Juniorprogrammierer.de

Java 2: Typecasting & Operators

2024/25 – Sascha Stojanovic

Agenda

- Most important types
- Typecasting I +II
- Operators I + II + III
- Homework

Most important types

```
int myNum = 5; // Integer (whole number)
double myDoubleNum = 5.99; // Double point number
boolean myBool = true; // Boolean
String myText = "Hello"; // String
```

Typecasting I

- Converting one datatype into another
- For instance, taking something small and put it in something big (e.g. char => String) or the other way around
- In Java two typecasting exists
  - Widening casting
  - Narrowing casting

Typecasting II

- Widening Casting
  - Java does for us
  - Pouring a smaller cup into a bigger one (no spill)

```
public class Main {
  public static void main(String[] args) {
    int numInt = 1;
    double numDouble = numInt;
    System.out.println(numInt);
    System.out.println(numDouble);
  }
}
```

`byte` -> `short` -> `char` -> `int` -> `long` -> `float` -> `double`

- Narrowing Casting
  - You manually shrink data
  - Pouring from bigger cup into smaller one

```
public class Main {
  public static void main(String[] args) {
    double numDouble = 1.78;
    int numInt = (int) numDouble;

    System.out.println(numInt);
    System.out.println(numDouble);
  }
}
```

`double` -> `float` -> `long` -> `int` -> `char` -> `short` -> `byte`

Operators I

- Arithmetik Operators
  - Plus
  - Minus
  - Mulitiplator
  - Division
  - Modulus => left over after division
  - Inkrement = adding 1
  - Decrement = substracting 1

```java
public class Main {
  public static void main(String[] args) {
    //pluss operator
    int pluss = 10 + 5;

    //minus operator
    int minus = 10 - 5;

    //multiplication operator
    int mulit = 10 * 5;

    //division operator
    int div = 10 / 5;

    //modulus
    int mod = 10 % 3;

    //inkrement
    int inkr = 5;
    inkr ++;

    //decrement
    int decr = 5;
    decr --;

    System.out.println(pluss);
    System.out.println(minus);
    System.out.println(mulit);
    System.out.println("div" + div);
    System.out.println(mod);
    System.out.println(inkr);
    System.out.println(decr);
  }
}
```

Operators II

- Comparison Operators
  - Equals
  - Smaller
  - Bigger
  - Smaller Equal
  - Bigger Equal

```
public class Main {
  public static void main(String[] args) {
    int num = 10;
    System.out.println(num == 10);
    System.out.println(num >= 10);
    System.out.println(num <= 10);
    System.out.println(num > 5);
    System.out.println(num < 20);
  }
}
```

Operators III

- Logical Operators
  - And
  - Or
  - Not

```java
public class Main {
  public static void main(String[] args) {
    int num = 10;
    System.out.println(num > 5 && num < 20);
    System.out.println(num > 5 || num < 20);
    System.out.println(!(num < 10));
  }
}
```

Homework

- Create an arcade.java.
  - You are in an arcade. Int maxScore = 500. You achived int personalScore = 444. What is your float percentage of maxScore. The formular is personalScore/maxScore * 100.
- Create an operators_testing.java
  - Look at slides operators I and II
  - Play around by writing them down and look at the result