

Corso pomeridiano Java

Giovedì 13.30-15.30

Classe 4AI (Autoformazione)

Partecipanti:

AGOSTINI STEFANO

BARICCI GIULIO

BERNASCONI GUIDO

CAFA' MICHAEL

CALAFATO MORGANA

ELMI MOHAMED MOHAMED

IORE JONATHAN

GROSS CABRERA LUIS JOEL

LOCATELLI LORENZO

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MANCON STEFANO

MONTALBANO DANIEL

RE FRANCESCO

REPELE LORENZO

SCOPACASA RUBEN

STURARO LORENZO

TORNAGHI OMAR

ZONCADA SAMUELE

Tutor: prof. Davide Zanin

Totale ore: 110, non necessariamente da esaurirsi entro l'anno scolastico, assegnate previa verifica periodica degli obiettivi raggiunti

Programma:

Part 1. Introducing Java

Introduction to the Java Environment (5h)

- The Language, the JVM, and the Ecosystem
- A Brief History of Java and the JVM
- The Lifecycle of a Java Program
- Java Security
- Comparing Java to Other Languages
- Answering Some Criticisms of Java

Java Syntax from the Ground Up (10h)

- Java Programs from the Top Down
- Lexical Structure
- Primitive Data Types
- Expressions and Operators
- Statements
- Methods
- Introduction to Classes and Objects
- Arrays
- Reference Types
- Packages and the Java Namespace
- Java File Structure
- Defining and Running Java Programs

Object-Oriented Programming in Java (5h)

- Overview of Classes
- Fields and Methods
- Creating and Initializing Objects
- Subclasses and Inheritance
- Data Hiding and Encapsulation
- Abstract Classes and Methods
- Modifier Summary

The Java Type System (10h)

- Interfaces
- Java Generics
- Enums and Annotations
- Nested Types
- Lambda Expressions
- Conclusion

Introduction to Object-Oriented Design in Java (10h)

- Java Values
- Important Methods of `java.lang.Object`
- Aspects of Object-Oriented Design
- Exceptions and Exception Handling
- Safe Java Programming

Java's Approach to Memory and Concurrency (10h)

- Basic Concepts of Java Memory Management
- How the JVM Optimizes Garbage Collection
- The HotSpot Heap
- Finalization
- Java's Support for Concurrency
- Working with Threads

Part 2. Working with the Java Platform

Programming and Documentation Conventions (5h)

- Naming and Capitalization Conventions
- Practical Naming
- Java Documentation Comments
- Conventions for Portable Programs

Working with Java Collections (5h)

- Introduction to Collections API
- Lambda Expressions in the Java Collections

Handling Common Data Formats (5h)

- Text
- Numbers and Math
- Java 8 Date and Time

File Handling and I/O (5h)

- Classic Java I/O
- Modern Java I/O
- NIO Channels and Buffers
- Async I/O
- Networking

Classloading, Reflection, and Method Handles (10h)

- Class Files, Class Objects, and Metadata
- Phases of Classloading
- Secure Programming and Classloading
- Applied Classloading
- Reflection
- Dynamic Proxies
- Method Handles

Optional: Nashorn (10h)

- Introduction to Nashorn
- Executing JavaScript with Nashorn
- Nashorn and javax.script
- Advanced Nashorn

Platform Tools and Profiles (5h)

- Command-Line Tools
- VisualVM
- Java 8
- Profiles

Part 3. Optional Java 9 improvement:

(20h)

- Understand Java 9 module system concepts
- Master the patterns and practices for building truly modular applications
- Migrate existing applications and libraries to Java 9 modules
- Use JDK 9 tools for modular development and migration