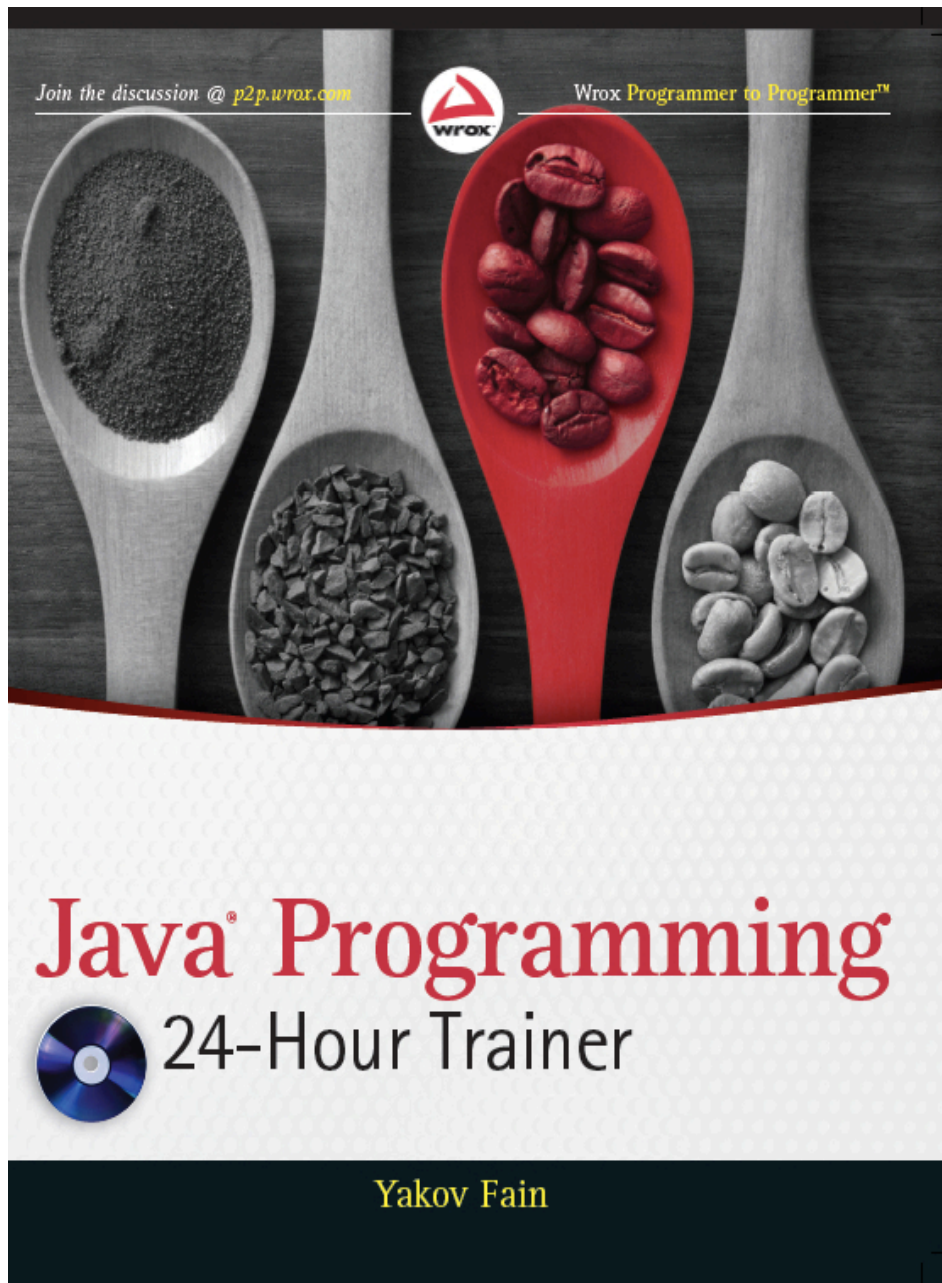




Java Programming

Unit 1

Your first Java Program
Eclipse IDE



During this training course we'll use the textbook
“Java Programming 24-Hour Trainer”
by Yakov Fain.

Why Learn Java?

- Large code base of already written applications
- 9 million of professional Java developers
- Lots of enterprise applications were developed and are being developed in Java
- As per Tiobe index <http://bit.ly/rItE> Java remains one of the most popular languages.
- The same program can run on different platforms
- Mobile Android development is done in Java

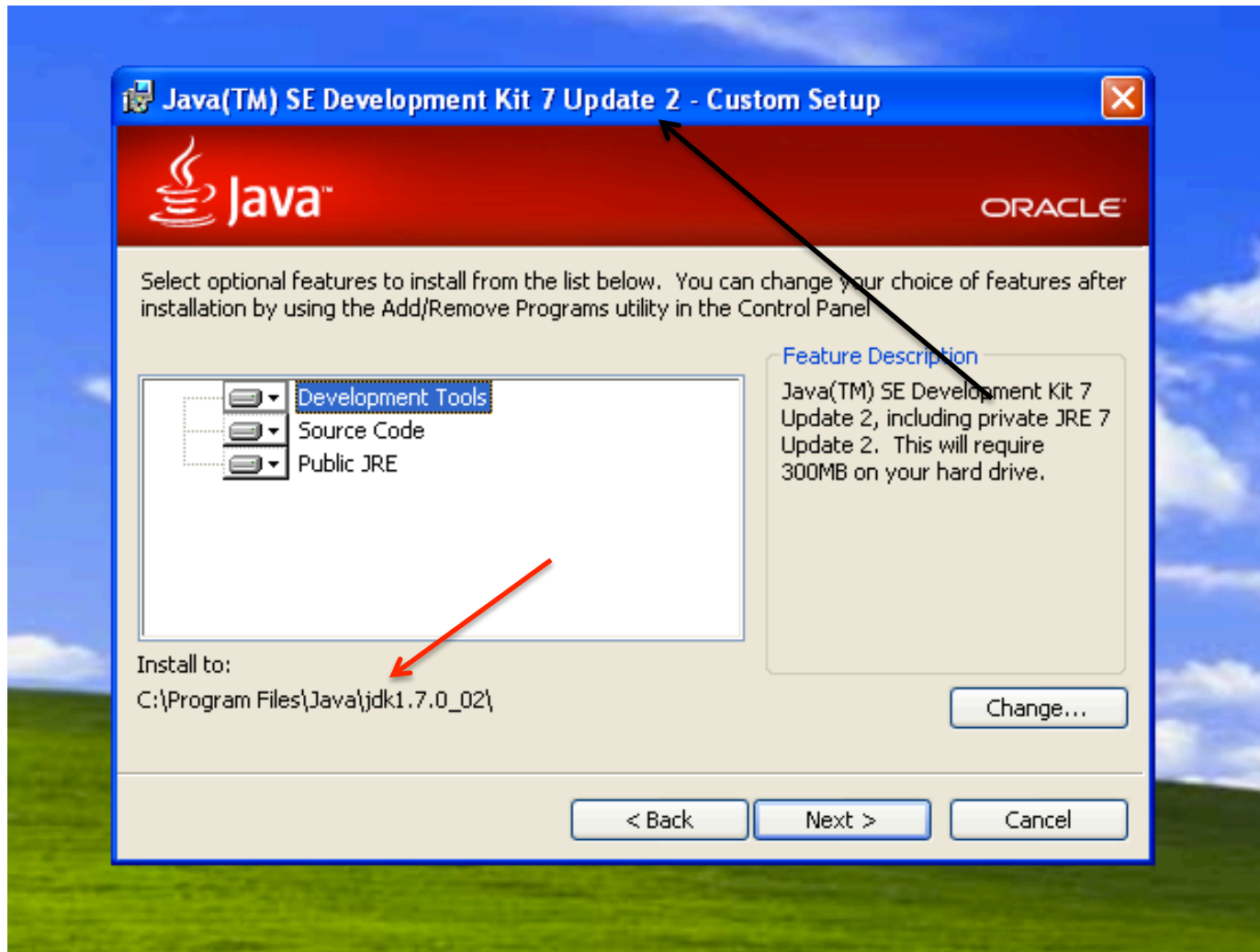
JDK and JRE

- Java Development Kit (**JDK**) is required to develop and run programs
- Java Runtime Environment (**JRE**) is required to run programs.
- Users must have JRE installed, developers – JDK
- JDK includes JRE

Java SE and Java EE

- Java SE: Java Standard Edition
- Java EE: Java Enterprise Edition (a.k.a. J2EE)
- Java EE includes a set of technologies built on top of Java SE: Servlets, JSP, JSF, EJB, JMS, et al.
- All Java programs *run* inside the Java Virtual Machine (JVM)

Installing JDK on Windows



Just press the buttons Next or Continue to complete the install.
The at the end, JavaFX 2 will be also installed, which won't be covered in this training.

Testing the installation

- Add the `bin` folder to the `PATH` system variable of your computer (for details see <http://java.com/en/download/help/path.xml>).
- Make sure that the newly installed version is being used. Open Command (or Terminal on MAC) window and type the following:

```
java -version
```

Walkthrough 1

1. Download Java SE 7 (Currently JDK 7 u40 – update 40) from <http://www.oracle.com/technetwork/java/javase/downloads>

Download JDK, not JRE. In Windows, download the X86 version of Java.

2. Install Java SE (for details, see Lesson 1 of the textbook).

To install Java SE 7 on MAC computers download the JDK dmg file from <http://jdk7.java.net/download.html> , run it and follow the instructions.

3. If after typing `java -version` in the Command window (Terminal window on MAC OS)- the reported version should be 1.7.... If not, you may need to modify the system variable `PATH` to include the bin directory of JDK.

JDK 8 will be released in October of 2013.

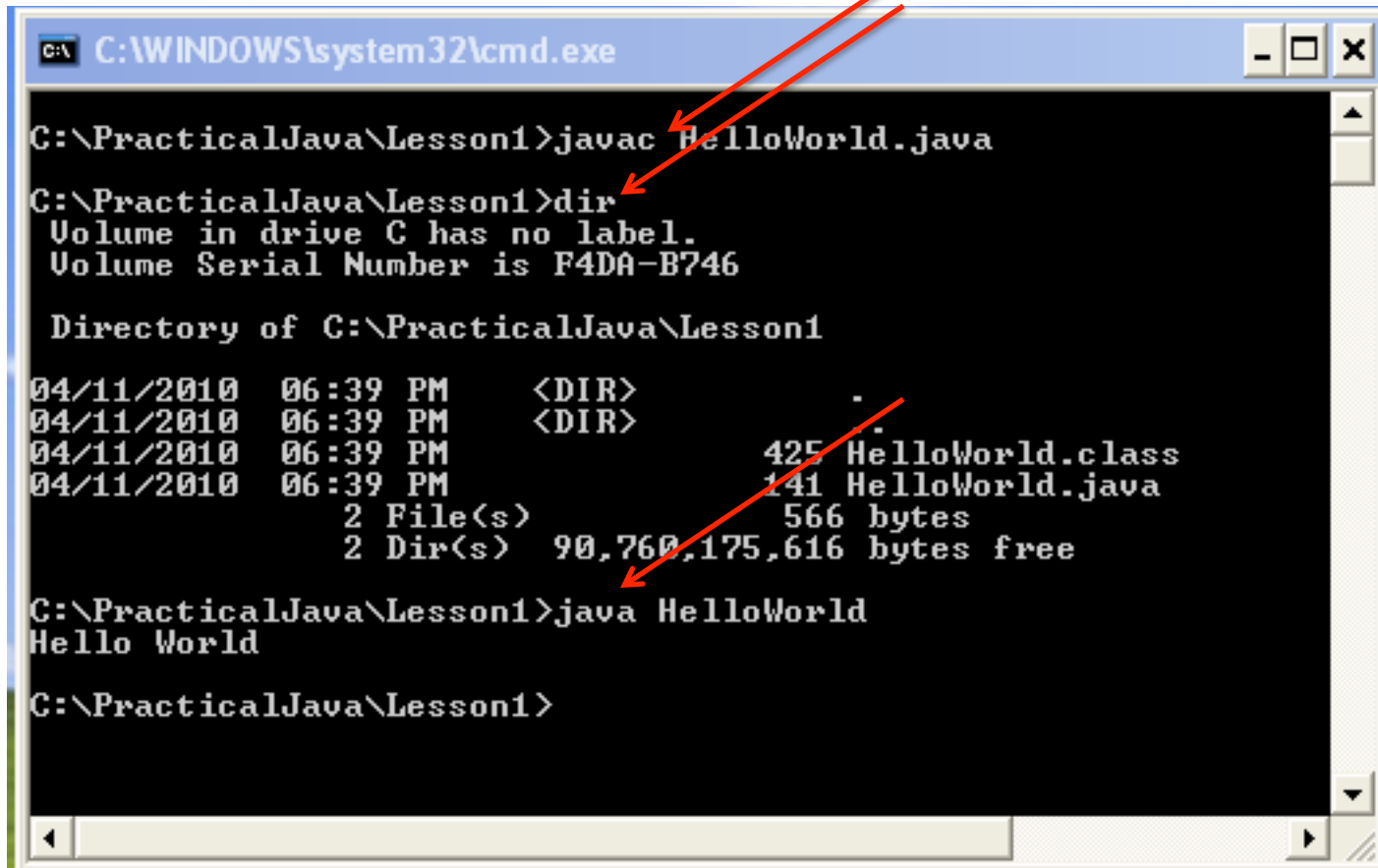
Three steps to run the Java program

- Write the program and save it in a file with the name that ends with `.java`, for example `HelloWorld.java`
- Compile the program using `javac` compiler, e.g. `javac HelloWorld.java`

This will create a file `HelloWorld.class`

- Run your program:
`java HelloWorld`

Compiling and running HelloWorld



A screenshot of a Windows command prompt window titled "C:\WINDOWS\system32\cmd.exe". The window shows the following commands and output:

```
C:\PracticalJava\Lesson1>javac HelloWorld.java
C:\PracticalJava\Lesson1>dir
Volume in drive C has no label.
Volume Serial Number is F4DA-B746

Directory of C:\PracticalJava\Lesson1
04/11/2010  06:39 PM    <DIR>          .
04/11/2010  06:39 PM    <DIR>          ..
04/11/2010  06:39 PM                425 HelloWorld.class
04/11/2010  06:39 PM                141 HelloWorld.java
                2 File(s)                566 bytes
                2 Dir(s)  90,760,175,616 bytes free

C:\PracticalJava\Lesson1>java HelloWorld
Hello World

C:\PracticalJava\Lesson1>
```

Three red arrows point to the following elements in the screenshot:

- The first arrow points to the `javac HelloWorld.java` command.
- The second arrow points to the `dir` command.
- The third arrow points to the `java HelloWorld` command.

HelloWorld.java

```
public class HelloWorld {  
  
    public static void main(String[] args){  
        System.out.println("Hello World");  
    }  
}
```

In Java, you start with creating a class. Our class is called `HelloWorld`.

A class can have methods. In this case it's called `main()`

You can run the class as a program if it has a method with the following *signature*

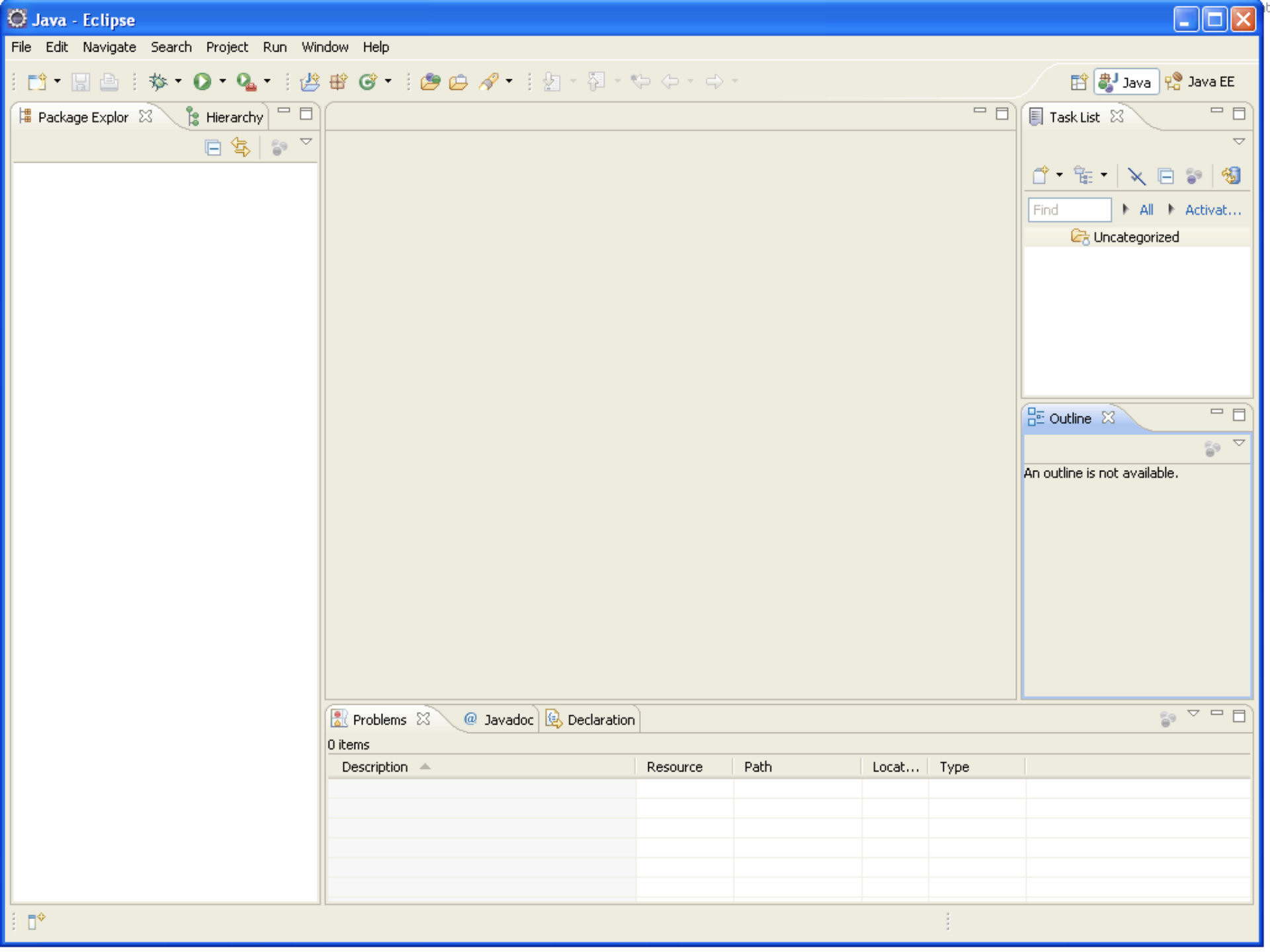
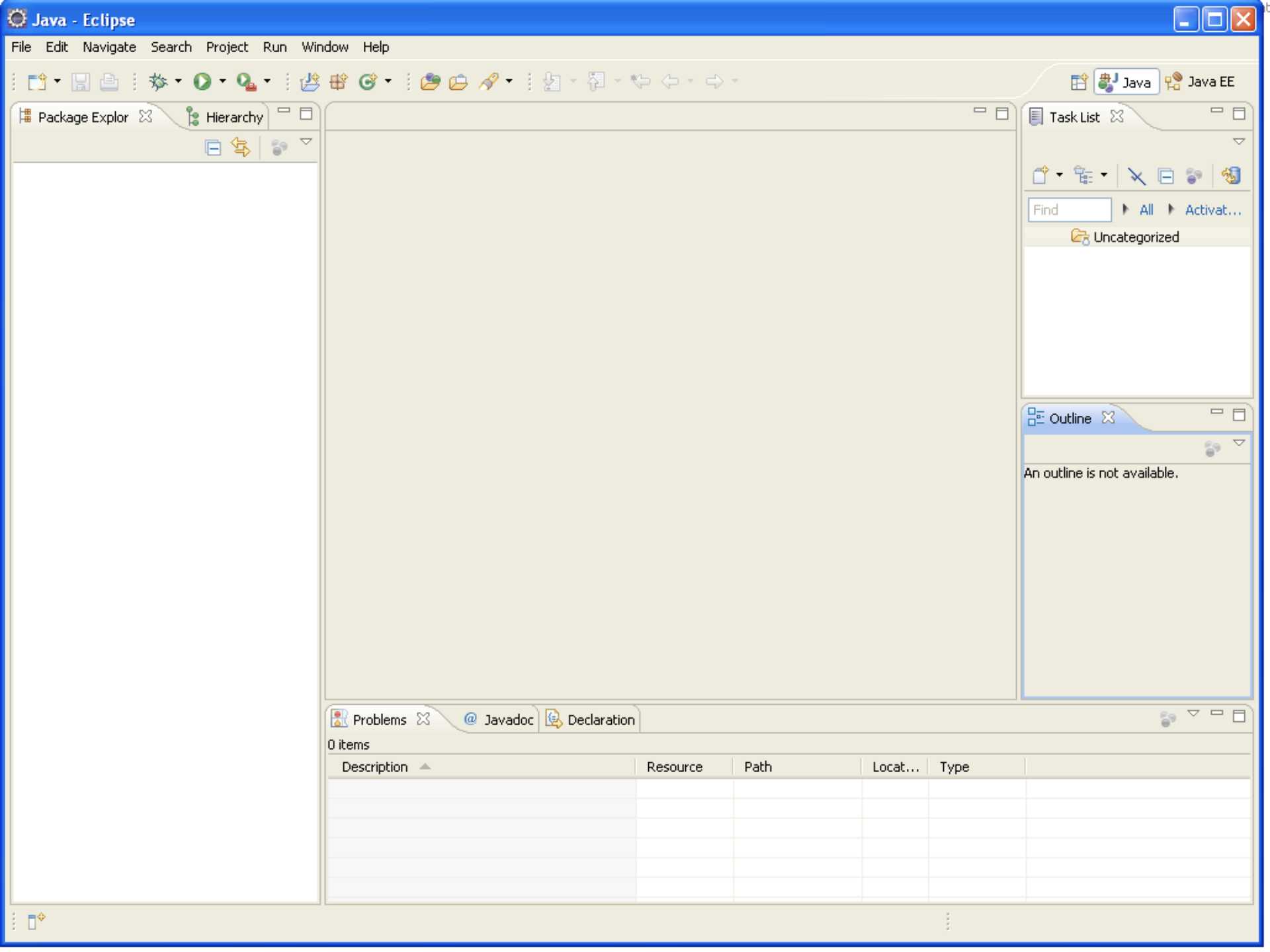
```
public static void main(String[] args)
```

Walkthrough 2

- Create a directory called *PracticalJava* and a subdirectory *Lesson1*.
- Open a plain text editor, e.g. Notepad, enter the text of the HelloWorld program from previous slide and save it as *HelloWorld.java* in the directory *Lesson1*.
- Open the command window, change the directory to *Lesson1* using the `cd` command.
- Compile (`javac`) and run (`java`) HelloWorld program – it has to print HelloWorld on the screen.

Eclipse IDE

- Integrated Development Environment (IDE) makes your work more productive
- Includes text editor, compiler, debugger, context-sensitive help, works with different Java SDKs
- Eclipse is the most widely used IDE
- Alternatives: IntelliJ IDEA (JetBrains), NetBeans (Oracle)



Eclipse IDE

- **Eclipse for Java EE Developers** comes with a number of plugins that will be used in second half of this course.
- The latest version of Eclipse IDE is called Kepler.
- Eclipse is also a platform for plugin development – additional features simplifying programming.

Walkthrough 3

- Download and install the latest Eclipse for Java EE (32 Bit version) from <http://www.eclipse.org/downloads>.

To install Eclipse simply unzip the content of the archive file you downloaded. To start Eclipse, double-click on Eclipse.exe (or Eclipse.app on MAC).

- Create a new Java project named Hello by using the menu File | New (see Lesson 2 in the textbook for details).
- Create a new Java class named HelloWorld and enter the code from Listing 1-1 of the textbook.
- Press **Control-S** to save and compile the code.
-
- Run the program – right-click on HelloWorld and select the Run As menu item.

Homework

1. Write a program that will print your name and address in the Console view of Eclipse, for example:

Alex Johnson
23 Main Street
New York, NY 10001
USA

2. Study all materials from Lesson 1 and 2 from the textbook

3. Create a new project in Eclipse called *Sale*

4. Enter, compile, and run the program *FriendsAndFamily*. Try to guess, how this program works.

5. Study Eclipse tutorial at <http://bit.ly/EJSCx>

```
import java.util.Scanner;

public class FriendsAndFamily {
    public static void main(String[] args) {

        Scanner input= new Scanner(System.in);

        do {
            System.out.println("\n Enter list price: " );
            double listPrice = input.nextDouble();

            System.out.println(" Enter discount %: " );
            int discount = input.nextInt();

            System.out.printf(" You'll pay only  $%2.2f", listPrice –
                                listPrice*discount/100);

        } while (true);
    }
}
```

Additional Read

- How to study online (the original, in Russian):
<http://www.stratoplan.ru/lib/break-the-ice/>

The English translation done by Google Translate: <http://bit.ly/10LXgrH>

- Eclipse IDE Workbench User Guide:
<http://help.eclipse.org/kepler/index.jsp>