NTI TECH ACADEMY

JAVA FULL STACK

COURSE CONTENT

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INTRODUCTION TO JAVA

Why Java was Developed

Application Areas of Java

History of Java

Platform Independency in Java

USP of Java: Java Features

Sun-Oracle Deal

Different Java Platforms

Difference between JDK,JRE,JVM

Java Versions

JVM Architecture

Installing Java on Windows

Understanding Path Variable: Why Set Path

CREATING FIRST JAVA PROGRAM

Understanding Text Editors to Write Programs

How to compile java file

Byte Code and class file

How to run class file

JAVA LANGUAGE FUNDAMENTALS

Identifiers

Keywords

Variables

Literals

Data Types

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Operators

Comments

Looping Statements

Condition Statements

Type Casting

OOP IMPLEMENTATION (PIE)

Why OOP
OOP Concepts with Real life examples
Class& it's Syntax
Object& it's Syntax
Reference Variable
Constructors
Instance(Non-Static)& Static Variables
Instance(Non-Static) & Static Methods
this Keyword and it's usages
Object & Static Initializers(Anonymous Blocks)
Understanding '+' Operator
Inheritance& it's Syntax
Types of Inheritance
Object Class as Root of Java Class Hierarchy
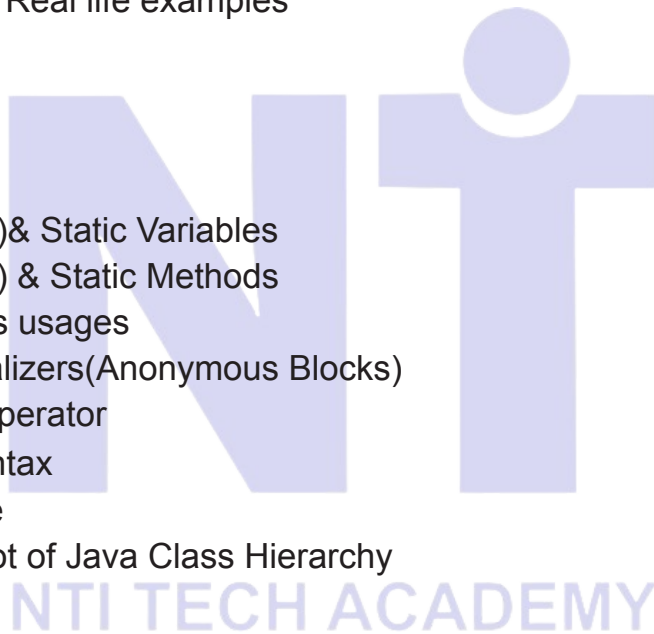Variable Hiding
Method Hiding
Method Overriding
Method Overloading
Super keyword and it's usages
Final keyword and it's usages
Constructor Chaining

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Upcasting and Downcasting
Static &Dynamic Binding
Run Time Polymorphism
Abstract Keyword(Abstract classes and methods)
Understanding Interfaces
Implementation of Encapsulation
Association with Implementation

PACKAGES

Understanding Packages
Setting Class path
Reading Input from Keyboard
Access Modifiers

NESTED TYPES

Static Nested Class
Non-static Nested Class
Local Class
Anonymous Class
Nested Interface

ARRAYS

General Definition of Array
Advantages from Array
Arrays in Java
1-d Arrays
2-d Arrays
Jagged Arrays
Array of reference type
Operations on Arrays

EXCEPTION HANDLING

Types of Runtime Errors

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Understanding Exceptions
Exception Class Hierarchy
Try & Catch Blocks
Patterns of Catch Block
Nested Try statements
Throw, throws and finally
Creating Custom Exceptions
Checked & Unchecked Exceptions
Assertion

WORKING WITH STRINGS

What is String
String Class
Creating String Object
Operations on String
String Buffer Class and it's Methods
Difference between String and StringBuffer class
String Builder Class and it's Methods
Difference between StringBuffer and StringBuilder

SWING

Introduction to AWT
Introduction to Swing Components
Look And Feel of Swing Components
MVC Architecture of Swing Components

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Working with Image

Advance Swing Components

- JOptionPane,JTree,JTable,JTabbedPane
- JfileChooser,JcolorChooser

Menu Components

- JMenu
- JMenuItem
- JMenubar

MULTITHREADED PROGRAMMING

Multitasking: Why Concurrent Execution

Multiprocessing v/s Multithreading

Main Thread (Default Java Thread)

Creating Child Threads and understanding context switching

Thread States

Thread Group

Thread Synchronization: Methods and Blocks

Inter-Thread communication

Daemon Threads

Deadlock

I/O STREAMS

What is I/O

Why Need Streams

Byte Streams and Character Streams

Read/Write operations with file

Scanner Class

Object Serialization& Deserialization

Transient keyword

File Class and it's Methods

REFLECTION

Understanding the Need Of Reflection

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Getting information about class's modifiers, fields, methods, constructors and super classes

Finding out constant and method declaration belong to an interface

Creating an instance of the class whose name is not known until runtime

Getting and setting values of an object's field if field name is unknown until runtime

Invoking a method on an object if the method is unknown until runtime

Invoking Private Methods

EXTENDED & UTILITY CONCEPTS

Generics

Lambda Expression

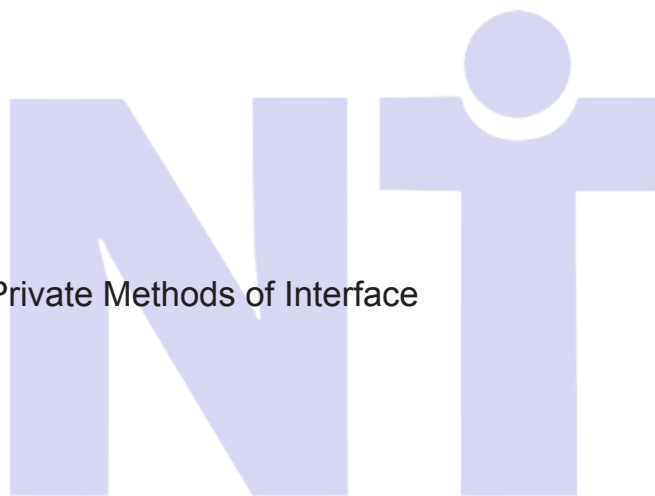Annotations

Object Cloning

Vargs

Static-import

Enum

Static, Default and Private Methods of Interface

Var Type

Java Modules

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COLLECTIONS FRAMEWORK
What is Collection?
What is Framework?
Collections Framework
Core Interfaces
Collection, List, Queue,Deque
Set,NavigableSet, SortedSet
Map,NavigableMap, SortedMap
Core Classes
ArrayList, LinkedList,PriorityQueue,ArrayDeque
HashSet,LinkedHasSet,TreeSet,
HashMap,IdentityHashMap,WeakHashMap,LinkedHashMap,Tree Map
Accessing a Collection via an Iterator
Accessing List via ListIterator
Accessing a Collection via for each loop
Working with User Defined Objects
The Comparator and Comparable Interfaces
The Legacy classes and Interfaces.
Enumeration, Vector ,Stack
Hashtable, Properties

DATE & TIME API
java.util.Date
java.util.Calender
java.sql.Date

JODA API
java.time.LocalDate
java.time.LocalTime
java.time.LocalDateTime

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INTRODUCTION TO SQL(PROJECT BASED)

DATABASE PROGRAMMING USING JDBC

    Need Of JDBC

    JDBC Drivers

    Statement, PreparedStatement, CallableStatement

    Scrollable and Updatable ResultSet

    Batch Updates

    Transaction

    Metadata

JAVA EE(JAVA PLATFORM ENTERPRISE EDITION)

    Understanding the Concept of Java EE : JEE Specification

    Java EE Architecture

- Single Tier
- Two Tier
- Three Tier
- N-Tier

    Java EE Components

    Web Components

    Distributed(Business) Components

    Java EE Containers& Servers

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Web Container& Web Server(Apache Tomcat)
EJB Container& Application Server(Weblogic,Glassfish,Websphere)
Java EE Services

- JNDI Service
- Java Transaction Service
- JAAS
- JMS

JAVA SERVLET

Introduction to web programming
Role of Servlet in web programming
Servlet Lifecycle
Servlet with Annotations

- @WebServlet
- @WebInitParam
- @WebListener
- @WebFilter
- @MultipartConfig

Request Dispatching
Parameters & Attributes and their differences
ServletConfig and ServletContext
File Uploading and Downloading
Session Tracking&State Management

- Cookie
- Url Rewriting
- Hidden Form Field
- Session Object

Events & Listeners

- Dependency Injection
- Refreshing Servlet
- Filters

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JAVA SERVER PAGES (JSP) & JSTL

    JSP Architecture
    JSP Elements
    JSP Objects
    Understanding JavaBeans
    Custom Tags
    Using tags of JSTL
    Expression Language

PROJECT CLASSES

    Front End Coding
    FORM DESIGNING

- HTML
- CSS
- JAVA SCRIPT
- BOOTSTRAP

    Back End Coding
    DATABASE DESIGNING
    Connecting forms to database
    Writing Business Logic
    Project Hosting

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JAVA MAIL API
    Email System and Protocols
    Sending & Receiving Mails
    Handling Attachments

INTRODUCTION TO RESTFULL SERVICES
    @PathParam
    @Path
    @FormParam
    @QueryParam
    @DefaultValue

SPRING
    What is Spring?
    Spring modules
    Understanding dependency Injection
    Applying aspect-oriented programming

BASIC BEAN WIRING
    Containing your Bean
    Creating bean
    Injecting into bean properties
    Auto wiring
    Controlling bean creation

ADVANCED BEAN WIRING
    Declaring parent and Child Bean
    Applying method injection
    Injecting Non-spring Beans

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Registering Custom property editors

ADVISING BEANS
Introducing AOP
Creating classic spring aspects
Creating advice
Defining Pointcuts and Advisors
Using proxyFactory Bean
Autoproxying

HITTING THE DATABASE
Learning spring's data Access Philosphy
Configuring a data source
Using JDBC with Spring
Working with JDBC Templates
Using Spring's DAO Support Classes for JDBC
Integrating Hibernate with Spring
Caching

INTRODUCTION TO MVC
Define MVC
Hibernate Injection
Spring Annotation
Spring Controller

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MAVEN DEPLOYMENT
    Maven Configuration
    Converting Maven to Eclipse
    Various Maven Command

SPRING REST API
    Creating Rest
    Consuming Rest
    Calling on Client

BUILDING CONTRACT-FIRST WEB SERVICES IN SPRING
    Introducing Spring-WS
    Defining Contract (First!)
    Handling messages with service endpoints
    Wiring it all together
    Consuming Spring-WS Web services

INTRODUCTION TO ORM
    Need of ORM
    Problems using JDBC Directly
    ORM Implementation

INTRODUCTION TO HIBERNATE
    Hibernate Architecture
    Hibernate configuration
    Hibernate's Support for Other Technologies
    Installing Hibernate
    A "Hello world" stand alone application
    A Servlet–Based Hibernate application

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CREATING PERSISTING CLASSES
Mapping a basic Java Class
Mapping a Class with Binary Data
Mapping a Serializable Class
Mapping a class with Data/ calendar attributes
Mapping a Read-only class
Mapping a class using Versioning /Timestamps

MAPPING INHERITENCE WITH JAVA CLASSES
Table-Per –class Hierarchy Mapping
Table-Per –subclass Hierarchy Mapping
Table-Per –concrete-subclass Hierarchy Mapping
Persistence interfaces

WORKING WITH COLLECTIONS
Associations
Lazy initialization
Mapping Maps/Sorted Maps
Mapping Sets/Sorted Sets
Mapping lists
Mapping Arrays
Mapping a Bidirectional Association

SCALAR QUERIES AND HIBERNATE QUERY LANGUAGE
Queries
Named Queries
SQL Queries
Hibernate Queries language

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HIBERNATE TRANSACTIONS AND LOCKING
    Configuration
    Database support
    Using Transactions
    The Transactions API
    Transaction Example Using Oracle
    Locking

HIBERNATE CACHING
    How caching improves performence
    First level lache
    Second level cache

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