

# CODAPPS

## *Coding Cheatsheet*

Clément Levallois

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# Variables and objects

General rules:

- The type of the variable (String, Long, Boolean...) start with a capital letter.
- variable names start without a capital letter.

## String variables store text

*Creating a String variable and giving it a value*

```
String title = "Welcome to my app"; ①
```

① Don't forget the double quotes " "!

## Integer variables store round numbers

*Creating an Integer variable and giving it a value*

```
Integer classSize = 32;  
int anotherClassSize = 25; ①
```

① `int` is like `Integer`. It takes less memory but is sometimes less convenient to use. Also, note: no double quote!! Double quotes are just for `String`.

## Float and Double variables store decimals

*Double is like Float but can store decimals with a lot more precision*

*Creating Float and Double variables*

```
Float pi = 3.14f; ①  
Double piVeryPrecise = 3.141592653589793238462643383279502884197169d; ②
```

① Don't forget the `f` letter at the end of your number. `float` or `Float` can be used, `float` takes less memory than `Float`.

② Don't forget the `d` letter at the end of your number. `double` or `Double` can be used, `double` takes less memory than `Double`.

## Long stores big round numbers

*Long is like Integer but can store bigger numbers*

*Creating a Long variable*

```
Long millisecondsSinceLastMonth = 3644340304304141; ①
```

- ① Don't forget the **l** letter at the end of your number. **long** or **Long** can be used, **long** takes less memory than **Long** but can be inconvenient to use.

## Boolean stores true / false values

*This seems not very useful but actually we use it quite often*

*Creating a Boolean variable*

```
Boolean hasAStudentCard = true; ①
```

- ① A classic mistake is to write `"true"` (with double quotes, which is incorrect). Boolean values are **true** or **false** without double quotes. **boolean** can be used instead of **Boolean**: less memory but also less convenient to use in some cases.

## Objects: to create and store a variety of things

*A variety of objects exist - use them to create and store things*

*Creating an Object storing a Date*

```
Date dateStartOfTheGame; ①  
dateStartOfTheGame = new Date(); ②  
Date dateEndOfTheGame = new Date(); ③
```

- ① An object `dateStartOfTheGame` of type `Date` is declared. It is `null` at the moment.  
② `dateStartOfTheGame` is instantiated: an instance of it is created.  
③ Shortcut: a variable can be declared and instantiated in one line of code.

# Methods

## Creating (defining) a method

### Creating a method adding the VAT to a price

```
private Float addFrenchVAT(Float priceWithoutVAT) { ①
    Float priceWithVAT; ②
    //the regular rate of the VAT in France is 20% so we multiply the price by 1.20 to
    find the new price ③
    priceWithVAT = priceWithoutVAT * 1.20; ②
    return priceWithVAT; ②
}④
```

- ① title of the method you create, then the method start at the opening curly brace {.
- ② the method itself
- ③ an explanation, not some code! The line starts with // to show this is some explanations for humans like you and me, not some code in our app.
- ④ this closing curly brace signals the end of the definition of the method.

### Creating a method which returns nothing

```
Float price = 5.99f; ①
private void addFrenchVAT() { ②
    price = price * 1.20; ③
} ④
```

- ① we have created a variable named `price`
- ② now we define a method like the one before in this lesson, except that:
  - `Float` has been replaced by `void`, which is an English term meaning "nothing"
  - it has no parameter: there is nothing in the parenthesis ( )
- ③ the method does one thing: it multiplies the value of the variable `price` by 1.20
- ④ this is the end of the method. There is no "return" statement.

## Classes

A class is just a file in your app. It contains the variables and the methods that you want. It looks like:

A simple example of what a class looks like

```
package net.clementvallois.codapps.myfirstapp ①

public class Form1 { ②

    Integer scorePlayer; ③

    public void addOneToScore() {
        scorePlayer = scorePlayer + 1;
    }

} ④
```

- ① a class always starts with the name of the package where it belongs
- ② the name of the class (**Form1**) should have the same name as your file where it is written (here the file would be Form1.java)
- ③ this is a variable which can be used anywhere in the class.
- ④ don't forget the closing curly brace of the class!

Instantiating a Form in MyApplication.java

```
public void start() {
    Form1 myForm1 = new Form1(); ①
    myForm1.show(); ②
}
```

- ① We instantiate our Form1
- ② **And now we can use methods of this Form1.** Here, we use the method **show()** which has for effect to display the **Form** on screen.

Another common way to instantiate an object is this one:

Getting the present time and storing it in a variable

```
public void start() {
    LocalDateTime timeNow = LocalDateTime.now(); ①
}
```

- ① This stores the time at the moment when this line of code is executed, in the variable **timeNow**

## If... conditional statements

### conditional statements for numbers

```
Float priceItemInEuros;
priceItemInEuros = 5.99f;
Label productLabel = new Label();
if (priceItemInEuros < 6) {
    productLabel.setText("cheap product!");
}
if (priceItemInEuros == 5.99) { ①
    productLabel.setText("the price is exactly 5.99");
}
if (priceItemInEuros != 5.99) { ②
    productLabel.setText("the price is different from 5.99");
}
if (priceItemInEuros <= 6) {
    productLabel.setText("the price is under or equal to 6!");
}
if (priceItemInEuros >= 7) {
    productLabel.setText("the price is above or equal to 6!");
}
```

## conditional statements about text

It would be a **mistake** to write:

*Mistake! Don't do this!*

```
String playerName1 = "Tristan";
String playerName2 = "Tristan";

if (playerName1 == playerName2) { ①
    messageLabel.setText("the two players have the same name!");
}
```

① Using `==` to compare two Strings is incorrect.

- Your build will not fail, but even if the two players have the same name it might say it's false!
- when comparing two String, you should do like below:

## Different kinds of conditional statements about text

```
String playerName1 = "Tristan";
String playerName2 = "Touni";

if (playerName1.equals(playerName2)) {
    messageLabel.setText("the two players have the same name!");
}
if (!playerName1.equals(playerName2)) { ①
    messageLabel.setText("the two players have different names!");
}
```

① note the ! in front

## conditional statements about several items

*A statement with two conditions which need both to be true*

```
Float priceItemInEuros;
priceItemInEuros = 5.99f;
Label productLabel = new Label();
if (priceItemInEuros < 6 & priceItem > 2) { ①
    productLabel.setText("relatively cheap product!");
}
```

① the & means "and". The two conditions: `priceItemInEuros < 6` **and** `priceItem > 2` both need to be true for the statement `productLabel.setText("relatively cheap product!");` to be executed.

*A statement with two conditions where just either one of the two needs to be true*

```
Float priceItemInEuros;
priceItemInEuros = 5.99f;
Label productLabel = new Label();
if (priceItemInEuros < 6 | priceItem > 2) { ①
    productLabel.setText("relatively cheap product!");
}
```

① the | means "or". Just one of the two conditions: `priceItemInEuros < 6` **or** `priceItem > 2` needs to be true for the statement `productLabel.setText("relatively cheap product!");` to be executed.

# Loops

*Writing a loop*

```
for (int i = 0; i<100; i = i+1){
    System.out.println("I looped " + i) + " times.");
}
```



*A loop with several ifs inside*

```
for (int i = 0; i<100; i = i+1){
    System.out.println("I looped " + i + " times.");
    if (i == 0) {
        System.out.println("We just started the loops. This is going to be a long
journey.");
    }
    if (i == 50) {
        System.out.println("Half way already!");
    }
    if (i == 99) {
        System.out.println("This was the last loop. Bye!");
    }
}
```

## ArrayLists

*Creating a list and adding objects to it*

```
ArrayList<Balloon> balloons = new ArrayList();
for (int i = 0; i<20000;i = i+1){
    Balloon myBalloon = new Balloon();
    balloons.add(myBalloon);
}
```

*Looping through a list to show the names of all players*

```
for (String player: playerNames) { ①
    Label myLabel = new Label();
    myLabel.setText(player);
    myForm.add(myLabel)
}
```

① here we assume that we had created before an ArrayList of player names.