Core Java

CORE JAVA

Module	Description	Week No
Java Introduction	• The Java Environment - Overview • Writing a Java Program • Obtaining The Java Environment • Setting up your Java Environment • Software Installation	1

Basics	• Basic Java Syntax
	  • General Syntax Rules
	  • Java Statements
	  • Blocks of Code
	  • Comments
	  • Variables
	• Data
	  • Primitive Data Types
	  • Object Data Types
	  • Literal Values
	  • Constants and the final keyword
	• Mathematics in Java
	  • Expressions
	  • Operator Precedence
	  • Multiple Assignments
	  • Order of Evaluation
	  • Bitwise Operators
	  • Compound Operators
	  • Expressions that Mix Data Types: Typecasting
	• Creating and Using Methods
	  • Creating Methods
	  • Variable Scope
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Java Objects	• Objects
	  • Object-Oriented Languages
	  • Object-Oriented Programs
	  • Encapsulation
	  • Creating and Using an Instance of an Object
	  • References
	  • Defining a Class
	  • Java Beans
	  • Constructors
	  • Method Overloading
	  • The this Keyword
	  • static Elements
	  • Garbage Collection
	  • Java Packages
	  • Dealing with Keyboard Input
	• String, StringBuffer, and StringBuilder
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Comparisons And
 	
Flow Control Structures
	• Controlling Program Flow
	  • Boolean-Valued Expressions
	  • Complex boolean Expressions
	  • Simple Branching
	  • Two Mutually Exclusive Branches
	  • ... elseStatements - Comparing a Number of Mutually Exclusive Options
	  • Comparing a Number of Mutually Exclusive Options - The switch Statement
	  • Comparing Objects
	  • Conditional Expression
	  • while and .while Loops
	  • for Loops
	• Additional Loop Control: break and continue
	  • Breaking Out of a Loop
	  • Continuing a Loop
	• Classpath, Code Libraries, and Jar files
	  • Using CLASSPATH
	Creating a jar File (a Libr
		2

Arrays and Collections	• Arrays
	  • Defining and Declaring Arrays
	  • Instantiating Arrays
	  • Initializing Arrays
	  • Working With Arrays
	  • Array Variables
	  • Copying Arrays
	  • Arrays of Objects
	• Enhanced for Loops - the For-Each Loop
	• Multi-Dimensional Arrays
	  • Multidimensional Arrays in Memory
	  • Example - Printing a Picture
	• Typecasting with Arrays of Primitives
	• Dynamic Collections vs. Arrays
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Inheritance	• Inheritance
	  • Payroll with Inheritance
	  • Objects
	• Polymorphism
	  • Inheritance and References
	  • Dynamic Method Invocation
	• Creating a Derived Class
	  • Inheritance and Access
	  • Inheritance and Constructors - the super Keyword
	  • Derived Class Methods That Override Base Class Methods
	  • Inheritance and Default Base Class Constructors
	  • The Instantiation Process at Runtime
	• Example - Factoring Person Out of Employee and Dependent
	• Typecasting with Object References
	  • Typecasting, Polymorphism, and Dynamic Method Invocation
	  • More on Overriding
	  • Object Typecasting Example
	  • Checking an Object's Type: Using
	  • Typecasting with Arrays of Objects
	• Other Inheritance-Related Keywords
	  • abstract
	  • final
	• Methods Inherited from Object
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Interfaces	• Interfaces
	• Creating an Interface Definition
	• Implementing Interfaces
	  • Implementing Interfaces - Example
	• Reference Variables and Interfaces
	  • Calling an Interface Method
	• Interfaces and Inheritance
	• Some Uses for Interfaces
	  • Interfaces and Event-Handling
	  • Interfaces and "Pluggable Components"
		7

Exception handling and Logging	• Exceptions
	  • Handling Exceptions
	  • Exception Objects
	• Attempting Risky Code - try and catch
	• Guaranteeing Execution of Code - the finally Block
	• Letting an Exception be Thrown to the Method Caller
	• Throwing an Exception
	• Exceptions and Inheritance
	  • Exception Class Constructors and Methods
	• Creating and Using Your Own Exception Classes
	• Rethrowing Exceptions
	• Initializer Blocks
	  • Static Initializer Blocks
	  • Assertions
	
	• Logging
	• The Java SE Logging API
	• Loggers
	• Logging Levels
	• Handlers
		8

Generics and Collections	• Fundamental Collections: Sets, Lists, and Maps
	• Iterators
	• Creating Collectible Classes
	  • hashCode and equals
	  • Comparable and Comparators
	• Generics
	  • Basic Generics Syntax
	  • Bounded Types and Wildcards
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Inner Classes	• Inner Classes, aka Nested Classes
	  • Inner Class Syntax
	  • Instantiating an Inner Class Instance from Within the Enclosing Class
	  • Inner Classes Referenced from Outside the Enclosing Class
	  • Working with Inner Classes
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