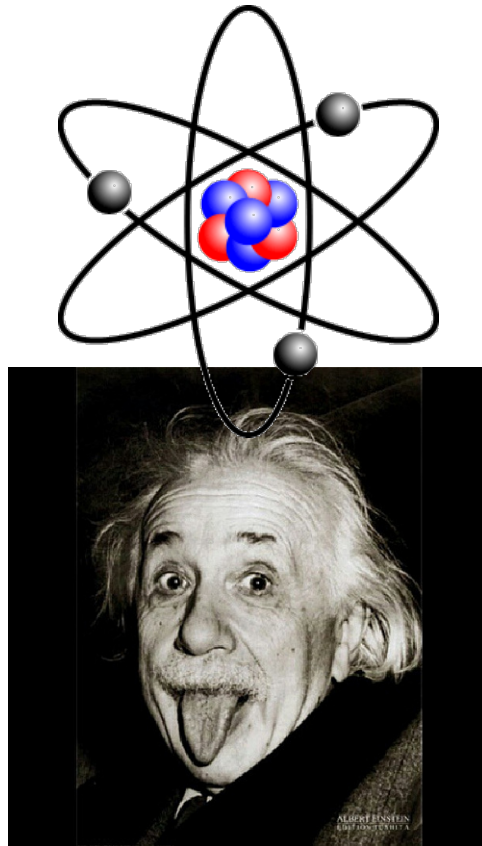


Teaching with NetBeans

NetBeans Day 2015
Munich
Karsten Sitterberg

Introducing – Myself

Physicist



Freelance



Certified since 2009

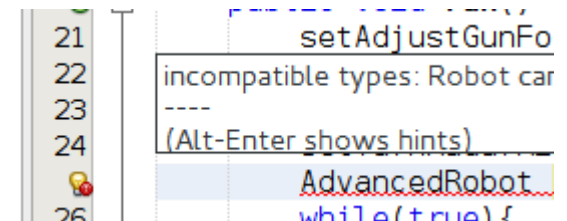
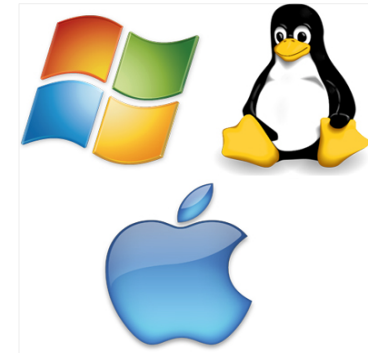
Currently

SCJA, OCJP, OCJD

Why Netbeans for teaching?

Thats Why!

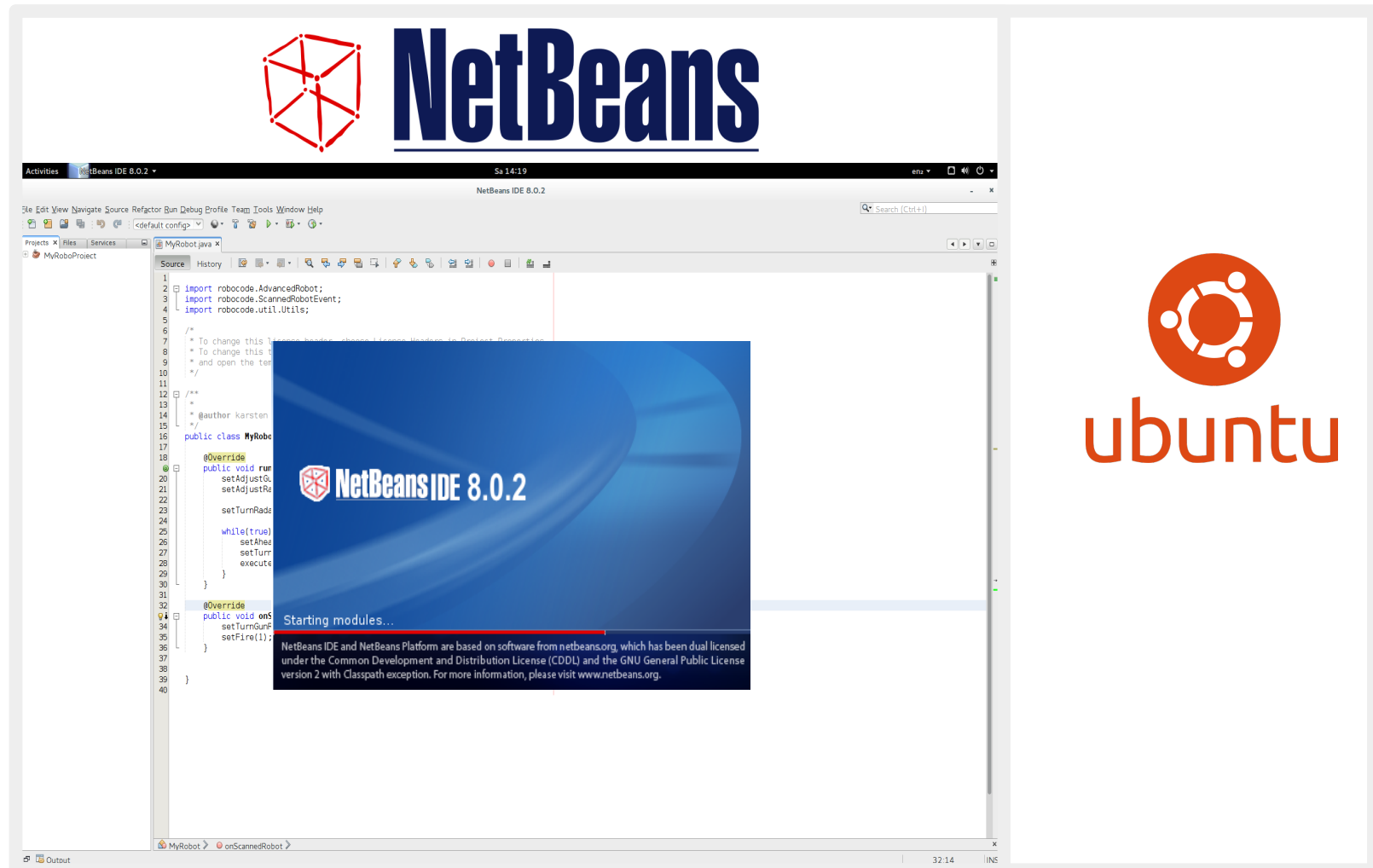
- Free/Open source
- Available on all major platforms
- Fast error recognition
- Simple: Install, start, get to work
- Everything included



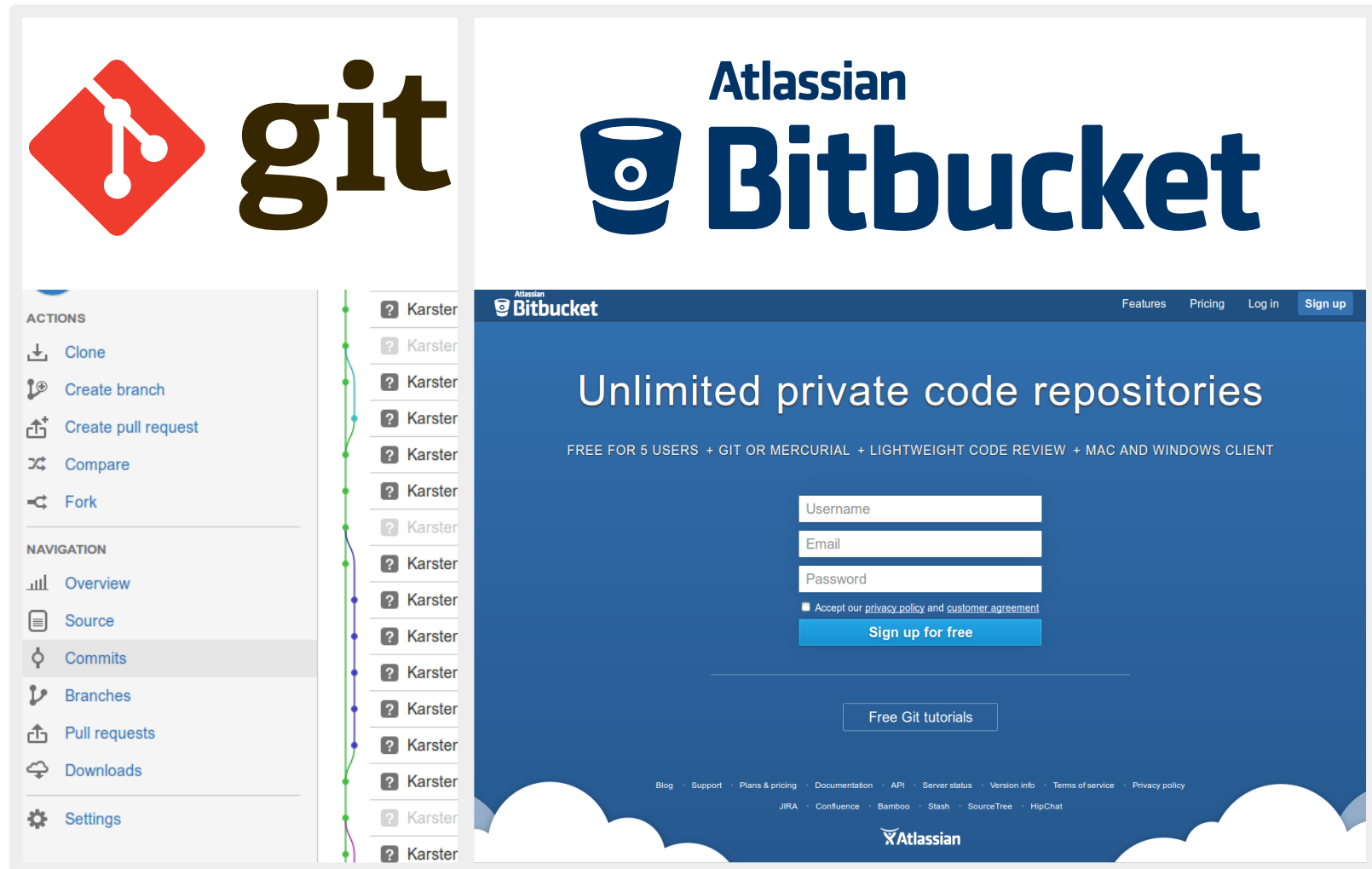
Teaching

The full stack

Tooling – Development



Tooling – Version Control



Tooling – Alternatives

BlueJ

A screenshot of the BlueJ IDE window titled "Square - shapes". The window shows a Java class named "Square" with the following code:

```
1 import java.awt.*;
2
3 /**
4  * A square that can be manipulated and th
5  *
6  * @author Michael Kolling and David J. B
7  * @version 2008.03.30
8  */
9
10 public class Square
11 {
12     private int size;
13     private int xPosition;
14     private int yPosition;
15     private String color;
16     private boolean isVisible;
17
18     /**
19      * Create a new square at default posi
20      */
21     public Square()
22     {
23         size = 30;
24         xPosition = 60;
25         yPosition = 50;
26         color = "red";
27         isVisible = false;
28     }
29 }
```

The code is displayed in a text editor with line numbers on the left. The window has a menu bar with "Class", "Edit", "Tools", and "Options". Below the menu bar are buttons for "Compile", "Undo", "Cut", "Copy", "Paste", and "Finish". At the bottom right of the window is a "saved" button.

Greenfoot



University of
Kent

Different People

New Developer

They need

- Fast progress
- Key concepts (OO, Inheritance)
- Enterprise environment

→ NetBeans

- Fast development cycle
(Error checking, Maven, ...)

Bundled sample projects

Enthusiasts

They have a goal

- Small hacks
- Programming minecraft

→ NetBeans

- Assistance
(Code completion, Javadoc, ...)

Robocode

Code Katas

Example: (Code) Kata

- Originally: Karate moves
 - Begin Simple
 - Get more Complex
 - Repeated until perfection
- Adapted for Programming
 - Code Kata



Example: (Code) Kata

Katas tailored to purpose

- Learn programming
- Learn language
- Learn features, i.e. Java8



Example: (Code) Kata

FizzBuzz

Objective: Learn Programming

- Write a program that prints the integers from 1 to 100.
- For multiples of 3 print "Fizz" instead
- For multiples of 5 print "Buzz".
- For multiples of both print "FizzBuzz".

Demo: (Code) Kata

FizzBuzz

```
1 package codekata;
2
3 public class FizzBuzzConcat {
4
5     public static void main(String[] args) {
6         for (int i = 1; i <= 100; i++) {
7             String output = "";
8             if (i % 3 == 0) {
9                 output += "Fizz";
10            }
11            if (i % 5 == 0) {
12                output += "Buzz";
13            }
14            if (output.equals("")) {
15                output += i;
16            }
17            System.out.println(output);
18        }
19    }
20 }
21
```

```
1 package codekata;
2
3 public class FizzBuzzSimple {
4
5     public static void main(String[] args) {
6         for (int i = 1; i <= 100; i++) {
7             if (i % 15 == 0) {
8                 System.out.println("FizzBuzz");
9             } else if (i % 3 == 0) {
10                System.out.println("Fizz");
11            } else if (i % 5 == 0) {
12                System.out.println("Buzz");
13            } else {
14                System.out.println(i);
15            }
16        }
17    }
18 }
19
20
```

```
1 package codekata;
2
3 import static java.util.stream.IntStream.rangeClosed;
4
5 public class FizzBuzzStreams {
6
7     public static void main(String... arguments) {
8         rangeClosed(1, 100)
9             .mapToObj(i -> {
10                 if (i % (3 * 5) == 0) {
11                     return "FizzBuzz";
12                 } else if (i % 3 == 0) {
13                     return "Fizz";
14                 } else if (i % 5 == 0) {
15                     return "Buzz";
16                 } else {
17                     return Integer.toString(i);
18                 }
19             })
20         .forEach(System.out::println);
21     }
22 }
```

Example: (Code) Kata

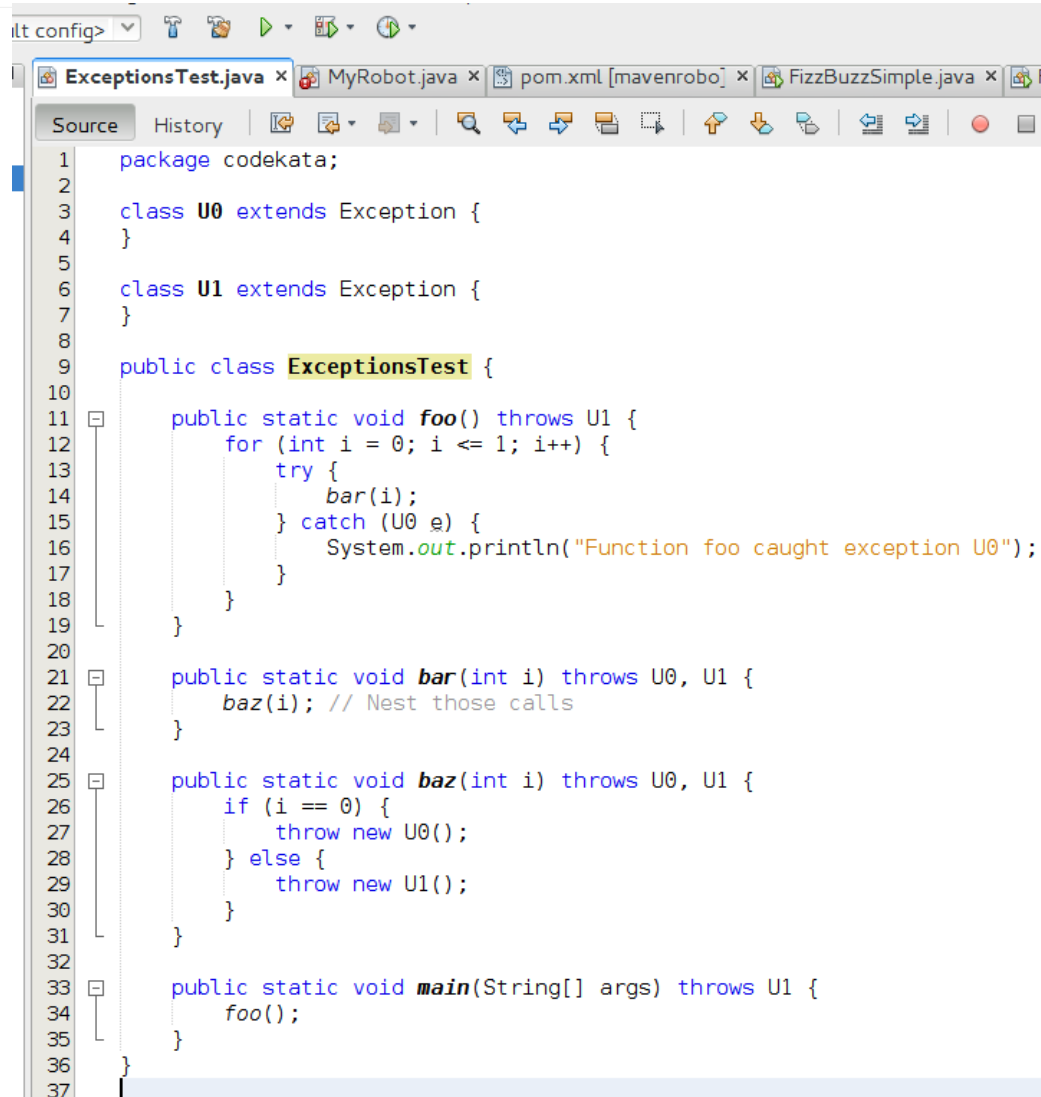
ExceptionTest

Objective: Learn Language

- Create exceptions, throw and catch them from several nested calls
 - Create two exception classes, U0 and U1
 - Have function foo call function bar twice
 - Have function bar call function baz
 - Function baz should throw exception U0 on its first call, exception U1 on its second.
 - Function foo should catch only exception U0, not U1.
- Show/describe what happens when the program is run.

Demo: (Code) Kata

ExceptionsTest



```
1 package codekata;
2
3 class U0 extends Exception {
4 }
5
6 class U1 extends Exception {
7 }
8
9 public class ExceptionsTest {
10
11     public static void foo() throws U1 {
12         for (int i = 0; i <= 1; i++) {
13             try {
14                 bar(i);
15             } catch (U0 e) {
16                 System.out.println("Function foo caught exception U0");
17             }
18         }
19     }
20
21     public static void bar(int i) throws U0, U1 {
22         baz(i); // Nest those calls
23     }
24
25     public static void baz(int i) throws U0, U1 {
26         if (i == 0) {
27             throw new U0();
28         } else {
29             throw new U1();
30         }
31     }
32
33     public static void main(String[] args) throws U1 {
34         foo();
35     }
36 }
37
```

Learning by playing

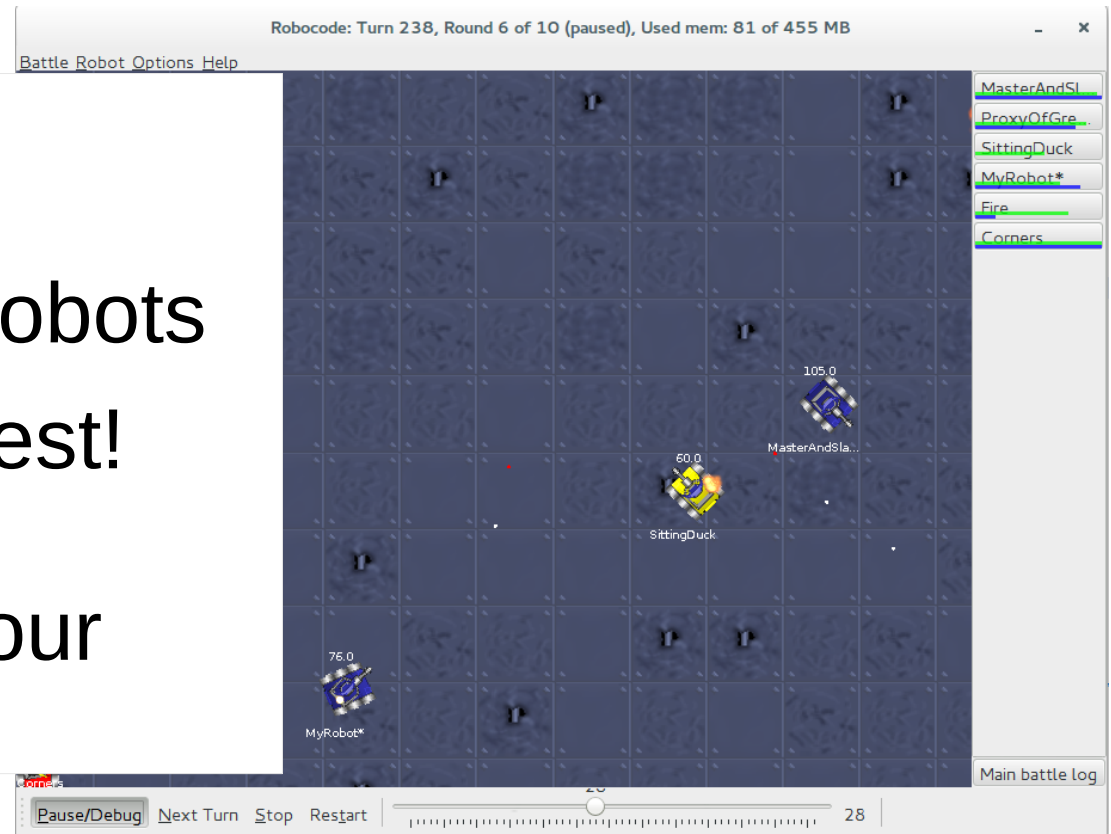
- Greenfoot
- Robocode
- Minecraft

Example: Robocode

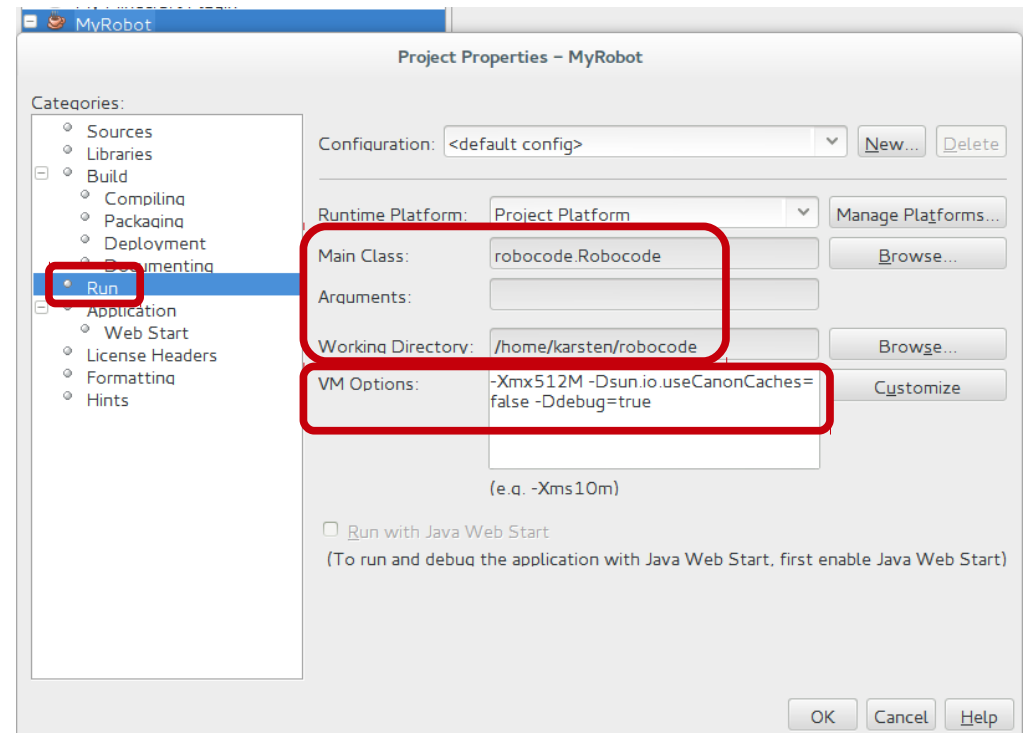
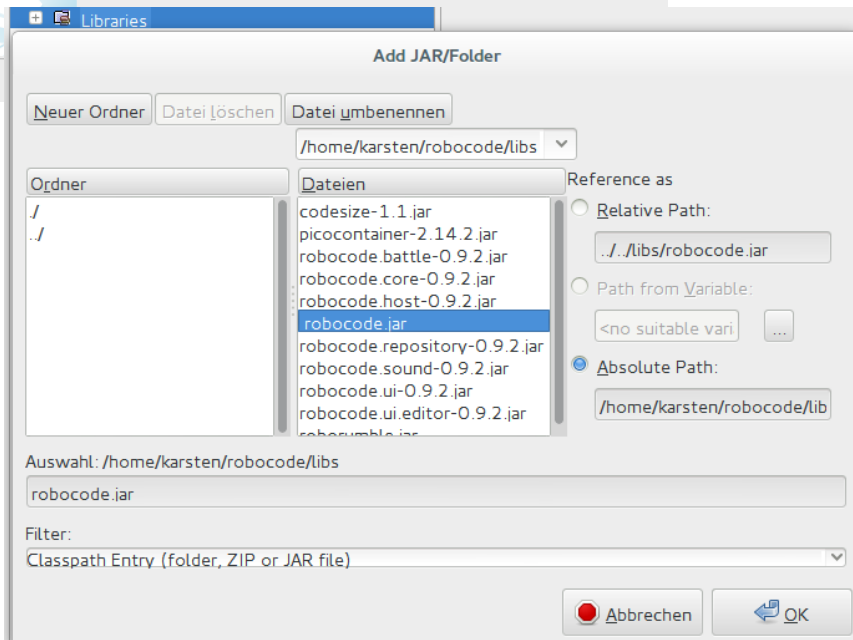
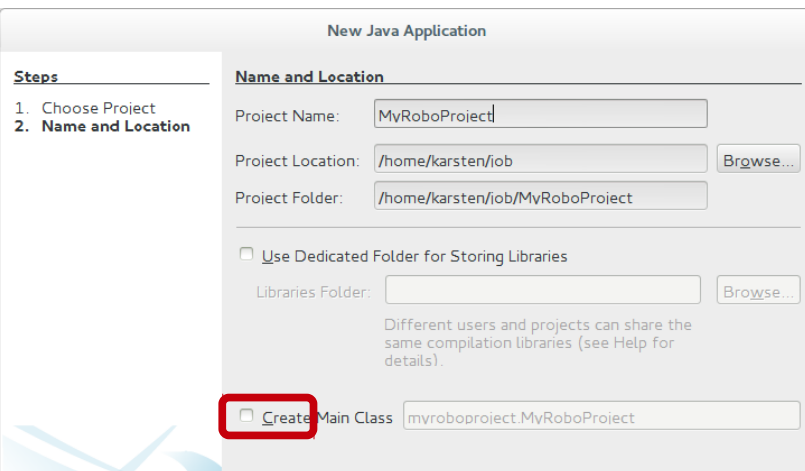


Example: Robocode

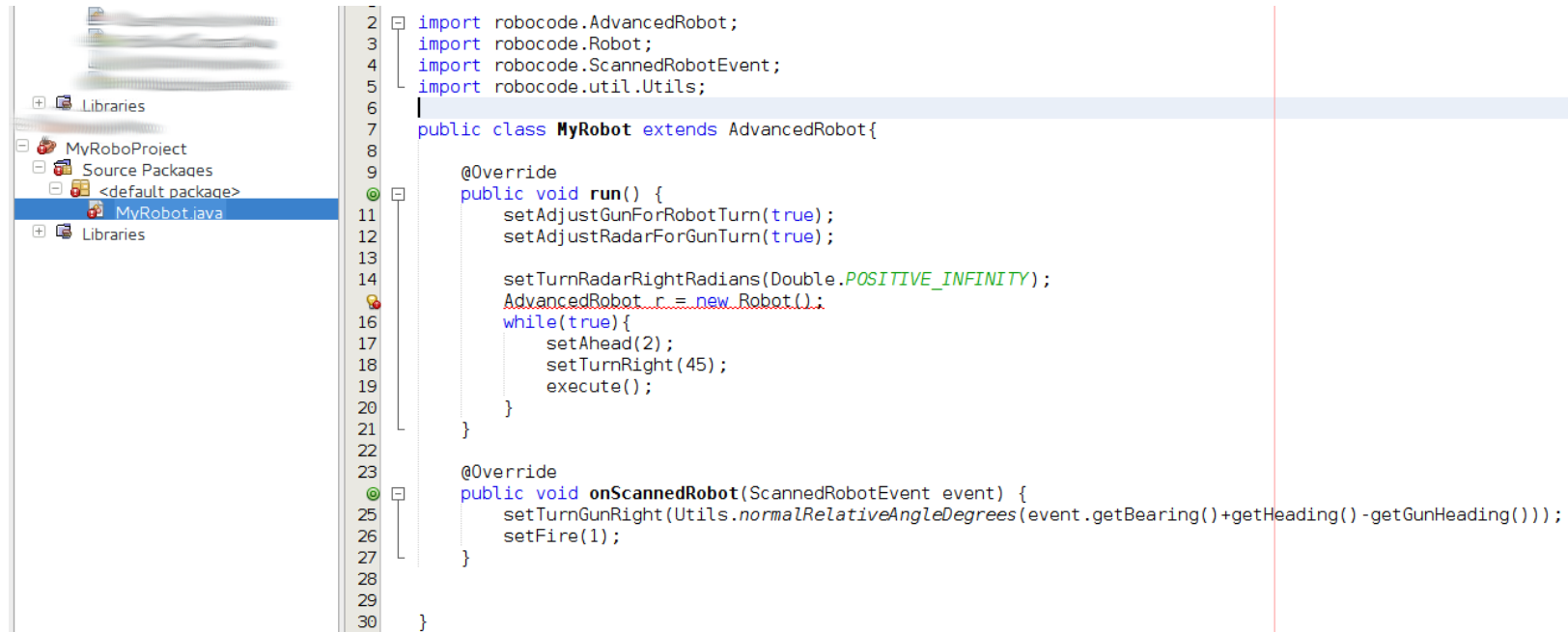
- Robot competition
- Program your own robots
→ Survival of the fittest!
- Share robots with your friends



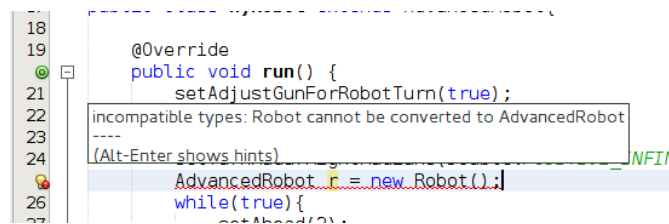
Demo: Robocode



Demo: Robocode

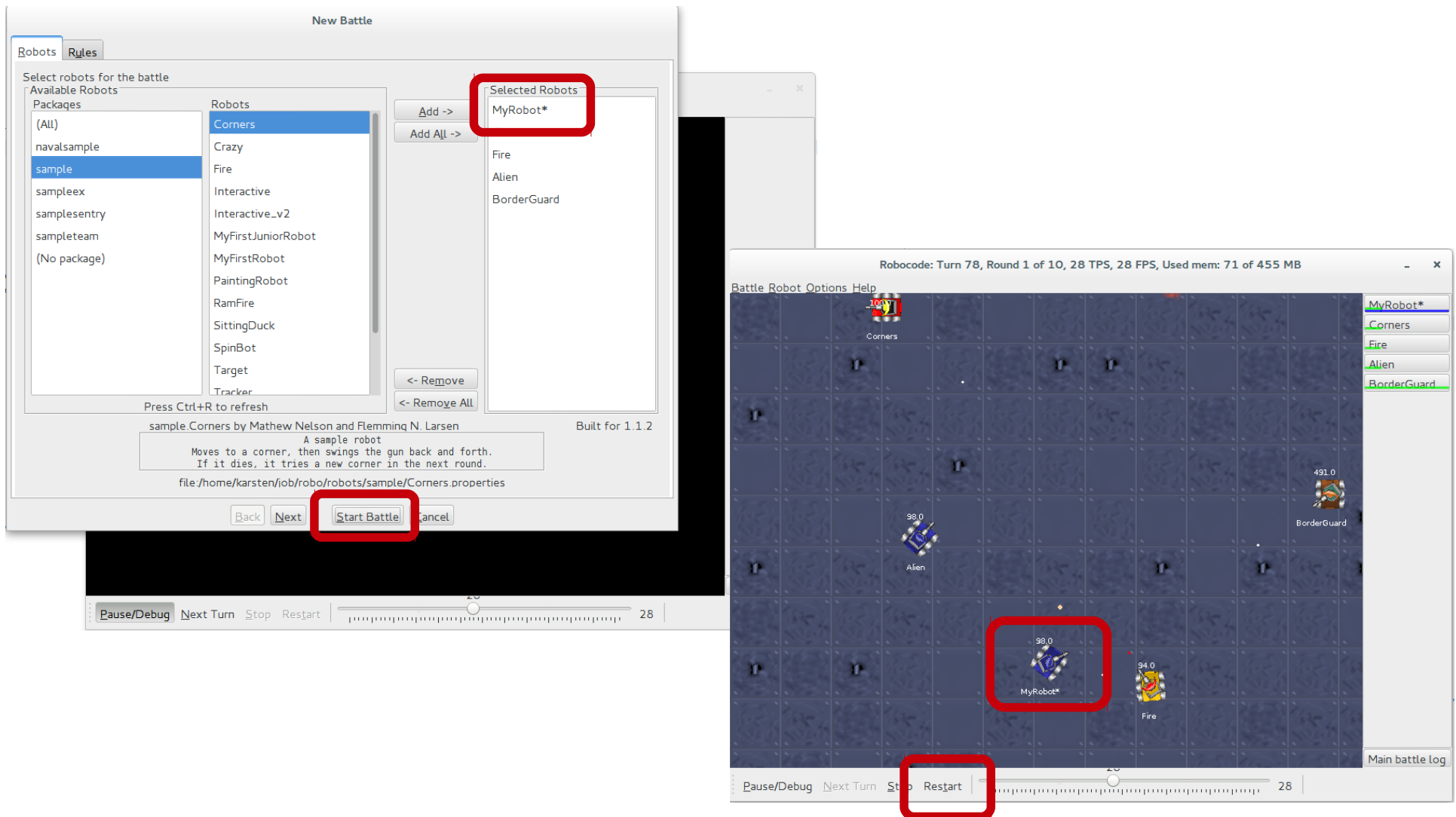


```
2  import robocode.AdvancedRobot;
3  import robocode.Robot;
4  import robocode.ScannedRobotEvent;
5  import robocode.util.Utils;
6
7  public class MyRobot extends AdvancedRobot{
8
9      @Override
10     public void run() {
11         setAdjustGunForRobotTurn(true);
12         setAdjustRadarForGunTurn(true);
13
14         setTurnRadarRightRadians(Double.POSITIVE_INFINITY);
15         AdvancedRobot r = new Robot();
16         while(true){
17             setAhead(2);
18             setTurnRight(45);
19             execute();
20         }
21     }
22
23     @Override
24     public void onScannedRobot(ScannedRobotEvent event) {
25         setTurnGunRight(Utils.normalRelativeAngleDegrees(event.getBearing()+getHeading()-getGunHeading()));
26         setFire(1);
27     }
28
29
30 }
```



```
18
19
20     @Override
21     public void run() {
22         setAdjustGunForRobotTurn(true);
23         incompatible types: Robot cannot be converted to AdvancedRobot
24         -----
25         (Alt-Enter shows hints)
26         AdvancedRobot r = new Robot();
27         while(true){
28             setAhead(2);
```

Demo: Robocode



Other training material

- Sample projects on Bitbucket/GitHub
- Oracle learning trails
- ... and Netbeans brings own bundled projects
+ Appserver for JavaEE

Demo: Netbeans samples

The image is a composite of three screenshots from the NetBeans IDE, demonstrating the process of creating and running a sample application.

New Project Dialog: The 'New Project' window is shown with the 'Choose Project' tab selected. In the 'Categories' list on the left, 'Java EE' is expanded, and 'Web Services' is selected. The 'Projects' list on the right shows various samples, with 'Absolute Ordering of Web Fragments Servlet (Java EE 7)' selected. The 'Description' field at the bottom states: 'Demonstrates how to use web fragments with absolute ordering.'

Web Socket JavaScript Echo Client - Chromium: A browser window titled 'Web Socket JavaScript Echo Client - Chromium' is shown. The address bar displays 'localhost:8080/websocket-echo/'. The page content includes the title 'WebSocket Echo Client', a 'Press me' button, and a text input field containing 'Hello WebSocket!'. Below the input field, the status 'CONNECTED' is displayed, followed by 'SENT: Hello WebSocket!' and 'RECEIVED: Hello WebSocket!'.

Select deployment server Dialog: The 'Select deployment server' window is shown. The 'Server' dropdown menu is set to 'GlassFish Server'. The 'Do not remember - Use only for one-time deployment' radio button is selected. Other options include 'Remember in Current IDE Session', 'Remember Permanently', and 'Ignore, I don't want IDE managed deployment'. The 'OK' and 'Cancel' buttons are at the bottom.

Testimonials/Feedback

'not just java'
→ JavaScript/PHP,
HTML/CSS, Databases,
C/C++, ...



Armel Nene
@armelnene



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Teaching [#JSON](#) and [#jQuery](#) [#mobile](#) to
teens using [#NetBeans](#), building a world
cup great data source
openfootball.github.io

📍 Stevenage, England



David Bell
@dtbell99



Follow

How [#netbeans](#) is helping me learn [#java](#)
8 features: alt+enter !! Go lambda
conversion!!



RETWEETS

3

FAVORITES

2



1:45 PM - 5 Mar 2015

Python would be good
for teaching

Recommendations

Books:

- Head First series (i.e. Java, Programming)

Follow @netbeans on twitter!

Online resources:

- Netbeans.org (+trials)
- Rosettacode.com
- Greenfoot.org
- Robocode.sourceforge.net

Join local community/JUG

Thank you!

Questions?