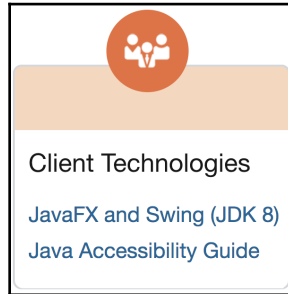


Chapter 1: Java Virtual Machine (JVM) on Your Computer



Java Platform, Standard Edition

Java SE 10.0.1
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Product / File Description	File Size	Download
Linux	305.97 MB	jdk-10.0.1_linux-x64_bin.rpm
Linux	338.41 MB	jdk-10.0.1_linux-x64_bin.tar.gz
macOS	395.46 MB	jdk-10.0.1_osx-x64_bin.dmg
Solaris SPARC	206.63 MB	jdk-10.0.1_solaris-sparcv9_bin.tar.gz
Windows	390.19 MB	jdk-10.0.1_windows-x64_bin.exe

```
demo> java -version
java version "10.0.1" 2018-04-17
Java(TM) SE Runtime Environment 18.3 (build 10.0.1+10)
Java HotSpot(TM) 64-Bit Server VM 18.3 (build 10.0.1+10, mixed mode)
demo>
```

```
demo> java
Usage: java [options] <mainclass> [args...]
        (to execute a class)
or java [options] -jar <jarfile> [args...]
        (to execute a jar file)
or java [options] -m <module>[/<mainclass>] [args...]
   java [options] --module <module>[/<mainclass>] [args...]
        (to execute the main class in a module)

Arguments following the main class, -jar <jarfile>, -m or --module
<module>/<mainclass> are passed as the arguments to main class.
```

where options include:

```
-d32          Deprecated, will be removed in a future release
-d64          Deprecated, will be removed in a future release
-cp <class search path of directories and zip/jar files>
-classpath <class search path of directories and zip/jar files>
--class-path <class search path of directories and zip/jar files>
              A : separated list of directories, JAR archives,
              and ZIP archives to search for class files.
-p <module path>
--module-path <module path>...
              A : separated list of directories, each directory
              is a directory of modules.
--upgrade-module-path <module path>...
              A : separated list of directories, each directory
              is a directory of modules that replace upgradeable
              modules in the runtime image
--add-modules <module name>[,<module name>...]
              root modules to resolve in addition to the initial module.
              <module name> can also be ALL-DEFAULT, ALL-SYSTEM,
              ALL-MODULE-PATH.
--list-modules
              list observable modules and exit
```

```
demo> ls -l
total 0
drwxr-xr-x  2 ab54696  staff  68 Dec  9 10:33 dir2
drwxr-xr-x  2 ab54696  staff  68 Dec  9 10:33 dir3
drwxr-xr-x  2 ab54696  staff  68 Dec  9 10:51 dir4
demo>
```

```
-d <module name>
--describe-module <module name>
    describe a module and exit
--dry-run      create VM and load main class but do not execute main method.
                The --dry-run option may be useful for validating the
                command-line options such as the module system configuration.
--validate-modules
                validate all modules and exit
                The --validate-modules option may be useful for finding
                conflicts and other errors with modules on the module path.
```

```
-D<name>=<value>
    set a system property
-verbose:[class|module|gc|jni]
    enable verbose output
-version      print product version to the error stream and exit
--version    print product version to the output stream and exit
-showversion print product version to the error stream and continue
--show-version
            print product version to the output stream and continue
--show-module-resolution
            show module resolution output during startup
-? -h -help
            print this help message to the error stream
--help      print this help message to the output stream
-X          print help on extra options to the error stream
--help-extra print help on extra options to the output stream
```

```

-ea[:<packagename>...!:<classname>]
-enableassertions[:<packagename>...!:<classname>]
    enable assertions with specified granularity
-da[:<packagename>...!:<classname>]
-disableassertions[:<packagename>...!:<classname>]
    disable assertions with specified granularity
-esa | -enablesystemassertions
    enable system assertions
-dsa | -disablesystemassertions
    disable system assertions
-agentlib:<libname>[=<options>]
    load native agent library <libname>, e.g. -agentlib:jdwp
    see also -agentlib:jdwp=help
-agentpath:<pathname>[=<options>]
    load native agent library by full pathname
-javaagent:<jarpath>[=<options>]
    load Java programming language agent, see java.lang.instrument
-splash:<imagepath>
    show splash screen with specified image
    HiDPI scaled images are automatically supported and used
    if available. The unscaled image filename, e.g. image.ext,
    should always be passed as the argument to the -splash option.
    The most appropriate scaled image provided will be picked up
    automatically.
    See the SplashScreen API documentation for more information
@argument files
    one or more argument files containing options
-disable-@files
    prevent further argument file expansion
To specify an argument for a long option, you can use --<name>=<value> or
--<name> <value>.

```

```

demo> javac
Usage: javac <options> <source files>
where possible options include:
@<filename>           Read options and filenames from file
-Akey[=value]         Options to pass to annotation processors
--add-modules <module>(,<module>)*
    Root modules to resolve in addition to the initial modules, or all modul
es
    on the module path if <module> is ALL-MODULE-PATH.
--boot-class-path <path>, -bootclasspath <path>
    Override location of bootstrap class files
--class-path <path>, -classpath <path>, -cp <path>
    Specify where to find user class files and annotation processors
-d <directory>       Specify where to place generated class files
-deprecation
    Output source locations where deprecated APIs are used

```

```

-encoding <encoding>          Specify character encoding used by source files
-endorseddirs <dirs>          Override location of endorsed standards path
-extdirs <dirs>               Override location of installed extensions
-g                             Generate all debugging info
-g:{lines,vars,source}        Generate only some debugging info
-g:none                        Generate no debugging info
-h <directory>                Specify where to place generated native header files
--help, -help                  Print this help message
--help-extra, -X               Print help on extra options
-implicit:{none,class}        Specify whether or not to generate class files for implicitly referenced
files
-J<flag>                       Pass <flag> directly to the runtime system
--limit-modules <module>(<module>)*
    Limit the universe of observable modules
--module <module-name>, -m <module-name>
    Compile only the specified module, check timestamps
--module-path <path>, -p <path>
    Specify where to find application modules
--module-source-path <module-source-path>
    Specify where to find input source files for multiple modules
--module-version <version>
    Specify version of modules that are being compiled

```

```

-nowarn                         Generate no warnings
-parameters                     Generate metadata for reflection on method parameters
-proc:{none,only}               Control whether annotation processing and/or compilation is done.
-processor <class1>[,<class2>,<class3>...]
    Names of the annotation processors to run; bypasses default discovery pr
ocess
--processor-module-path <path>
    Specify a module path where to find annotation processors
--processor-path <path>, -processorpath <path>
    Specify where to find annotation processors
-profile <profile>               Check that API used is available in the specified profile
--release <release>             Compile for a specific VM version. Supported targets: 6, 7, 8, 9
-s <directory>                  Specify where to place generated source files
-source <release>               Provide source compatibility with specified release
--source-path <path>, -sourcepath <path>
    Specify where to find input source files
--system <jdk>|none              Override location of system modules
-target <release>               Generate class files for specific VM version
--upgrade-module-path <path>
    Override location of upgradeable modules
-verbose                         Output messages about what the compiler is doing
--version, -version              Version information
-Werror                           Terminate compilation if warnings occur

```

```

demo> javac -version
javac 10.0.1
demo>

```

```

demo> jcmd
3408 org.jetbrains.idea.maven.server.RemoteMavenServer
3458 jdk.jcmd/sun.tools.jcmd.JCmd
3454 org.jetbrains.jps.cmdline.Launcher /Applications/IntelliJ IDEA CE.app/Contents/lib/util.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/httpclient-4.5.2.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/jna-platform.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/log4j.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/maven-aether-provider-3.3.9-all.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/resources_en.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/netty-all-4.1.13.Final.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/openapi.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/commons-codec-1.9.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/guava-21.0.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/jps-model.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/nanoxml-2.2.3.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/jgoodies-forms.jar:/Applications/IntelliJ IDEA CE.app/Contents/lib/aether-1.1.0-all.jar
3455 com.pactk.javapath.App

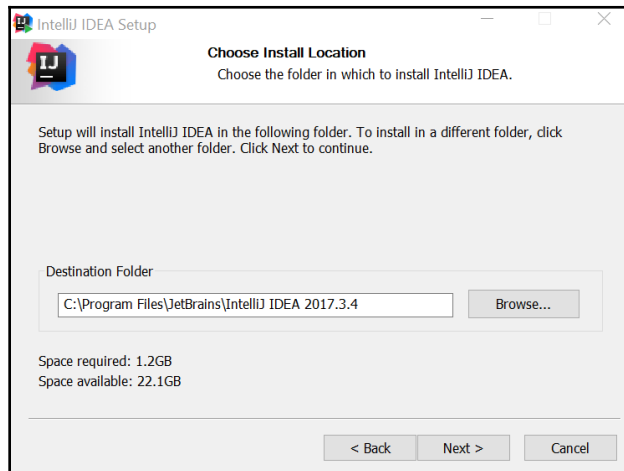
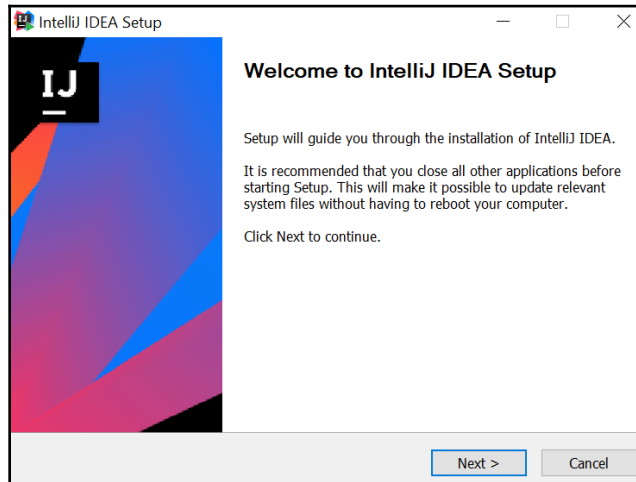
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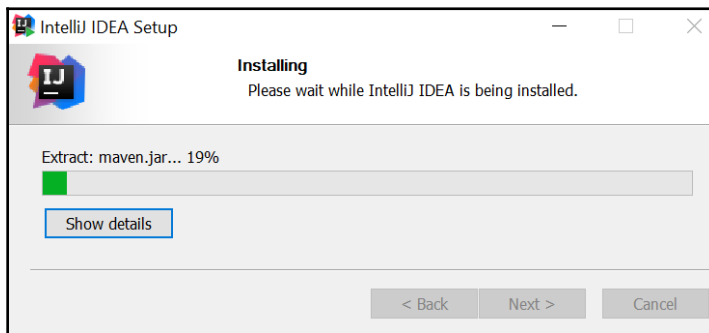
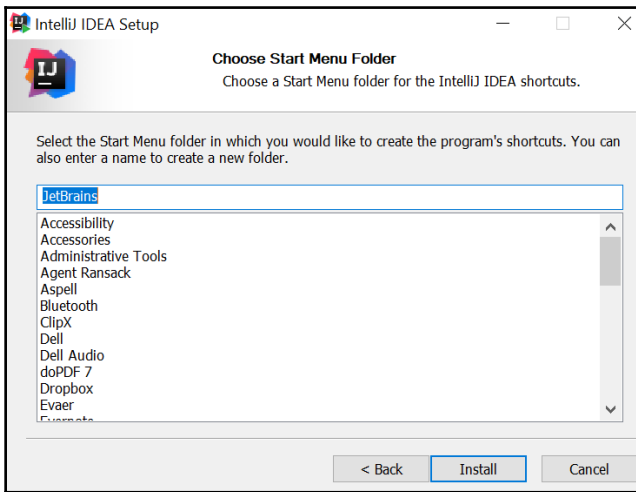
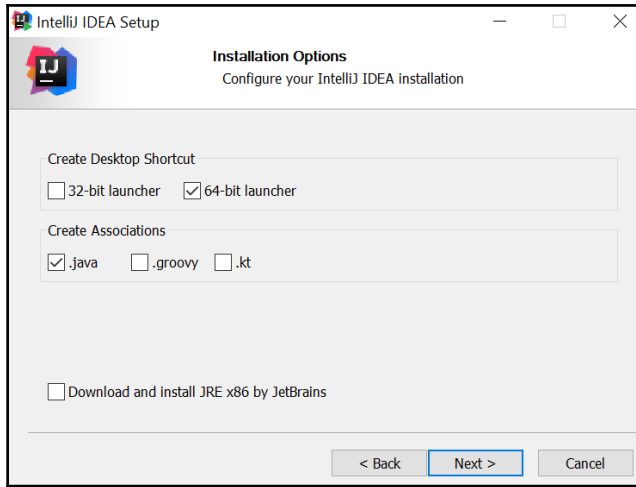
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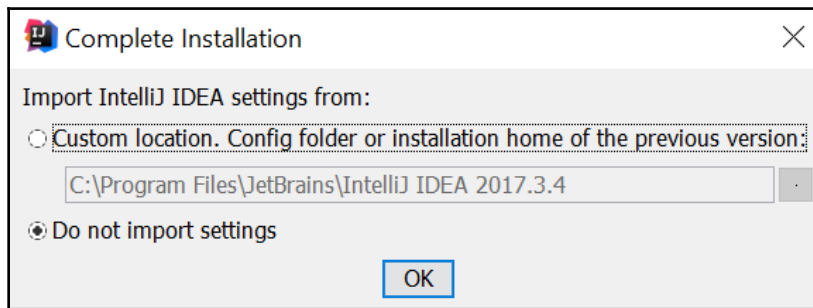
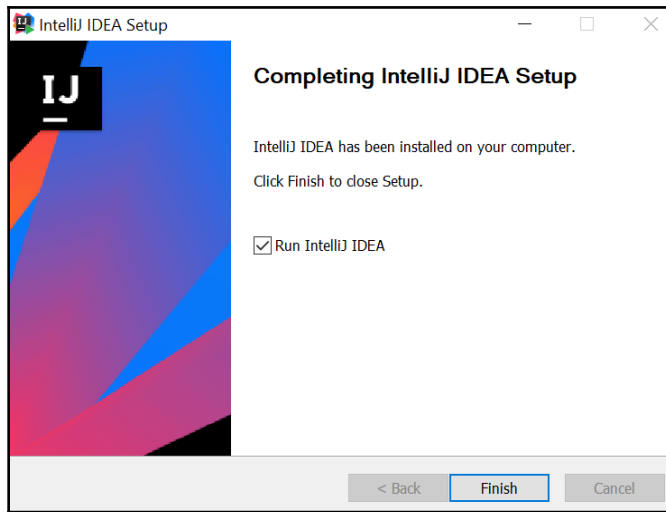
demo> cd /Library/Java/JavaVirtualMachines/jdk-10.jdk/Contents/Home/bin
demo> ls
appletviewer  javac      jconsole    jimage      jps          jweblauncher  rmiregistry  wsgen
idlj          javadoc   jcontrol    jinfo       jrunscript   keytool       schemagen    wsimport
jaotc        javap     jdb         jjs         jshell       orbd          serialver    xjc
jar          javapackager  jdeprscan   jlink       jstack       pack200       servertool
jarsigner    javaws     jdeps      jmap        jstat        rmic          tnameserv
java         jcmd      jhsdb      jmod        jstatd       rmid          unpack200
demo>

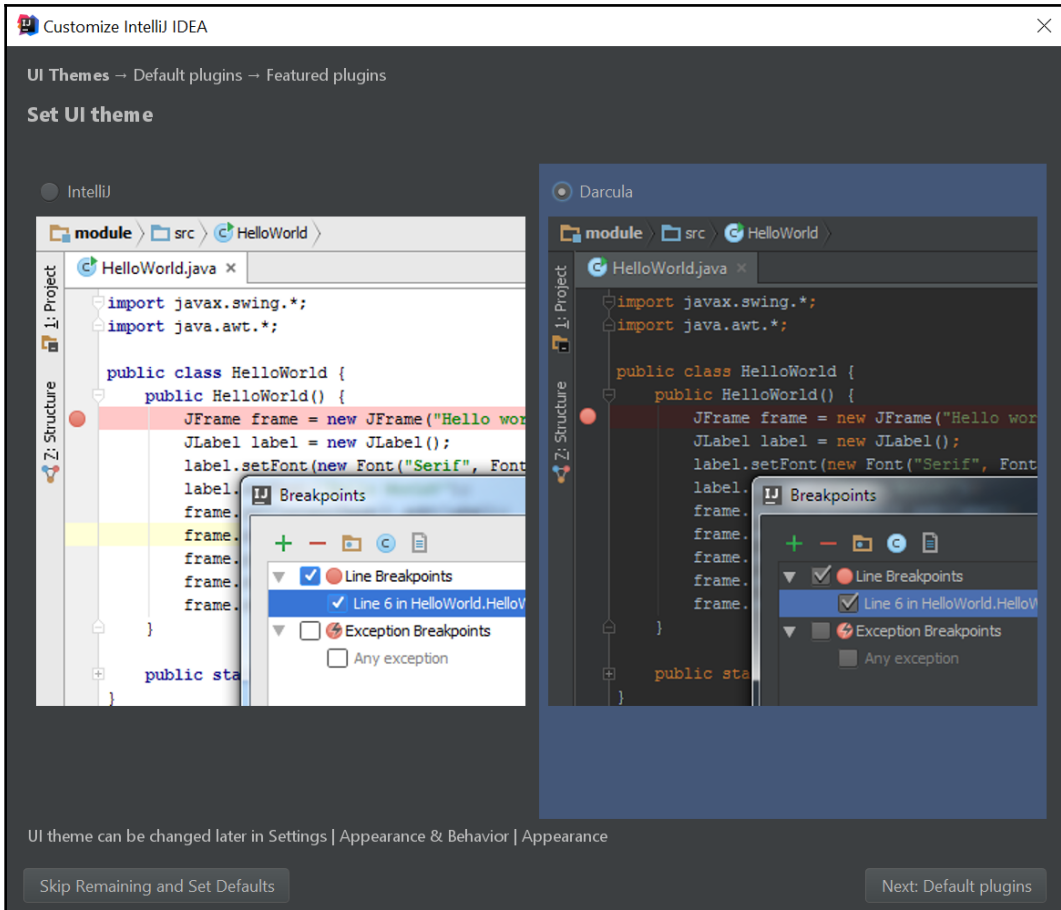
```

Chapter 3: Your Development Environment Setup


















Customize IntelliJ IDEA

UI Themes → Default plugins → Featured plugins

Tune IDEA to your tasks

IDEA has a lot of tools enabled by default. You can set only ones you need or leave them all.

 <p>Java Frameworks</p> <p>Google App Engine, Grails, GWT, Vaadin, JBoss Seam...</p> <p>Customize... Disable All</p>	 <p>Build Tools</p> <p>Ant, Maven, Gradle</p> <p>Customize... Disable All</p>	 <p>Web Development</p> <p>HTML, Haml, CSS, Less, Sass, Stylus, JavaScript...</p> <p>Customize... Disable All</p>
 <p>Version Controls</p> <p>CVS, Git, GitHub, Mercurial, Perforce, Subversion, TFS</p> <p>Customize... Disable All</p>	 <p>Test Tools</p> <p>JUnit, TestNG-J, Cucumber for Java, Coverage</p> <p>Customize... Disable All</p>	 <p>Application Servers</p> <p>Application Servers View, Geronimo, GlassFish, JBoss...</p> <p>Customize... Disable All</p>
 <p>Clouds</p> <p>Cloud Foundry, CloudBees, Heroku, OpenShift</p> <p>Customize... Disable All</p>	 <p>Swing</p> <p>UI Designer</p> <p>Disable</p>	 <p>Android</p> <p>Android</p> <p>Disable</p>

Customize IntelliJ IDEA

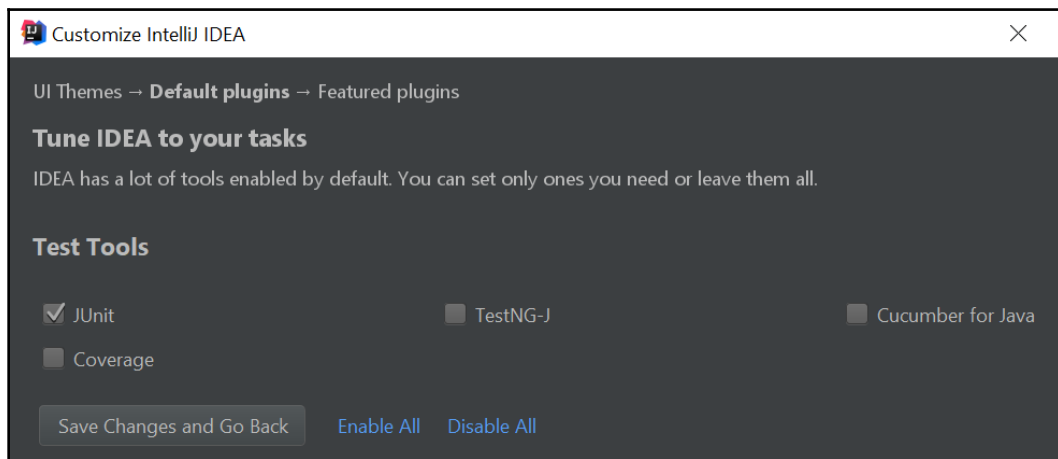
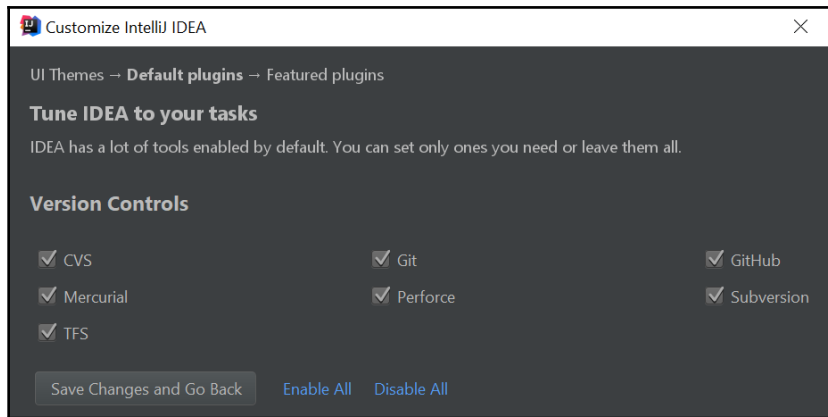
UI Themes → Default plugins → Featured plugins

Tune IDEA to your tasks

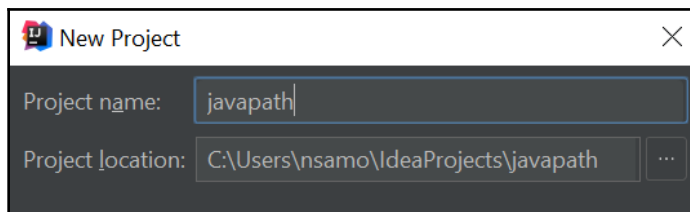
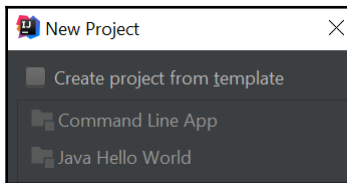
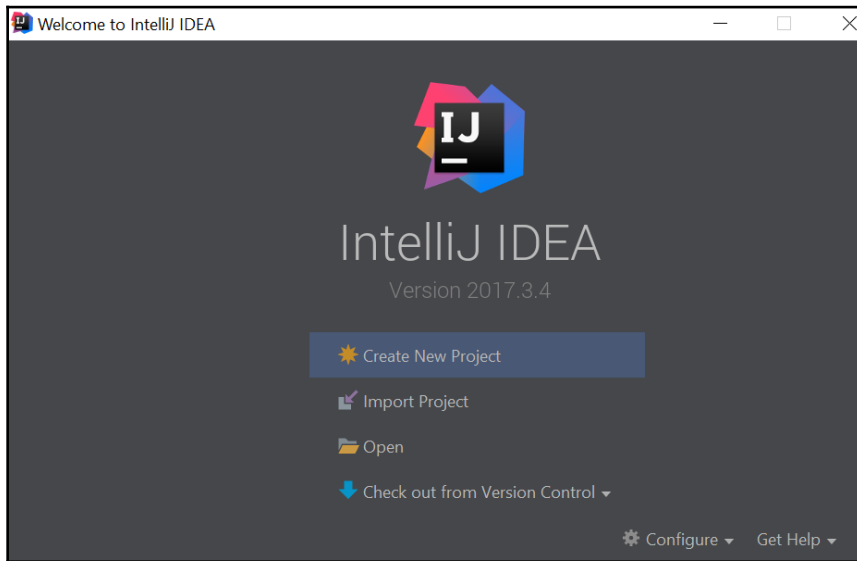
IDEA has a lot of tools enabled by default. You can set only ones you need or leave them all.

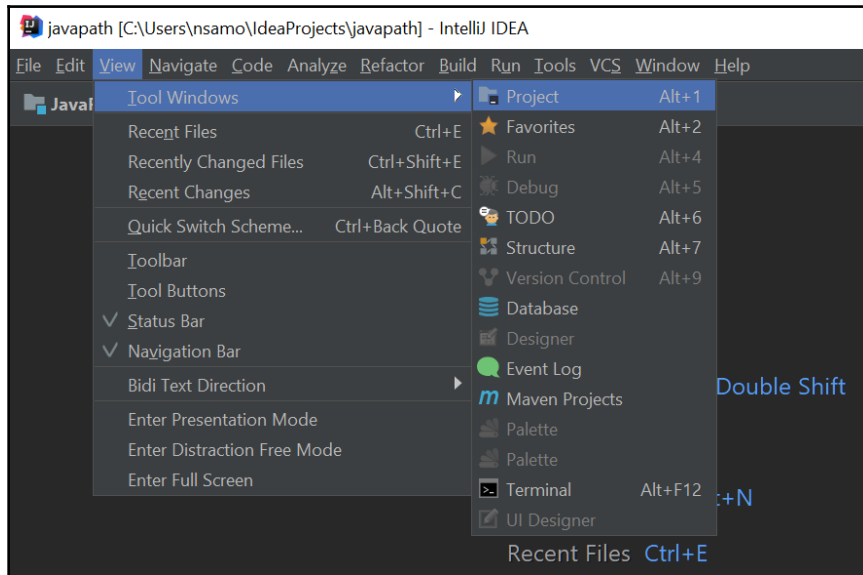
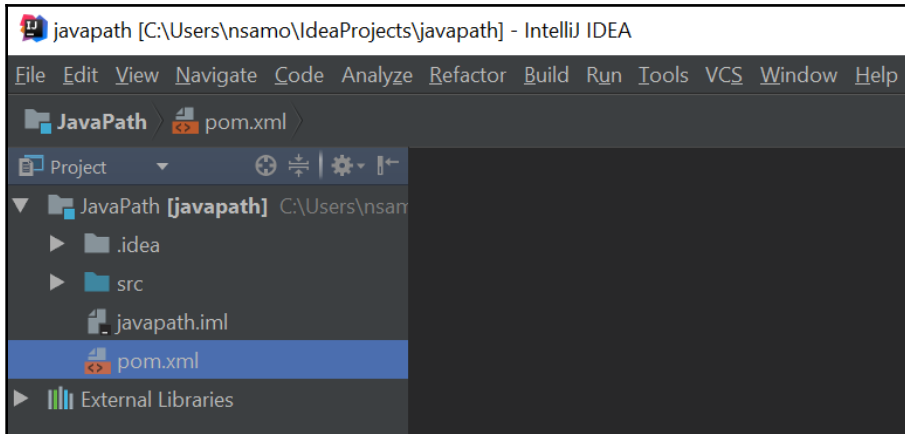
Build Tools

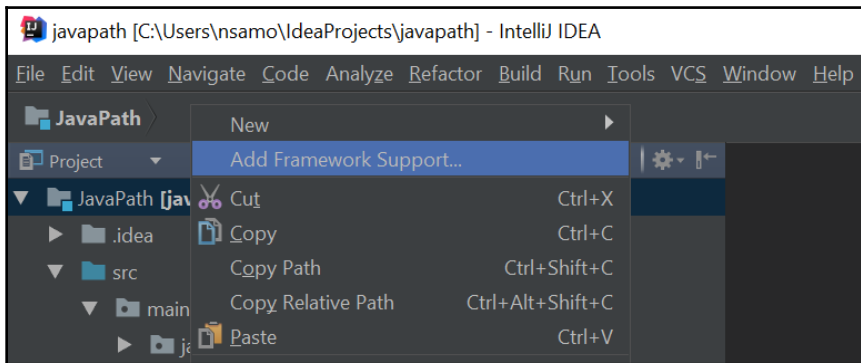
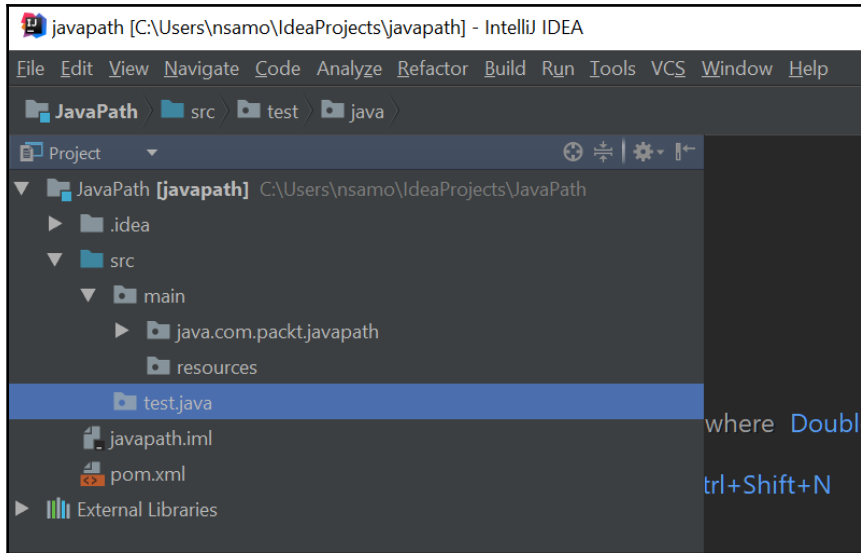
Ant
 Maven
 Gradle

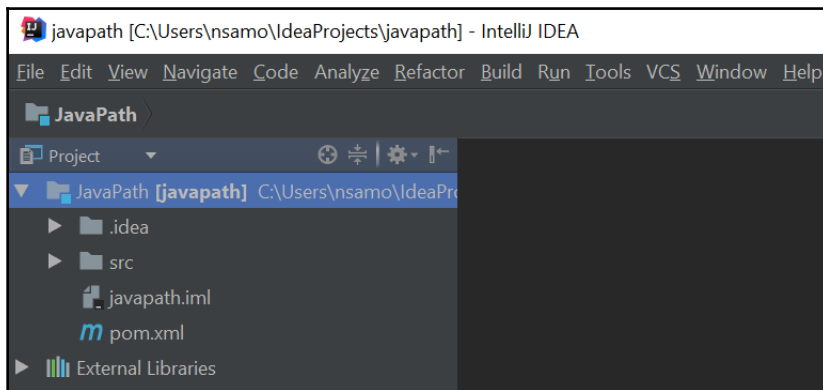
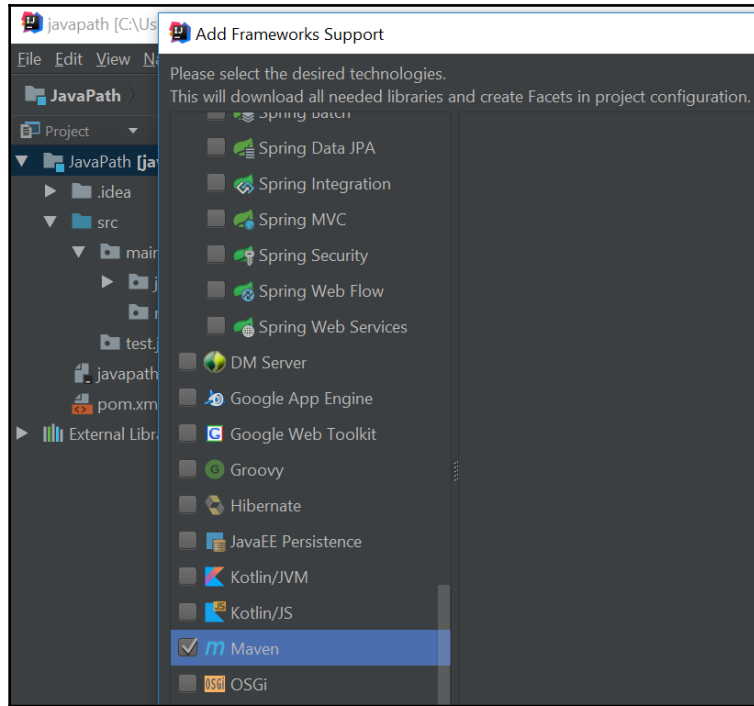


Chapter 4: Your First Java Project



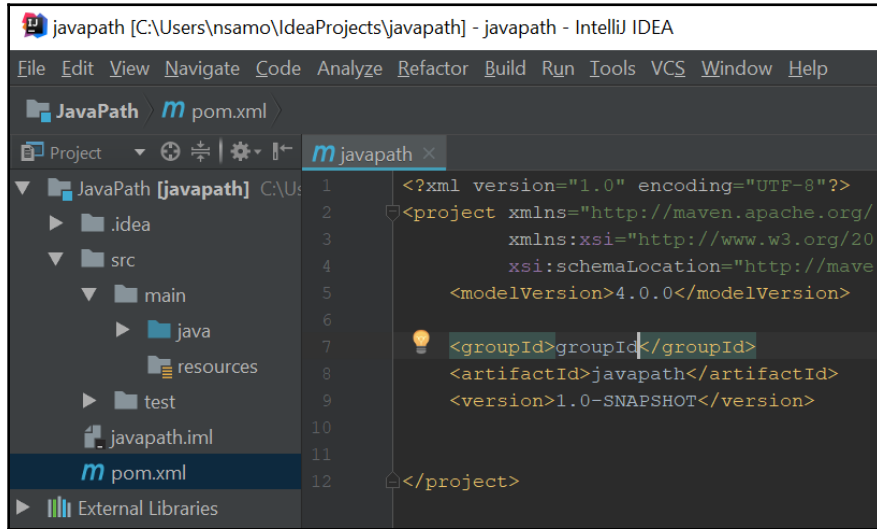
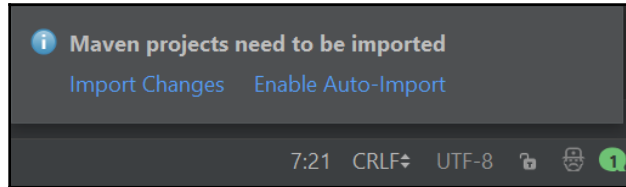
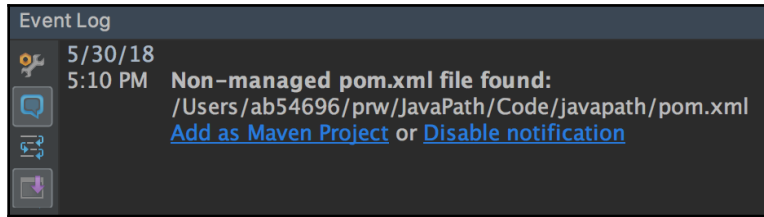


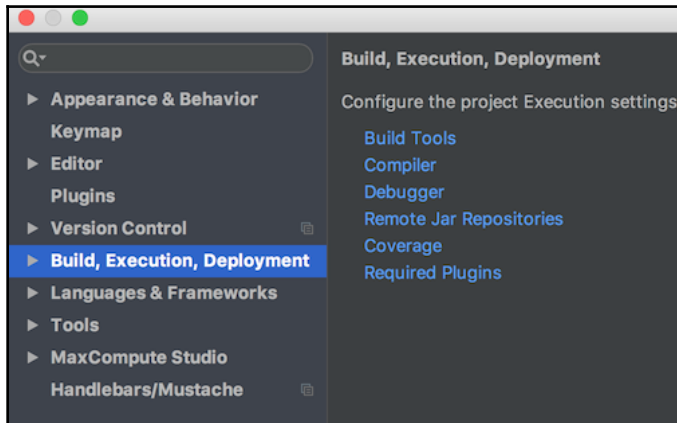
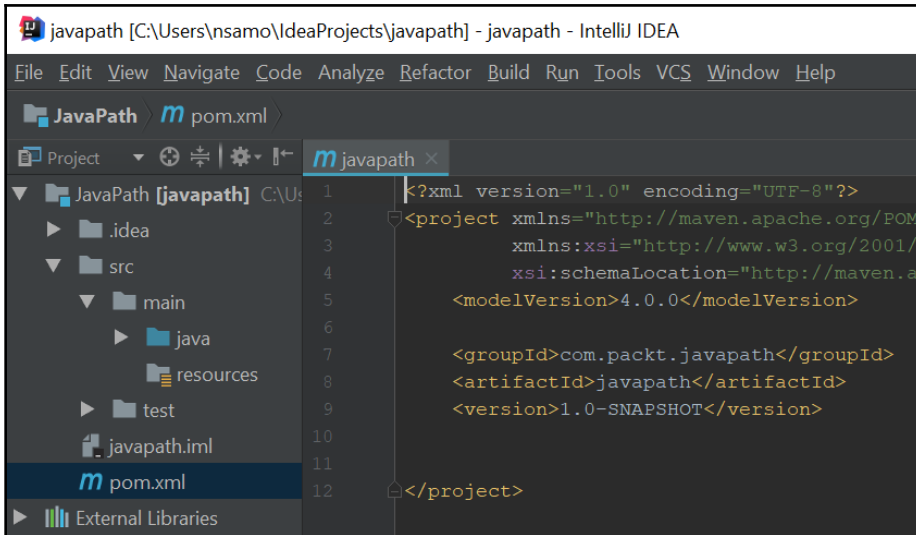


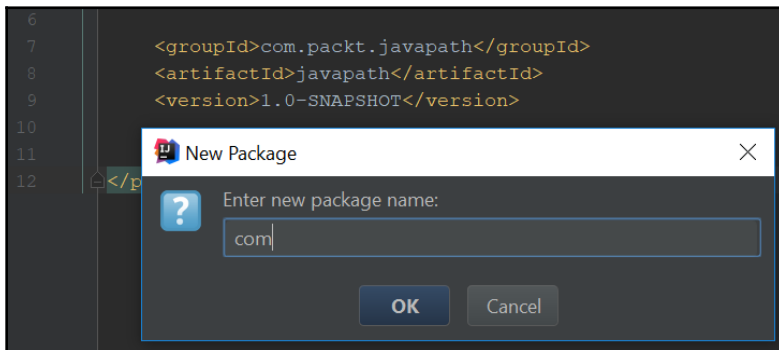
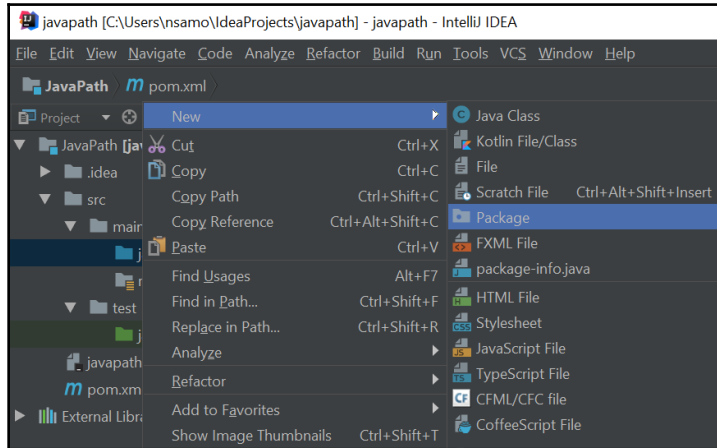
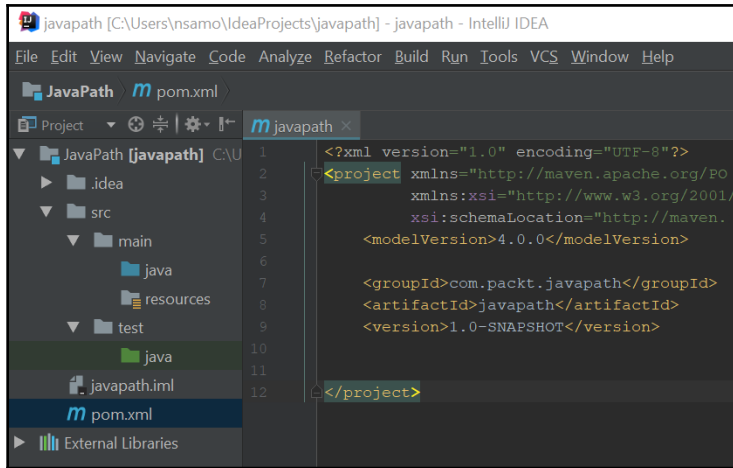


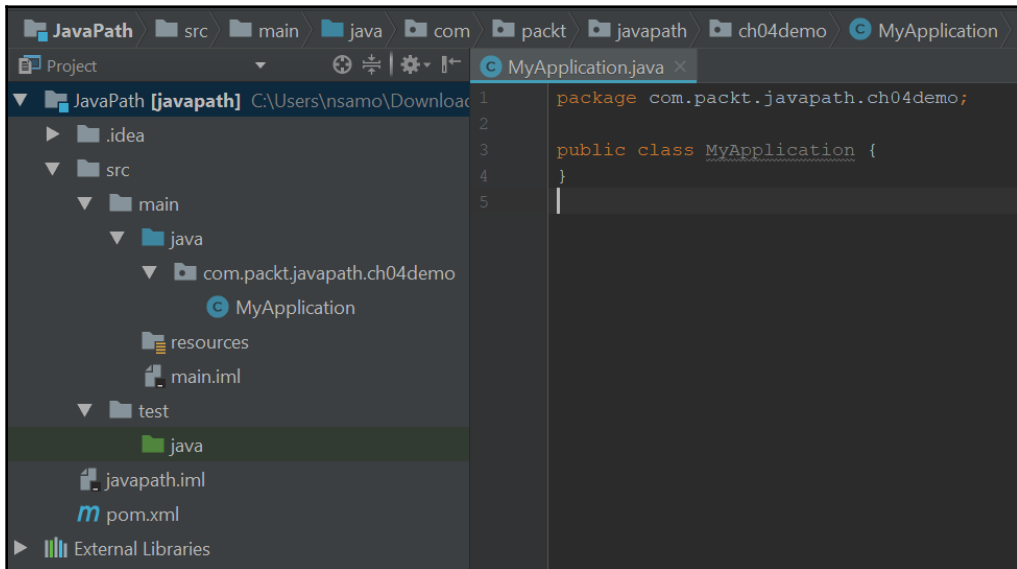
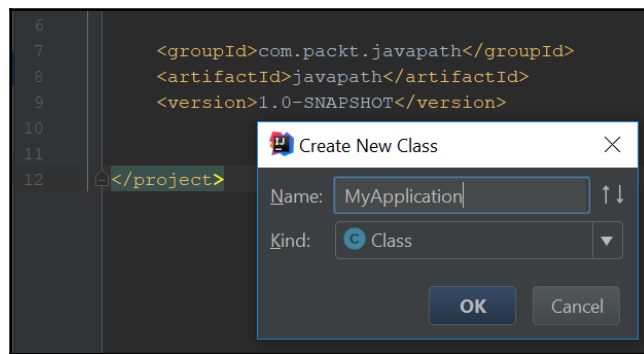
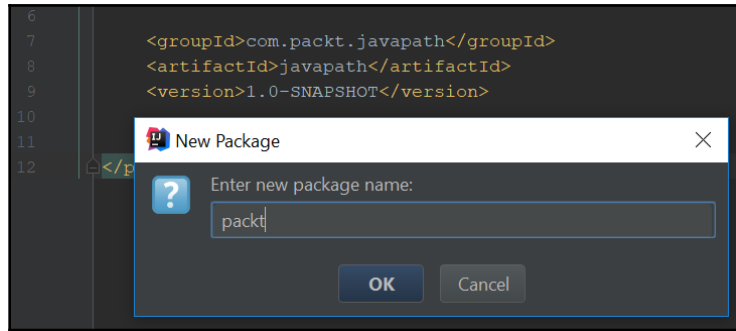
Non-managed pom.xml file found:
/Users/ab54696/prw/JavaPath/Code/javapath/pom.xml
[Add as Maven Project](#) or [Disable notification](#)

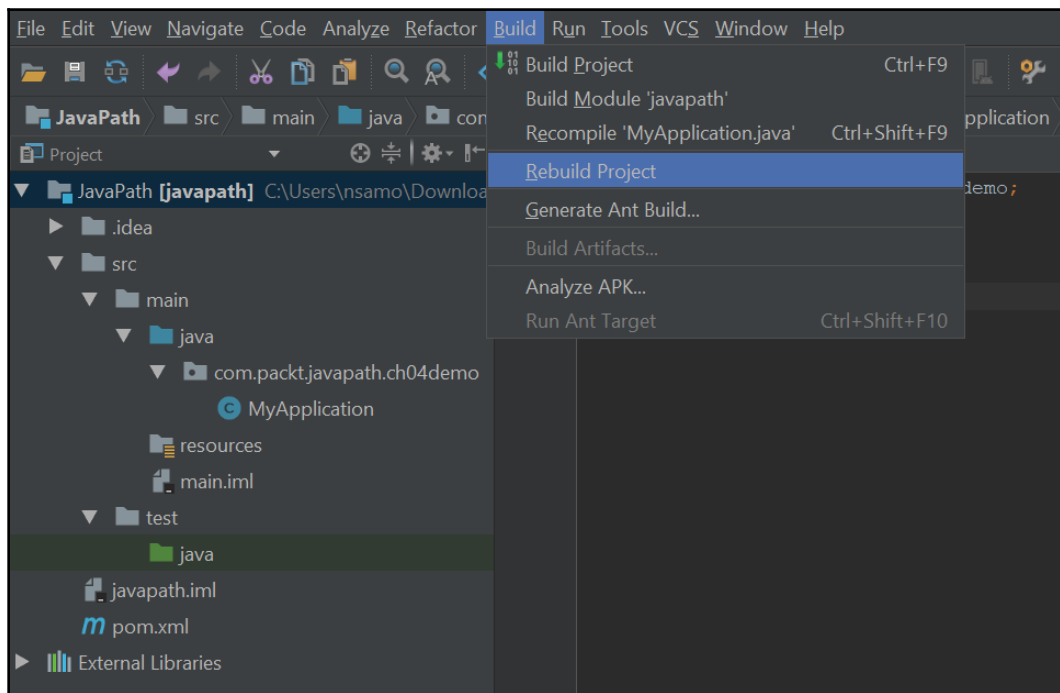
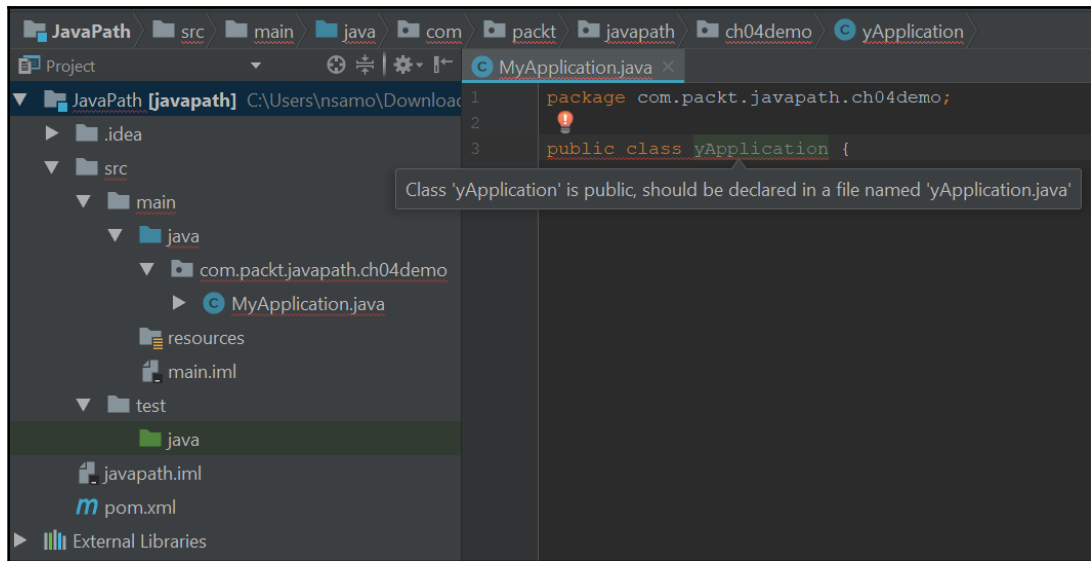
Non-managed pom.xml file found:: /Users/ab54696/prw/JavaPath/Code/javapath/pom.xml // Add as Maven Project or Disable notification (a minute ago)

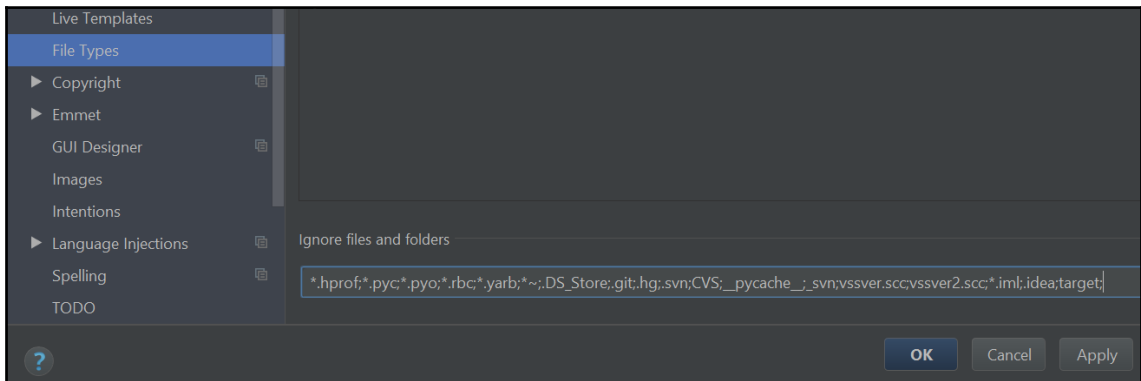
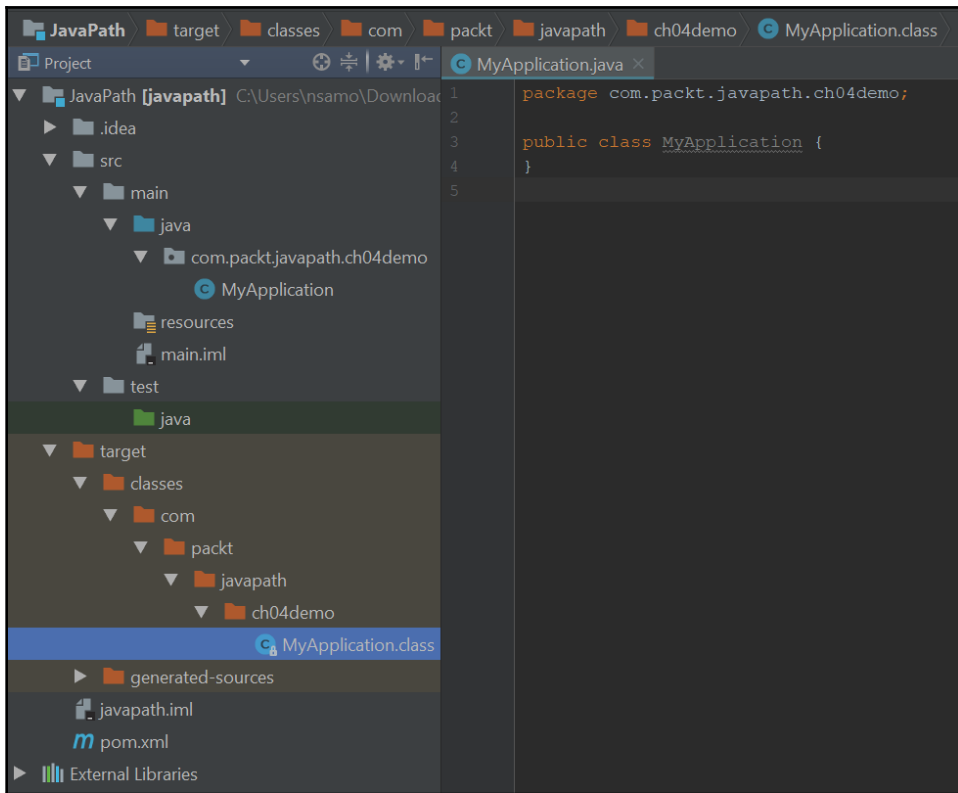












The screenshot shows an IDE window with the following project structure in the left sidebar:

- JavaPath [javapath] C:\Users\nsamo\Download
 - src
 - main
 - java
 - com.packt.javapath.ch04demo
 - MyApplication
- resources
- test
 - java
- pom.xml
- External Libraries

The main editor displays the code for `MyApplication.java`:

```
1 package com.packt.javapath.ch04demo;  
2  
3 public class MyApplication {  
4  
5 }
```

The screenshot shows the same IDE window with the project structure updated to include a `math` package:

- JavaPath [javapath] C:\Users\nsamo\Download
 - src
 - main
 - java
 - com.packt.javapath.ch04demo
 - math
 - SimpleMath
 - MyApplication
 - resources
 - test
 - java
 - pom.xml
 - External Libraries

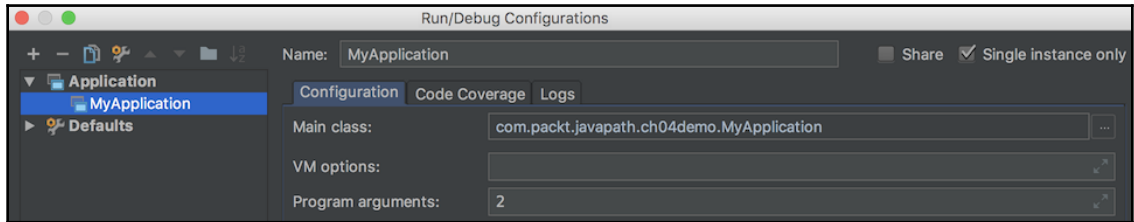
The main editor displays the code for `SimpleMath.java`:

```
1 package com.packt.javapath.ch04demo.math;  
2  
3 public class SimpleMath {  
4  
5 }
```

```
demo> java -cp target/classes com.packt.javapath.ch04demo.MyApplication 2  
2 * 2 = 4  
demo>
```

```
demo> cd target/classes  
demo> jar cf myapp.jar .  
demo> java -cp myapp.jar com.packt.javapath.ch04demo.MyApplication 2  
2 * 2 = 4  
demo>
```

6: TODO Terminal



```
MyApplication.java x
1 package com.packt.javapath.ch04demo;
2
3 import com.packt.javapath.ch04demo.math.SimpleMath;
4
5 public class MyApplication {
6
7     @
8     public static void main(String[] args) {
9         int i = Integer.parseInt(args[0]);
10        SimpleMath simpleMath = new SimpleMath();
11        int result = simpleMath.multiplyByTwo(i);
12        System.out.println(i + " * 2 = " + result);
13    }
14 }
15 }
```


MVNREPOSITORY Search for groups, artifacts, categories Search

Home » org.junit.jupiter » junit-jupiter-api

JUnit **Org.junit.jupiter:junit Jupiter Api**
Module "junit-jupiter-api" of JUnit 5.

Tags testing junit api

Used By 315 artifacts

Version	Repository	Usages	Date
5.1.x	5.1.0-M1	Central 14	(Nov, 2017)
	5.0.2	Central 65	(Nov, 2017)
	5.0.1	Central 63	(Oct, 2017)
	5.0.0	Central 67	(Sep, 2017)

Indexed Artifacts (8.41M)

Popular Categories

- Aspect Oriented
- Actor Frameworks
- Application Metrics
- Build Tools
- Bytecode Libraries

MVNREPOSITORY Search for groups, artifacts, categories Search

Home » org.junit.jupiter » junit-jupiter-api » 5.1.0-M1

JUnit **Org.junit.jupiter:junit Jupiter Api » 5.1.0-M1**
Module "junit-jupiter-api" of JUnit 5.

HomePage http://junit.org/junit5/

Date (Nov 19, 2017)

Files pom (2 KB) jar (82 KB) View All

Repositories Central Sonatype Releases

Used By 315 artifacts

Maven Gradle SBT Ivy Grape Leiningen Buildr

```
<!-- https://mvnrepository.com/artifact/org.junit.jupiter/junit-jupiter-api -->
<dependency>
  <groupId>org.junit.jupiter</groupId>
  <artifactId>junit-jupiter-api</artifactId>
  <version>5.1.0-M1</version>
  <scope>test</scope>
</dependency>
```

Include comment with link to declaration

Indexed Artifacts (8.41M)

Popular Categories

- Aspect Oriented
- Actor Frameworks
- Application Metrics
- Build Tools
- Bytecode Libraries
- Command Line Parsers
- Cache Implementations
- Cloud Computing
- Code Analyzers
- Collections
- Configuration Libraries

```
MyApplication.java x m javapath x
1 <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema"
2 xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v
3 <modelVersion>4.0.0</modelVersion>
4
5 <groupId>com.packt.javapath</groupId>
6 <artifactId>javapath</artifactId>
7 <version>1.0-SNAPSHOT</version>
8
9 <dependencies>
10
11 <!-- https://mvnrepository.com/artifact/org.junit.jupiter/junit-jupiter-api -->
12 <dependency>
13 <groupId>org.junit.jupiter</groupId>
14 <artifactId>junit-jupiter-api</artifactId>
15 <version>5.1.0-M1</version>
16 <scope>test</scope>
17 </dependency>
18
19 </dependencies>
20
21 </project>
22
```

```
MyApplication.java x SimpleMath.java x m javapath x
1 package com.pactt.javapath.math;
2
3 public class SimpleMath {
4
5     public int multiply(int i, int j) {
6         return i * j;
7     }
8 }
9
```

Copy Reference ⌘⇧⌘C
Paste ⌘V
Paste from History... ⇧⌘V
Paste Simple ⌘⇧⌘V
Column Selection Mode ⇧⌘8
Find Usages ⌘F7
Refactor ▶
Folding ▶
Analyze ▶
Go To ▶ Jump to Navigation Bar ⌘↑
Generate... ⌘N Declaration ⌘B
Recompile 'SimpleMath.java' ⇧⌘F9 Implementation(s) ⌘⇧B
Local History ▶ Type Declaration ⇧⌘B
Compare with Clipboard Super Class ⌘U
File Encoding Test ⇧⌘T

```
MyApplication.java x SimpleMath.java x javapath x
1 package com.packt.javapath.math;
2
3 public class SimpleMath {
4     public int mul
5     return i *
6 }
7
8
9
```

Choose Test for SimpleMath (0 found) ↗
Create New Test...

```
MyApplication.java x SimpleMath.java x javapath x
1 package com.packt.javapath.math;
2
3 public class SimpleMath {
4     public int multiplyByTwo(int i){
5     return i * 2;
6 }
7
8
9
```

Create Test

Testing library: JUnit5

Class name: SimpleMathTest

Superclass: ...

Destination package: com.packt.javapath.math ...

Generate: setUp/@Before
 tearDown/@After

Generate test methods for: Show inherited methods

Member	
<input checked="" type="checkbox"/>	multiplyByTwo(i:int):int

```
Project
├── javapath 1 hidden ~/prw/JavaPath
│   ├── myapp
│   └── src 1 hidden
│       ├── main 1 hidden
│       │   └── java 1 hidden
│       │       ├── com.packt.javapath
│       │       │   ├── math
│       │       │   │   ├── SimpleMath
│       │       │   │   └── MyApplication
│       │       │   └── resources
│       │       └── test
│       │           └── java
│       │               ├── com.packt.javapath.r
│       │               │   └── SimpleMathTest
│       │               └── resources
│       └── pom.xml
└── External Libraries
```

```
1 package com.packt.javapath.math;
2
3 import ...
4
5
6
7 class SimpleMathTest {
8
9     @Test
10    void multiplyByTwo() {
11    }
12 }
```

```
1 package com.packt.javapath.math;
2
3 import ...
4
5 @DisplayName("My first test case")
6 class SimpleMathTest {
7
8     @Test
9     @DisplayName("Happy path")
10    void multiplyByTwo(){
11        SimpleMath simpleMath = new SimpleMath();
12        int i = 2;
13        int result = simpleMath.multiplyByTwo(i);
14        assertEquals( expected: 4, result);
15    }
16 }
17
18
19 }
```

```
1 package com.packt.javapath.math;
2
3 public class SimpleMath {
4
5     public int multiplyByTwo(int i){
6         return i * 2 + 1;
7     }
8 }
9
```

Run SimpleMathTest 1 test failed - 14ms

```
Test Results 14ms
  My first test case 14ms
    Happy path 14ms
      org.opentest4j.AssertionFailedError:
        Expected :4
        Actual   :5
        <Click to see difference>
      <5 internal calls>
        at com.packt.javapath.math.SimpleMathTest.multiplyByTwo(SimpleMathTest.java:17)
        at java.base/jdk.internal.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
```

1 test passed - 12ms

```
All Tests Passed 12ms
Process finished with exit code 0
```

Chapter 5: Java Language Elements and Types

```
boolean literal true: true
boolean literal false: false
```

```
char literal 'a': a
char literal '%': %
char literal 'Ω': Ω
char literal '™': ™
```

```
The line breaks
here
The tab is here
"
'
\
```

```
float literal 123.456f: 123.456
double literal 123.456d: 123.456
```

```
float literal 1.234560e+02f: 123.456
double literal 1.234560e+02d: 123.456
```

```
Print literal 12:
- bin 0b1100: 12
- oct 014: 12
- dec 12: 12
- hex 0xc: 12
```

```
Print literal -12:
- bin 0b1100: -12
- oct 014: -12
- dec 12: -12
- hex 0xc: -12
```

```
9876567890121234
```

```
is.length=2
is[0].length=3
is[0][0].length=0
is[0][1].length=0
is[0][2].length=0
is[1].length=3
is[1][0].length=0
is[1][1].length=0
is[1][2].length=0
```

```
is.length=2
is[0]=null
is[1]=null
```

```
First line.
Second line.
Tab space in the line
It is called a "String literal".
Latin Capital Letter Y with diaeresis: Ÿ
```

```
s1s2
s1s2
s1s1
```

```
true
false
true
false
true
```

```
the original string has been changed
the original string
```

```
false
```

```
true
false
true
false
true
false
true
true
true
false
```

```
Bill
biking
fishing
```

```
Dress up warmer
You can drees up lighter now
```

```
true
true
```

```
SPRING
1
AUTUMN
WINTER
```

```
SPRING
1
The best season
The best season
```

```
SPRING
1
The best season
Winter
```

```
Spring is warmer than winter
Spring has average temperature around 60
Summer is the hottest season
Summer has average temperature around 100
Autumn is colder than summer
Autumn has average temperature around 70
Winter is the coldest season
Winter has average temperature around 40
```

```
Before demoMethod(): f = 1.0, count = 0  
After demoMethod(): f = 1.0, count = 42
```

```
Before demoMethod(): someArray[0] = 1  
After demoMethod(): someArray[0] = 42
```

```
Before demoMethod(): string = Some string  
After demoMethod(): string = Some string
```

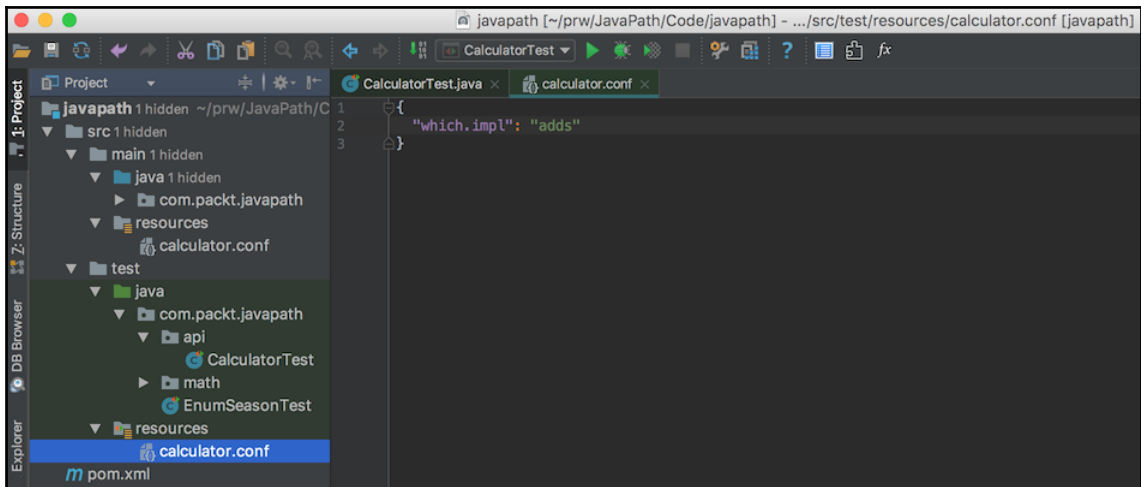
Chapter 6: Interfaces, Classes, and Object Construction

```
Calculator.java x
1 package com.packt.javapath.ch06demo.api;
2
3 public interface Calculator {
4
5     int multiplyByTwo(int i);
6
7 }
```

```
Calculator.java x CalculatorImpl.java x
1 package com.packt.javapath.ch06demo.api.impl;
2
3 import com.packt.javapath.ch06demo.api.Calculator;
4
5 class CalculatorImpl implements Calculator {
6
7     public int multiplyByTwo(int i){
8         System.out.println(CalculatorImpl.class.getName());
9         return i * 2;
10    }
11
12 }
```

```
Calculator.java x CalculatorImpl.java x CalculatorTest.java x
1 package com.packt.javapath.ch06demo.api;
2
3 import org.junit.jupiter.api.Test;
4
5 public class CalculatorTest {
6
7     @Test
8     void multiplyByTwo() {
9     }
10
11 }
```

```
Calculator.java x CalculatorImpl.java x CalculatorTest.java x CalculatorFactory.java x
1 package com.packt.javapath.ch06demo.api.impl;
2
3 import com.packt.javapath.ch06demo.api.Calculator;
4
5 public class CalculatorFactory {
6
7     public static Calculator create() {
8         return new CalculatorImpl();
9     }
10
11 }
12
13 }
```



```
which.impl=adds
com.packt.javapath.api.impl.AnotherCalculatorImpl

Process finished with exit code 0
```

```
which.impl=add
java.lang.RuntimeException: Houston, we have a problem. Unknown key which.impl value add is in config.
```

```
which.impl=adds
com.packt.javapath.api.impl.AnotherCalculatorImpl
com.packt.javapath.api.impl.AnotherCalculatorImpl

Process finished with exit code 0
```

```
which.impl=multiplies
com.packt.javapath.api.impl.CalculatorImpl
com.packt.javapath.api.impl.CalculatorImpl

Process finished with exit code 0
```

```
interface B
1
Clazz B
```

```
java.lang.NullPointerException
  at com.packt.javapath.ch06demo.Person.equals(Person.java:57) <4 internal calls>
  at com.packt.javapath.ch06demo.PersonTest.equals(PersonTest.java:35)
  at java.base/jdk.internal.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
```

```
Exception in thread "main" java.lang.StackOverflowError
  at com.packt.javapath.ch06demo.transport.Truck.getWeightPounds(Truck.java:14)
  at com.packt.javapath.ch06demo.transport.Truck.getWeightPounds(Truck.java:14)
  at com.packt.javapath.ch06demo.transport.Truck.getWeightPounds(Truck.java:14)
```

```
163.0
Process finished with exit code 0
```

```
2
3 public class Child extends Parent{
4
There is no default constructor available in 'com.packt.javapath.ch06demo.construct.deflt.Parent'
```

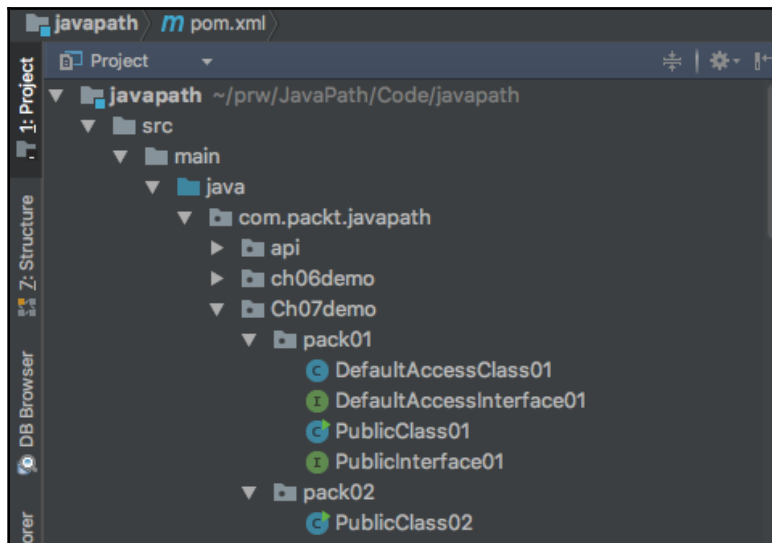
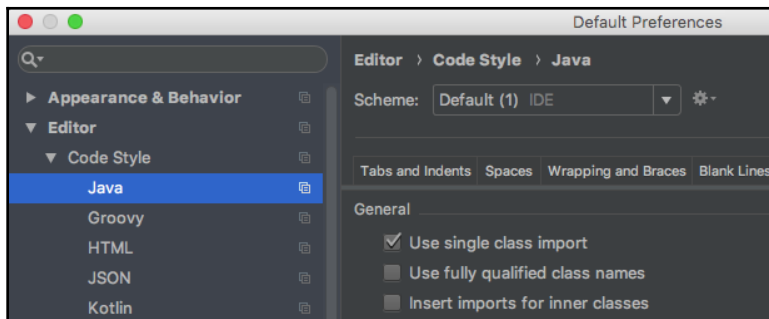
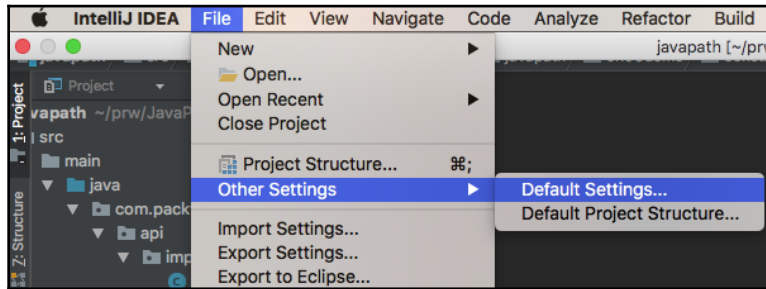
```
Error:(3, 8) java: constructor Parent in class com.packt.javapath.ch06demo.construct.deflt.Parent cannot be applied to given types;
required: int
found: no arguments
reason: actual and formal argument lists differ in length
```



```
Initial setting: finalVar.getInt()=1  
After setting to 5: finalVar.getInt()=100
```

```
Initial setting: finalVar.getInt()=1  
After setting to 5: finalVar.getInt()=5
```

Chapter 7: Packages and Accessibility (Visibility)



Chapter 8: Object-Oriented Design (OOD) Principles

```
Grandad  
Child
```

```
Loaded: 98.0  
Truck(no load): 105.0  
Loaded: 98.0  
Truck(no load): 105.0  
Loaded: 83.0  
Car(no load): 91.0  
Loaded: 98.0  
Truck(no load): 105.0
```

Chapter 9: Operators, Expressions, and Statements

```
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 43
    at com.packt.javapath.ch09demo.OperatorsDemo.newOperator(OperatorsDemo.java:28)
    at com.packt.javapath.ch09demo.OperatorsDemo.main(OperatorsDemo.java:13)
```

```
ClassY.method() is called
```

```
ClassY.method() is called
```

```
Exception in thread "main" java.lang.ClassCastException: com.packt.javapath.ch09demo
    at com.packt.javapath.ch09demo.OperatorsDemo.castOperator(OperatorsDemo.java:40)
    at com.packt.javapath.ch09demo.OperatorsDemo.main(OperatorsDemo.java:17)
```

Chapter 10: Control Flow Statements

```
0.04008814723807952
0.14761419247760388
0.9976253562971626
1.3936840361540992
```

```
0.824013192634479
0.9251526763091734
```

```
0.5907849135754448
0.8049481723535172
1.3318594841395899
```

```
0.0
0.25820267419621346
0.6261650877740176
0.6731072083731483
```

```
Teacher{subject=History, Person{age=32, name='Joe'}}
Student{year=4, Person{age=29, name='Joe'}}
Found: Student{year=4, Person{age=29, name='Joe'}}
```

```
Teacher{subject=History, Person{age=32, name='Joe'}}
Student{year=4, Person{age=29, name='Joe'}}
Student{year=3, Person{age=28, name='Jill'}}
Teacher{subject=Maths, Person{age=33, name='ALice'}}
Not found: Person{age=30, name='Joe'}
```

```
sum=6, x=0, y=2
sum=7, x=0, y=3
sum=7, x=1, y=1
sum=6, x=1, y=3
```

```
sum=7, x=0, y=3
sum=6, x=1, y=3
```

```
java.lang.NullPointerException
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method1 (ExceptionHandlingDemo.java:21)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method2 (ExceptionHandlingDemo.java:17)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.exceptionCaught (ExceptionHandlingDemo.java:10)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.main (ExceptionHandlingDemo.java:5)
```

```
java.lang.NullPointerException: Parameter String is null
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method1 (ExceptionHandlingDemo.java:22)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method2 (ExceptionHandlingDemo.java:17)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.exceptionCaught (ExceptionHandlingDemo.java:10)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.main (ExceptionHandlingDemo.java:5)
```

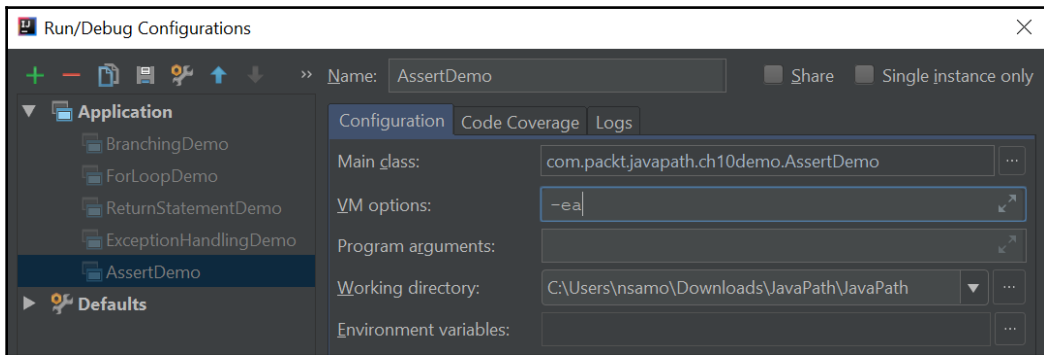
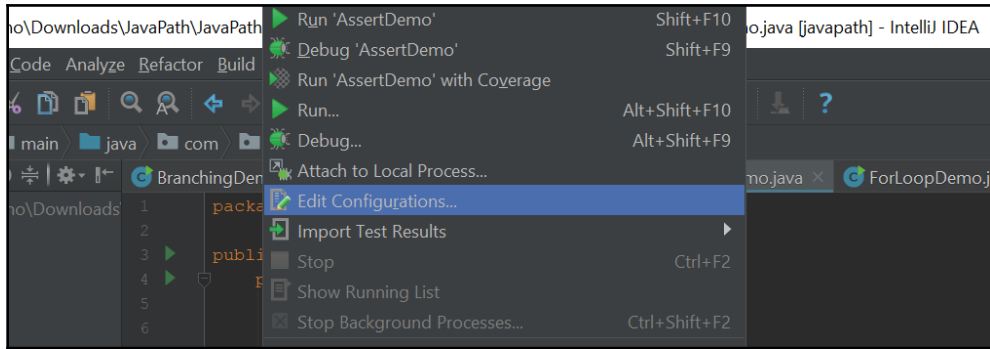
```
java.lang.RuntimeException: Parameter String is null
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method1 (ExceptionHandlingDemo.java:23)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method2 (ExceptionHandlingDemo.java:17)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.exceptionCaught (ExceptionHandlingDemo.java:10)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.main (ExceptionHandlingDemo.java:5)
```

```
Exception in thread "main" java.lang.NullPointerException
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method1 (ExceptionHandlingDemo.java:26)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method2 (ExceptionHandlingDemo.java:22)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.exceptionNotCaught (ExceptionHandlingDemo.java:10)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.main (ExceptionHandlingDemo.java:6)
```

```
NPE caught
java.lang.NullPointerException: Parameter String is null
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method1 (ExceptionHandlingDemo.java:98)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method2 (ExceptionHandlingDemo.java:88)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.exceptionCaught (ExceptionHandlingDemo.java:46)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.main (ExceptionHandlingDemo.java:5)
```

```
RuntimeException caught
java.lang.ArrayIndexOutOfBoundsException: Index ... is bigger than the array length ...
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method1 (ExceptionHandlingDemo.java:100)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method2 (ExceptionHandlingDemo.java:88)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.exceptionCaught (ExceptionHandlingDemo.java:46)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.main (ExceptionHandlingDemo.java:5)
```

```
Exception caught
java.lang.InstantiationException: No value for the field someField of SomeClass.
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method1 (ExceptionHandlingDemo.java:101)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.method2 (ExceptionHandlingDemo.java:88)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.exceptionCaught (ExceptionHandlingDemo.java:46)
  at com.packt.javapath.ch10demo.ExceptionHandlingDemo.main (ExceptionHandlingDemo.java:5)
```

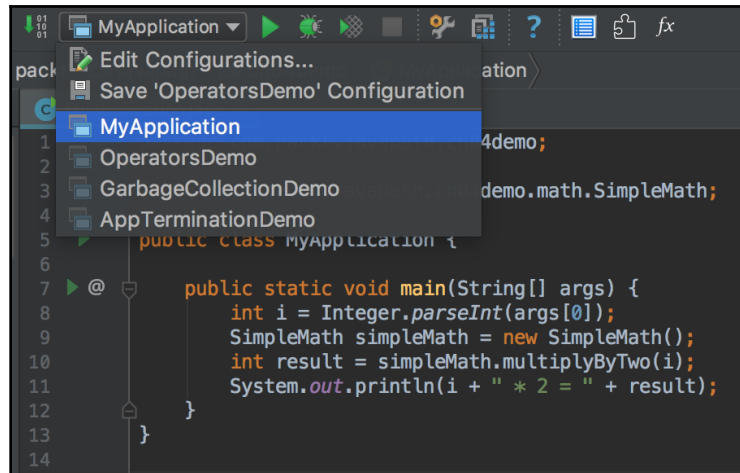


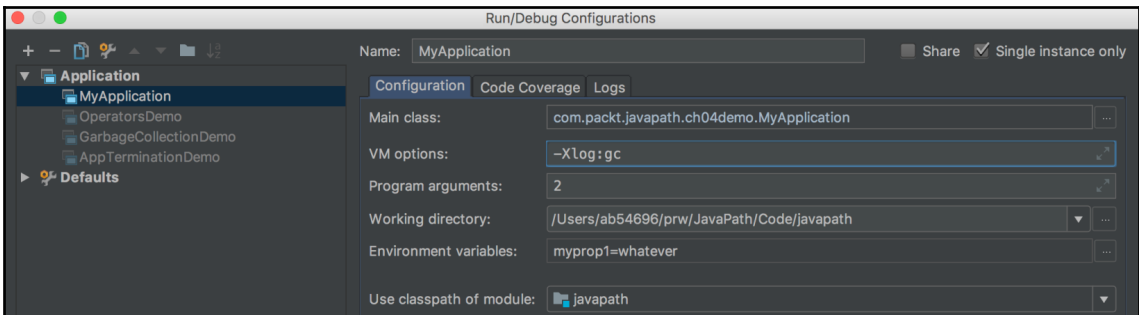
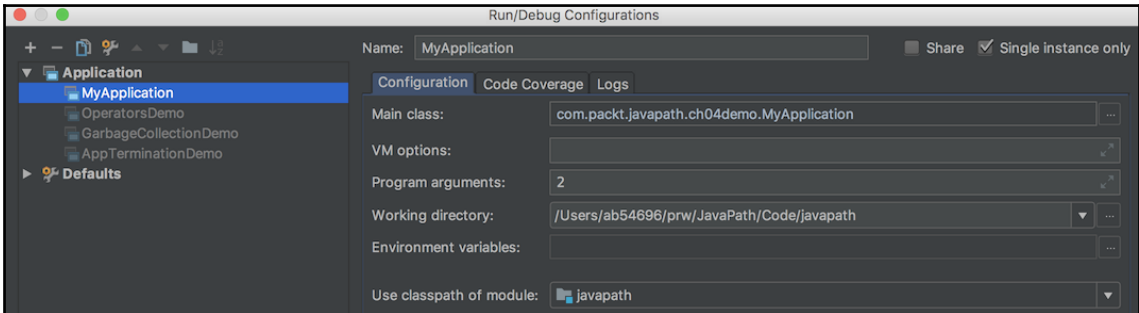
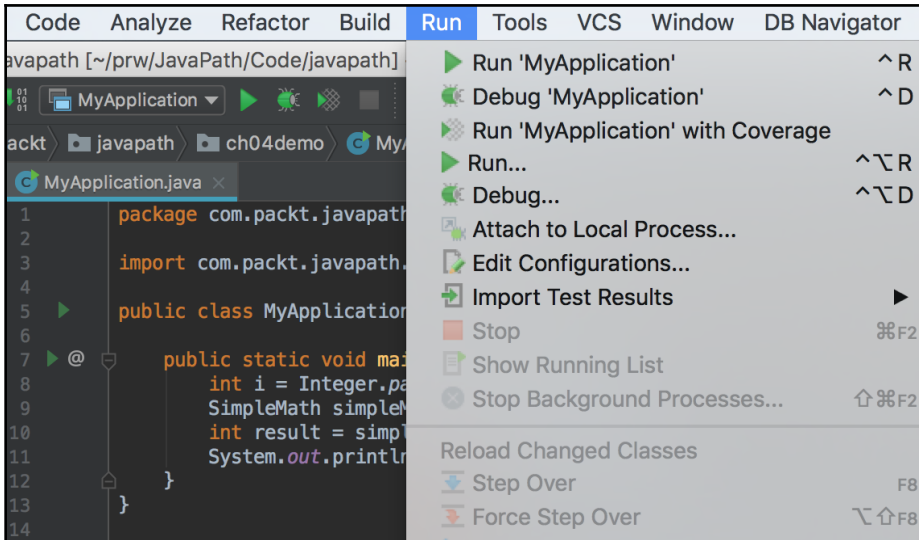
```
Exception in thread "main" java.lang.AssertionError: x != 1
    at com.packt.javapath.ch10demo.AssertDemo.main(AssertDemo.java:8)
```

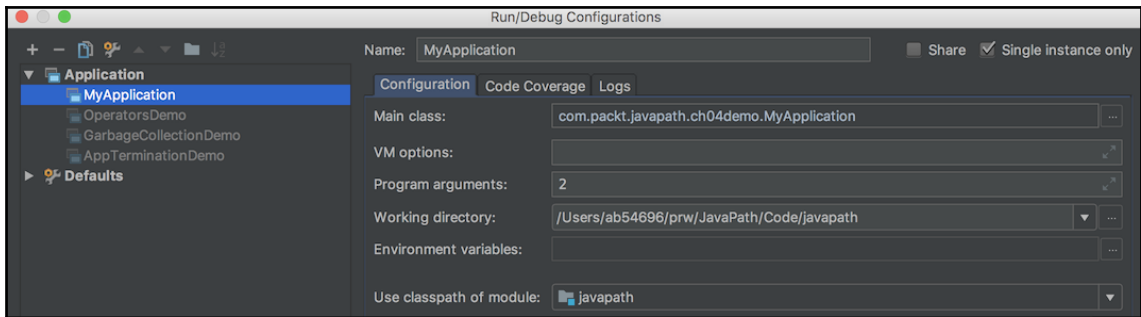
Chapter 11: JVM Processes and Garbage Collection

```
child thread daemon 11
child thread user 1
Main thread exists
child thread daemon 12
child thread user 2
child thread user 3
child thread daemon 13
child thread daemon 14
child thread user 4
```

```
child thread daemon 11
child thread user 1
Main thread exists
child thread daemon 12
child thread user 2
child thread daemon 13
```







```
[0.024s][info][gc] Using G1
[0.392s][info][gc] GC(0) Pause Young (G1 Evacuation Pause) 47M->43M(256M) 74.748ms
[0.452s][info][gc] GC(1) Pause Young (G1 Evacuation Pause) 63M->65M(256M) 40.631ms
[0.499s][info][gc] GC(2) Pause Young (G1 Evacuation Pause) 75M->77M(256M) 36.899ms
[0.550s][info][gc] GC(3) Pause Young (G1 Evacuation Pause) 103M->104M(256M) 23.946ms
[0.604s][info][gc] GC(4) Pause Initial Mark (G1 Humongous Allocation) 118M->118M(768M) 41.259ms
[0.604s][info][gc] GC(5) Concurrent Cycle
[0.737s][info][gc] GC(5) Pause Remark 173M->173M(768M) 1.856ms
[0.772s][info][gc] GC(5) Pause Cleanup 210M->176M(768M) 0.773ms
[0.794s][info][gc] GC(5) Concurrent Cycle 190.287ms
[0.873s][info][gc] GC(6) Pause Young (G1 Evacuation Pause) 179M->180M(768M) 75.056ms
[0.975s][info][gc] GC(7) Pause Young (G1 Evacuation Pause) 213M->216M(768M) 67.878ms
[1.199s][info][gc] GC(8) Pause Young (G1 Evacuation Pause) 309M->310M(768M) 133.679ms
[1.351s][info][gc] GC(9) Pause Initial Mark (G1 Humongous Allocation) 351M->353M(2100M) 105.331ms
[1.351s][info][gc] GC(10) Concurrent Cycle
[1.922s][info][gc] GC(11) Pause Young (G1 Evacuation Pause) 531M->532M(2100M) 235.754ms
[2.045s][info][gc] GC(10) Pause Remark 659M->659M(2100M) 1.456ms
[2.194s][info][gc] GC(10) Pause Cleanup 741M->665M(2100M) 1.861ms
```

Chapter 13: Java Collections

```
null
1
ss
Exception in thread "main" java.util.ConcurrentModificationException
  at java.base/java.util.ArrayList$Itr.checkForComodification(ArrayList.java:937)
  at java.base/java.util.ArrayList$Itr.next(ArrayList.java:891)
  at com.packt.javapath.ch13demo.ListDemo.iterate(ListDemo.java:29)
  at com.packt.javapath.ch13demo.ListDemo.main(ListDemo.java:10)
```

```
null
ss
1
A
B
null
ss
1
A
B
```

Chapter 14: Managing Collections and Arrays

```
[s10, s2, s1, s8, s7, s9, s4, s3, s6, s5]
```

```
[s1, s2, s5, s6, s3, s4, s9, s10, s7, s8]
```