Core Java - SCJP

Course content

NOTE: For exam objectives refer to the SCJP 1.6 objectives.

1. Declarations and Access Control

Java Refresher
Identifiers & JavaBeans
Legal Identifiers .
Sun's Java Code Conventions
JavaBeans Standards
Declare Classes
Source File Declaration Rules
Class Declarations and Modifiers
Exercise 1-1: Creating an Abstract Superclass and
Concrete Subclass
Declare Interfaces
Declaring an Interface
Declaring Interface Constants
Declare Class Members
Access Modifiers
Nonaccess Member Modifiers
Constructor Declarations
Variable Declarations
Declaring Enums

2. Object Orientation

Encapsulation (Exam Objective 5.1)
Inheritance, Is-A, Has-A (Exam Objective 5.5)
Polymorphism (Exam Objective 5.2)
Overriding / Overloading (Exam Objectives 1.5 and 5.4)
Overridden Methods
Overloaded Methods
Reference Variable Casting (Objective 5.2)
Implementing an Interface (Exam Objective 1.2)
Legal Return Types (Exam Objective 1.5)
Return Type Declarations
Returning a Value
Constructors and Instantiation
Determine Whether a Default Constructor Will Be Created
Overloaded Constructors
Statics (Exam Objective 1.3)
Static Variables and Methods
Coupling and Cohesion (Exam Objective 5.1)

3. Assignments

Stack and Heap—Quick Review
Literals, Assignments, and Variables
(Exam Objectives 1.3 and 7.6)
Literal Values for All Primitive Types
Assignment Operators
Exercise 3-1: Casting Primitives

Using a Variable or Array Element That Is Uninitialized
and Unassigned
Local (Stack, Automatic) Primitives and Objects
Passing Variables into Methods (Objective 7.3)
Passing Object Reference Variables
Does Java Use Pass-By-Value Semantics?
Passing Primitive Variables
Array Declaration, Construction, and Initialization
(Exam Objective 1.3)
Declaring an Array
Constructing an Array
Initializing an Array
Initialization Blocks
Using Wrapper Classes and Boxing (Exam Objective 3.1)
An Overview of the Wrapper Classes
Creating Wrapper Objects
Using Wrapper Conversion Utilities
Autoboxing
Overloading (Exam Objectives 1.5 and 5.4)
Garbage Collection (Exam Objective 7.4)
Overview of Memory Management and
Garbage Collection
Overview of Java's Garbage Collector
Writing Code That Explicitly Makes Objects Eligible
for Collection
Exercise 3-2: Garbage Collection Experiment

4. Operators

Java Operators (Exam Objective 7.6)
Assignment Operators
Relational Operators
instanceof Comparison
Arithmetic Operators
Conditional Operator
Logical Operators

5. Flow Control

if and switch Statements (Exam Objective 2.1)
if-else Branching
switch Statements
Exercise 5-1: Creating a switch-case Statement
Loops and Iterators (Exam Objective 2.2)
Using while Loops
Using do Loops
Using for Loops
Using break and continue
Unlabeled Statements
Labeled Statements
Exercise 5-2: Creating a Labeled while Loop
Handling Exceptions (Exam Objectives 2.4 and 2.5)
Catching an Exception Using try and catch
Using finally
Propagating Uncaught Exceptions
Exercise 5-3: Propagating and Catching an Exception
Defining Exceptions
Exception Hierarchy
Handling an Entire Class Hierarchy of Exceptions
Exception Matching
Exception Declaration and the Public Interface
Rethrowing the Same Exception
Exercise 5-4: Creating an Exception

6. Exceptions, and Assertions

Common Exceptions and Errors(Exam Objective 2.6)
Working with the Assertion Mechanism (Exam Objective 2.3)
Assertions Overview
Enabling Assertions
Using Assertions Appropriately

7. Strings

String, StringBuilder, and StringBuffer (Exam Objective 3.1)
The String Class
Important Facts About Strings and Memory
Important Methods in the String Class
The StringBuffer and StringBuilder Classes
Important Methods in the StringBuffer and StringBuilder Classes
The java.io.Console Class
Serialization (Exam Objective 3.3)

8. Collections
Overriding hashCode() and equals() (Objective 6.2)
Overriding equals()
Overriding hashCode()
Collections (Exam Objective 6.1)
So What Do You Do with a Collection?

- List Interface
- Set Interface
- Map Interface
- Queue Interface

Using the Collections Framework (Objectives 6.3 and 6.5)
ArrayList Basics
Autoboxing with Collections
Sorting Collections and Arrays
Navigating (Searching) TreeSets and TreeMaps
Other Navigation Methods

9. Threads
Defining, Instantiating, and Starting Threads (Objective 4.1)
Defining a Thread
Instantiating a Thread
Starting a Thread
Thread States and Transitions (Objective 4.2)
Thread States
Preventing Thread Execution
Sleeping
Exercise 9-1: Creating a Thread and
Putting It to Sleep
Thread Priorities and yield( )
Synchronizing Code (Objective 4.3)
Synchronization and Locks
Exercise 9-2: Synchronizing a Block of Code
Thread Deadlock
Thread Interaction (Objective 4.4)
Using notifyAll( ) When Many Threads
May Be Waiting

10. Development
Using the javac and java Commands
(Exam Objectives 7.1, 7.2, and 7.5)
Compiling with javac
Launching Applications with java
Searching for Other Classes
JAR Files (Objective 7.5)
JAR Files and Searching
Using Static Imports (Exam Objective 7.1)
Static Imports

11. Java 5 new features

The for/each loop
Scanner and command-line input
Generics
Autoboxing
Varargs
Printf – formatting output
Reading command-line input

12. Java 6 new features

XML processing and Web services
JDBC 4.0
Annotation-based programming
Java compiler APIs
Application client GUI APIs