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Java SE 8 Programming I

Objectives

- Write Java code that uses variables, arrays, conditional and loop constructs of achieve program objectives
- Identify modular programming principles
- Access and create static fields and methods
- Encapsulate a class using access modifiers and overloaded constructors
- Manipulate numeric, text, and string data using appropriate Java operators
- Set environment variables to allow the Java compiler and runtime executables to function properly
- Create simple Java classes and use object references to access fields and methods in a class
- Demonstrate polymorphism by implementing a Java interface
- Handle a checked exception in a Java application
- Use a Predicate Lambda expression as the argument to a method
- Define and implement a simple class hierarchy that supports application requirement

Topics

- What is a Java Program?
 - Key features of the Java language
 - Java technology and development environment
 - Running and testing a Java program
- Creating a Java Main class
 - Java classes
 - The Main method
 - Adding a Main method



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- Data in the Cart
 - Introducing variables
 - Working with strings
 - Working with numbers
 - Manipulating numeric data
- Managing Multiple Items
 - Working with conditions
 - Using IF statements
 - Working with a list of items
 - Processing a list of items
- Describing Objects and Classes
 - Working with objects and classes
 - Defining fields and methods
 - Declaring, instantiating, and initializing objects
 - Working with object references
 - Doing more with arrays
- Manipulating and Formatting the Data in Your Program
 - Using the String class
 - Using the Java API docs
 - Using the StringBuilder class
 - More about primitive data types
 - More numeric operators
 - Promoting and casting variables
- Creating and Using Methods
 - Using methods
 - Method arguments and return values
 - Static methods and variables
 - How arguments are passed to a method

- Overloading a method



- Using Encapsulation
 - Access control
 - Encapsulation
 - Overloading constructors
- More on Conditionals
 - Relational and conditional operators
 - More ways to use IF/ELSE constructs
 - Using switch statements
 - Using the Netbeans debugger
- More on Arrays and Loops
 - Working with dates
 - Parsing the args array
 - Two-dimensional arrays
 - Alternate looping constructs
 - Nesting loops
 - The ArrayList class
- Using Inheritance
 - Overview
 - Working with subclasses and superclasses
 - Overriding methods in the superclass
 - Creating and extending abstract classes
- Using Interfaces
 - Polymorphism
 - Polymorphism in the JDK foundation classes
 - Using interfaces

- Local-variable type inference
- Using the List interface
- Introducing Lambda expressions



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- Handling Exceptions
 - Overview
 - Propagation of exceptions
 - Catching and throwing exceptions
 - Handling multiple exceptions and errors
- Deploying and Maintaining the Soccer Application
 - Packages, JARs, architecture
 - Application modification and requirements
- Understanding Modules
 - The Module system
 - JARs
 - Module declarations
 - Modular JDK
- JShell
 - Testing code
 - JShell basics
 - JShell in an IDE