Kotlin Basic Syntax

Sources: http://kotlinlang.org/docs/reference/basic-syntax.html
http://petersommerhoff.com/dev/kotlin/kotlin-for-java-devs/

Agenda

- Basic Types
- Local Variables (val & var)
- Functions
- Control Flow (if, when, for, while)
- Strings & String Templates
- Ranges (and the *in* operator)
- Type Checks & Casts
- Null Safety
- Comments

Basic Types

Numbers, characters and booleans.

Basic Types

In Kotlin, everything is an object in the sense that we can call member functions and properties on any variable.

Basic Types - Numbers

Type	Bit width
Double	64
Float	32
Long	64
Int	32
Short	16
Byte	8

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```
val doubleNumber: Double = 100.45
val floatNumber: Float = 100.45f
val longNumber: Long = 100
val intNumber: Int = 100
val shortNumber: Short = 100
val byteNumber: Byte = 100
```

Explicitly defining a numeric type

Basic Types - Numbers

Type inference

```
val doubleNumber = 100.45
val floatNumber = 100.45f
val longNumber = 100L
val intNumber = 100
val shortNumber = 100
val byteNumber = 100
```

Basic Types - Numbers

Type inference

```
val doubleNumber = 100.45
val floatNumber = 100.45f
val longNumber = 100L
val intNumber = 100
val shortNumber = 100
val byteNumber = 100
```

```
println("doubleNumber type is: " + doubleNumber.javaClass)
println("floatNumber type is:  " + floatNumber.javaClass)
println("longNumber type is:   " + longNumber.javaClass)
println("intNumber type is:    " + intNumber.javaClass)
println("shortNumber type is:  " + shortNumber.javaClass)
println("byteNumber type is:   " + byteNumber.javaClass)
```

Console

<terminated> Config - Main.kt [Java Appl

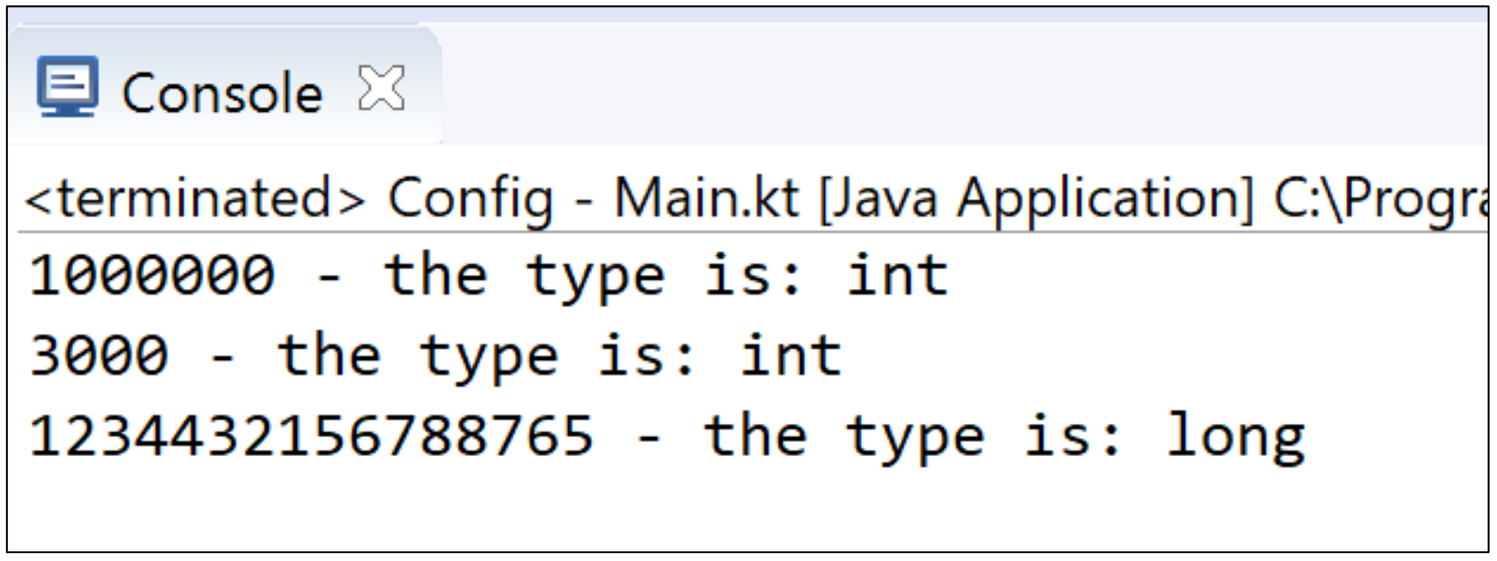
```
doubleNumber type is: double
floatNumber type is:  float
longNumber type is:   long
intNumber type is:    int
shortNumber type is:  int
byteNumber type is:   int
```

Basic Types - Numbers

```
val oneMillion = 1_000_000
val threeThousand = 3_000
val creditCardNumber = 1234_4321_5678_8765

fun main(args : Array<String>)
{
  println("" + oneMillion + " - the type is: " + oneMillion.javaClass)
  println("" + threeThousand + " - the type is: " + threeThousand.javaClass)
  println("" + creditCardNumber + " - the type is: " + creditCardNumber.javaClass)
}
```

You can use underscores to make number constants more readable.



Basic Types – Numbers: Explicit Conversions

In Kotlin, there are no implicit widening conversions for numbers i.e. smaller types (e.g. Byte) are not subtypes of bigger ones (e.g. Int)

→ smaller types are NOT implicitly converted to bigger types.

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→ smaller types are NOT implicitly converted to bigger types.

```
val byteNumber: Byte = 10          //static type check: OK
val intNumber: Int = byteNumber //syntax error
```

BUT, we can use explicit conversions to widen numbers

```
val byteNumber: Byte = 10          //static type check: OK
val intNumber: Int = byteNumber.toInt()   //OK
```

Basic Types – Numbers: Explicit Conversions

Every number type supports the following conversions:

- `toByte(): Byte`
- `toShort(): Short`
- `toInt(): Int`
- `toLong(): Long`
- `toFloat(): Float`
- `toDouble(): Double`
- `toChar(): Char`

```
//Explicit Conversion
val intNumber: Int = byteNumber.toInt()
val floatNumber: Float = byteNumber.toFloat()
```

Basic Types – Characters

```
val aChar = 'a'
val bChar: Char = 'b'

fun main(args : Array<String>)
{
  println("" + aChar + " - the type is: " + aChar.javaClass)
  println("" + bChar + " - the type is: " + bChar.javaClass)
}
```

Console

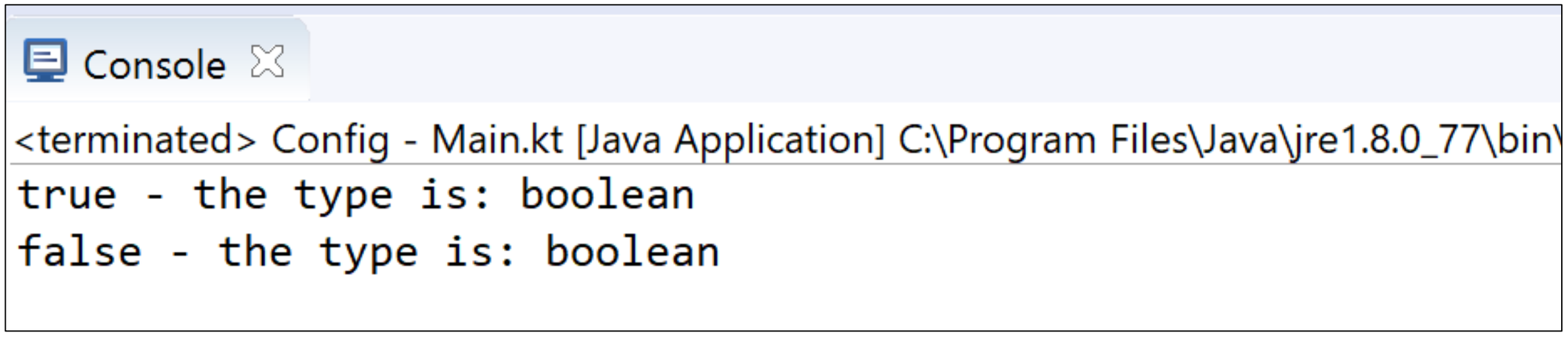
<terminated> Config - Main.kt [Java Application] C:\Program Files\Java\jre1.8.0

```
a - the type is: char
b - the type is: char
```

Basic Types – Booleans

```
val aFlag = true
val bFlag: Boolean = false

fun main(args : Array<String>)
{
  println("" + aFlag + " - the type is: " + aFlag.javaClass)
  println("" + bFlag + " - the type is: " + bFlag.javaClass)
}
```



Basic Types – Escape Characters

Special characters can be escaped using a backslash:

\t \b \n \r \’ \“ \\ \$

```
val aFlag= true
val bFlag: Boolean = false

fun main(args : Array<String>)
{
  println("" + aFlag + " - the type is: \n\t\t" + aFlag.javaClass)
  println("" + bFlag + " - the type is: \n\t\t" + bFlag.javaClass)
}
```

Console

<terminated> Config - Main.kt [Java Application] C:\Program Files\Java\jre1.8.0

```
true - the type is:
                boolean
false - the type is:
                boolean
```