

IJE: Summary

- Java Virtual Machine
 - byte code
 - garbage collector
- Structure of application
 - package
 - package x directory
 - import
 - classes
 - method main()

IJE: Summary

- Difference between object and class
 - template, a set of objects
 - an instance of the class
- Class
 - declaration
 - access modifiers (public, no modifier)
 - properties (variables, methods)
 - constructors

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- Method and variable
 - declaration
 - access modifiers (public, protected, private, nothing)
- Static properties of the class
- Using of classes
 - creating new instances
 - calling methods

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- Inheritance
 - what is it
 - how to declare it
- Abstract class, Anonymous class
 - what is it
 - usage

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- Interface
 - what is it
 - usage
 - inheritance

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- Object initialization
 - constructors
 - initialization of variables
- Types
 - type compatibility
 - classes, interfaces
 - inheritance
 - type cast

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- Exceptions
 - what is it
 - their implementation
 - inheritance hierarchy (Throwable, Error, ...)
 - try – catch – finally
 - invoking
 - throw
 - propagation
 - throws

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- Class Object
 - ancestor of all classes
 - method equals
 - compares two objects according to their content
 - *operator == (identity testing)!*
 - method hashCode
 - returns int value characterizing the object content
 - must return the same number for the same objects
 - should return different numbers for different objects (not necessary)

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- Containers
 - what is it
 - categories (interfaces List, Set, Map, ...)
 - implementation (Set – HashSet, ...)
 - iterators
 - problem of equals and hashCode overwriting

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- Input/Output
 - streams
 - modular concept (new stream can be constructed from existing stream)
 - File
 - binary streams
 - character streams

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- Multithreading
 - process – executed application with own address space
 - thread – independent task, within the process context, shares process address space
- Thread in Java
 - class Thread
 - interface Runnable
 - methods start and run

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- Synchronization
 - producer-consumer problem
 - two threads, shared place
 - race condition – more threads read/write data, the result depends on threads scheduling
 - critical section (at most one thread can execute it)

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- Synchronization
 - monitor
 - protect critical section (locking)
 - class Object, keyword synchronized
 - critical section: method or block
 - synchronization methods
 - wait – thread waits till somebody calls notify
 - notify – wakes up another thread waiting on monitor

IJE: Final Exam

- Sum of points: 60
- First part (about 20-30 p.)
 - test (multiple choice)
 - writing simple answers or code (2-3 lines)
- Second part (about 30-40 p.)
 - programming in Java
 - test class, your solution has to satisfy tests
 - evaluation based on numbers of tests fulfillment