


Object Oriented Programming

Quick intro to Java



What is Java?

- **Java** is a programming language and computing platform first released by Sun Microsystems in 1995 (now owned by Oracle).
- From laptops to data-centers, game consoles to scientific supercomputers, cell phones to the Internet, **Java is everywhere!**



A Java Program

```

//*****
// Demonstrates the basic structure of a Java application.
//*****
public class Lincoln
{
    //-----
    // Prints a presidential quote.
    //-----
    public static void main(String[] args)
    {
        System.out.println("A quote by Abraham Lincoln:");
        System.out.println("Whatever you are, be a good one.");
    }
}

```

Class name

Comments

Class definition

Java Basics

- What are the primitive types used in Java?
- There are 8: boolean, byte, char, short, int, long, float and double.
- How can we code control structures in Java?
 - Conditionals:
 - If - if/else - if/else/if
 - Switch
 - Loops:
 - While
 - Do-while
 - For

Primitive Data Types

- **Numeric primitives:** short, int, float long and double hold only numeric data.
Operations: simple arithmetic (addition, subtraction, etc.) or of comparisons (is greater than, is equal to, etc.)
- **Textual primitives:** byte and char hold characters (that can be Unicode alphabets or even numbers).
Operations: textual manipulation (comparing two words, joining characters to make words, etc.). However, can also support arithmetic operations.
- **Boolean and null primitives:** boolean and null.

Java Primitive Type Conversions

Convert	Convert To:							
From:	boolean	byte	short	char	int	long	float	double
boolean	-	N	N	N	N	N	N	N
byte	N	-	Y	C	Y	Y	Y	Y
short	N	C	-	C	Y	Y	Y	Y
char	N	C	C	-	Y	Y	Y	Y
int	N	C	C	C	-	Y	Y*	Y
long	N	C	C	C	C	-	Y*	Y*
float	N	C	C	C	C	C	-	Y
double	N	C	C	C	C	C	C	-

N = No , Y = Yes, C = explicit cast

Some Java Type Conversions

```
int i = 13;
byte b = i; (ERROR!!)
```

```
int i = 13;
//byte to int
byte b = (byte) i;
//double to int
i =(int) 13.456;
```

```
short s = (short) 0xffff;
char c = '\uffff';
int i1 = s;
int i2 = c;
```

Conditional Blocks

```
if (boolean expression1) {
    statement1
    statement2
    ...
    statementn
}
```

```
if (boolean expression1) {
    statement1
    statement2
    ...
    statementn
} else {
    statement1bis
    statement2bis
    ...
    statementnbis
}
```

Conditional Blocks

```

switch (int1 or char1 or short1 or byte1 or enum1 or String value1) {
    case case value1:
        statement1,1
        ...
        statement1,n
        break;
    case case value2:
        statement2,1
        ...statement2,n
        break;
    default:
        statementn,1
        ...
        statementn,n
}

```

Loop Blocks

```

while (boolean expression1) {
    statement1
    statement2
    ...
    statementn
}

do {
    statement1
    statement2
    ...
    statementn
} while (boolean expression1);

for (variable declarations; condition; iteration statement) {
    statement1
    statement2
    ...
    statementn
}

```


Keywords

- Words with a **special meaning** in the language:
 - public
 - class
 - private
 - int
- Also known as reserved words.

Packages

- A Java package is a mechanism for organizing Java classes into namespaces.
- Java packages can be stored in compressed files called JAR files.

```
/* File name : Animal.java
package animals;
class Animal {
    public void eat();
    public void travel();
}
```

Useful Links

- Java
 - https://java.com/en/download/help/index_installing.xml
- jEdit
 - <http://www.jedit.org/>

How Check the Compiler

- To make sure that the Java compiler (JDK) is correctly installed on the machine:
`C:\> javac -version`
- If the JDK / Java compiler is correctly installed, you should see a version number like so:
`C:\>javac -version`
`javac 1.7.0_04`
- If the JDK isn't installed, then you'll see an error like so:
`C:\>javac -version`
`javac' is not recognized as an internal or`
`external command, operable program or batch file.`

How Check the Compiler

- If you get a message like:
`'javac' is not recognized as an internal or external command, operable program or batch file.`
- Check that javac is under `c:\program files\java\jdk*\bin`
- If so, add the path to the PATH variable of the system:
 - Control Panel ⇒ System ⇒ Advanced system settings
 - Switch to "Advanced" tab ⇒ Environment Variables
 - In "System Variables", scroll down to select "PATH" ⇒ Edit

How to Run Java Code

- Write program and save the file as xxx.java in D:/
`HelloWorld.java`
- To compile the file, open your terminal, go the location where the file is stored and type: `javac filename.java`
`javac HelloWorld.java`
- To run the generated class file, use java filename
`java HelloWorld`