BenchmarkDemo.testTheMethod3:testTheMethod3·p0.90        sample             3656.000                ns/op
BenchmarkDemo.testTheMethod3:testTheMethod3·p0.95        sample             4312.000                ns/op
BenchmarkDemo.testTheMethod3:testTheMethod3·p0.99        sample             6000.000                ns/op
BenchmarkDemo.testTheMethod3:testTheMethod3·p0.999       sample            29120.000                ns/op
BenchmarkDemo.testTheMethod3:testTheMethod3·p0.9999      sample            73856.000                ns/op
BenchmarkDemo.testTheMethod3:testTheMethod3·p1.00        sample          6324224.000                ns/op
BenchmarkDemo.testTheMethod3                                ss         5   365093.400 ± 256801.341   ns/op
```

```
Benchmark                                                  Mode      Cnt        Score        Error   Units
BenchmarkDemo.testTheMethod4                              thrpt       25       ≈ 10⁻³               ops/ns
BenchmarkDemo.testTheMethod4                               avgt       25     3253.271 ±     82.781   ns/op
BenchmarkDemo.testTheMethod4                             sample  6538933     3398.419 ±      5.033   ns/op
BenchmarkDemo.testTheMethod4:testTheMethod4·p0.00        sample              2724.000                ns/op
BenchmarkDemo.testTheMethod4:testTheMethod4·p0.50        sample              3080.000                ns/op
BenchmarkDemo.testTheMethod4:testTheMethod4·p0.90        sample              3668.000                ns/op
BenchmarkDemo.testTheMethod4:testTheMethod4·p0.95        sample              4328.000                ns/op
BenchmarkDemo.testTheMethod4:testTheMethod4·p0.99        sample              5624.000                ns/op
BenchmarkDemo.testTheMethod4:testTheMethod4·p0.999       sample             29728.000                ns/op
BenchmarkDemo.testTheMethod4:testTheMethod4·p0.9999      sample             66573.645                ns/op
BenchmarkDemo.testTheMethod4:testTheMethod4·p1.00        sample           4964352.000                ns/op
BenchmarkDemo.testTheMethod4                                 ss        5   296304.600 ± 114666.024   ns/op
```

```
REMEMBER: The numbers below are just data. To gain reusable insights, you need to follow up on
why the numbers are the way they are. Use profilers (see -prof, -lprof), design factorial
experiments, perform baseline and negative tests that provide experimental control, make sure
the benchmarking environment is safe on JVM/OS/HW level, ask for reviews from the domain experts.
Do not assume the numbers tell you what you want them to tell.
```

Chapter 18: Best Practices for Writing High-Quality Code



Chapter 19: Java Getting New Features

```
The result:
   - the symbol A was not found;
   - the type of the object was not Integer either.
```