Training Duration 15 Days

9.00 A.M to 5.00 P.M

Monday – Friday

One Lunch and 2 Tea Breaks

1. Core JAVA
2. RDBMS & MySQL
3. Adv JAVA
4. HTML5, CSS3, JavaScript
5. Angular
6. RESTful Web Service

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Core JAVA

JAVA is a Programming Language (Object Oriented Programming)

1. Learning the Alphabets
2. Words
3. Framing small sentences
4. Grammar & Speaking
5. Alphabets (A-Z,a-z,0-9,Special symbols .,+-\*/%!|=&~^#)
6. Keywords (reserved words)
7. Syntax (variable declaration, expression formation)
8. Class & Object
9. Resolving simple & complex task

Flavors of JAVA

1)JRE (Java RunTime Environment )

2) JDK (Java Development Kit)

Editions

1. JSE (Java Standard Edition)
2. JEE (Java Enterprise Edition)
3. JME (Java Micro/Mobile Edition)
4. Installing JDK
5. Setting the PATH

JAVA\_HOME = C:\Program Files\Java\jdk1.8.0\_151

CLASSPATH = %JAVA\_HOME%\bin

1. Using IDE (Integrated Development Environment) Eclipse /NetBeans/JetBrains (IntelliJ)/etc., Or TextEditor (Notepad/TextPad/NotePad++)

Auto Code Complete, Auto Package Import, Auto Formatting, Auto Code Generation, Highlight syntax errors

SE Eclipse – Standalone Application Only

EE Eclipse – Standalone/Web/Enterprise based

Workspace – Folder

Types Of classes

1. Concrete class
2. Abstract class
3. Inner class
4. Anonymous class
5. Nested class
6. Static class

OOPS Feature

1. Polymorphism (Poly –many Morphing- Behaving)
2. Static – Method Overloading b) dynamic – Method Overriding
3. Encapsulation

* Binding code and Data Together (Capsuling the data- Hiding the Data)

1. Abstraction – Hiding Implementation (abstract)

(Maps – World Map & India Map) Showing relevant data & hiding irrelevant data

Abstract – In-complete / Non-Concrete (Partial)

1. Inheritance – Getting the property and behavior of other classes (extends)

Simple, multi-level

Question: What is platform dependent in JAVA?

Answer : JVM ( JDK)

First JAVA Program

Main method ()

Signature – access Modifier, return type, name and no of args

Empty method – no code inside the method only curly braces.

Abstract method – only method declaration no definition

Empty method is also a concrete(complete/full) method

Abstract methods also called as non-concrete/partial methods

Types of classes

1. Starter Class – A class with main method
2. Abstract class – non-concrete/in-complete(partial)
3. POJO class – Plain Old JAVA Object (Simple Class) Not extending any other classes or not implementing any interfaces.
4. Bean Class - Representing an Entity Bean(Table) in DB (Properties & Getter/setter method)
5. Inner class – A class written inside another class
6. Anonymous class – Inner class without name
7. Static Class – Built-in classes to access methods directly without creating object. (System, Thread)
8. Built-in Class – Developer provided (Created) classes
9. User defined class – User developed classes

Wrapper class

Basic Language Concepts

1. Alphabets (A-Z, a-z, 0-9, Special symbols +,-,\*,/,{}, [],(), .,++,--, +=,-=,….)
2. Java is a case sensitive language
3. Keywords (reserved words) all keywords are in small case only
4. Keywords have some pre-defined functionality (it instructs the JVM)
5. Data types ( Number, character based) (primitive, user defined)

boolean – 1 bit (0,1)

byte – 1 byte(8 bits)

short – 2 bytes (short integer)

int – 4 bytes (integer)

float – 8 bytes (floating point)

long – 8 bytes (Long Integer)

double –(floating point double precision)

char – 2 byte (UNICODE)

1 byte (8 bits)

binary(0-1)

decimal (0-9)

octal (0-7)

hexa decimal (0-9,A-F)

Operator

A=5+8

A is a variable

5 and 8 are operands

+ is a operator

1. Unary operator (++,--,!) one operand
2. Binary operators (two operands)
3. Ternary Operator (condition?true:false) (3 operands)

Order of priority & associativity (Operator precedence)

1. Arithmetic Operators (+,-,\*,/,%)
2. Assignment Operator =
3. Short hand operator +=,-=,\*=,/=
4. Logical Operator &&, ||, !
5. Comparison operator <,>,<=,>=,==,!=
6. Bitwise operator &,|,~,^
7. Increment, decrement operator ++,--

Variable, Constants in JAVA

1. Keywords can’t be used as variable names
2. Variable name should start with character or underscore
3. Special symbols are not allowed except underscore
4. Variable name should start with small case, proper name is compulsory
5. Java uses camel casing (numberOfMonths)
6. Using number in variable name is allowed
7. Octal number should start with o (small or capital)
8. Hexa decimal should start with ox (small or capital)
9. No const keyword, we have to use final keyword to declare constants
10. Constants variable name should be in ALLCAPS

Access Modifiers

1. Private
2. Default/package
3. Protected
4. Public

Ctrl+Space – Auto code completion

Ctrl+Shift+F – For Auto Formatting

Ctrl+f11 – to Run the java code

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Access Modifier | Private | Default/package | protected | public |
| Same class | yes | yes | yes | yes |
| Same package | no | yes | yes | yes |
| Different package | no | no | no | yes |
| Subclass same package | no | yes | yes | yes |
| Sub class in diff package | no | no | yes | yes |

Non-access modifier / behavior modifier

1. static
2. final
3. abstract
4. transient

access modifier – inform the JVM that who/how members are accessible

non-access modifier – inform the JVM that, these members will behave differently

1. static – Once per class not per instance

applicable for variables, methods and classes (built-in/inner classes)

sub class – child class

Only one public class is allowed in a JAVA file

You can have more than one non-public class in a JAVA file

The main method should be inside the public class only

Final

1. applicable for variables, methods and classes
2. non-modifiable component (variable means constant, method means no overriding, class means no inheritance/sub class)

abstract

1. applicable for methods and classes only

transient

1. applicable only on variables
2. to avoid saving sensitive information during serialization

Write a program to multiply two numbers without using \* operator.

Write a program to swap two numbers without using third variable.

Variables types

1. Local variable (declared inside any method or block-scope is very low)
2. Instance variable (one copy per object –declared outside any method and inside the class with access modifier)
3. Class/Static variable (One copy per class –declared outside any method and inside the class with access modifier and static modifier)

Control - Statements in JAVA

1. Conditional control statements (if, if-else, else if ladder, nested if, switch)
2. Repetitive/looping control statements (for, while, do while)

Entry control – Zero or more iteration (for, while)

Exit Control – One or More iteration (do while)

Java doesn’t support unconditional goto statement

Break and continue.

WAP to display the given number in words (use switch)

Ex : 123 – One Two Three

Getting input – Scanner

Default package of java language is

java.lang (package name should be in smallcase only)

Comments in JAVA

1. Single line comment // only one line (useful for adding comments about the below line)
2. Multiple Line comments /\* \*/
3. Documentation comments /\*\* \*/ - Documentation tool will convert java doc comment to HTML files

Day 2

Arrays in JAVA

1. Single Dimensional Array
2. Multi-Dimensional Array
3. Homogeneous Array
4. Heterogeneous Array

Explicit pointer manipulation is not supported in JAVA.

JAVA supports implicit pointers (Dummy number instead of Reg no in semester answer sheets)

Primitive data type is also called as built-in/pre-defined data type

Class is also called as user-defined data type/ custom data type

Type Casting – converting one primitive type to other primitive type

1. Narrowing
2. Widening
3. Implicit
4. Explicit

Trainer Name : Sivakumar OS

Course Name : Java

Location : Palmeto Hyderabad

Dates : 16/July/2018 to 3/Aug/2018

Program Duration : 15 Days

Boxing – Is the process of converting primitive into corresponding objects.

Wrapper Classes

|  |  |  |
| --- | --- | --- |
| Sl No | Primitive Data Type | Wrapper Class |
| 1 | boolean | Boolean |
| 2 | byte | Byte |
| 3 | short | Short |
| 4 | int | Integer |
| 5 | float | Float |
| 6 | char | Character |
| 7 | double | Double |
| 8 | long | Long |

JVM will automatically convert primitives into its corresponding object. This process is called as Auto-Boxing

Unboxing – converting Object into its primitive type

Auto Boxing will happen in Heterogeneous arrays and collection framework.

Internal process of Object Creation

Student stu;

Object – Instance of a class

Constructor - It is a special method whose name is same as the class name.

It will not return anything, it should be public, no need of void keyword

Student()

1. No Argument/Default Constructor (Empty)
2. Parameterized Constructor

JVM will automatically add Default constructor when no other constructor is defined.

The main use of constructor is to initialize all the member properties.

All the numerical primitives will be initialized to zero, boolean to false, objects to null;

this keyword represents current object.

Super keyword represents the parent object.

WAP to find all the Palindrome numbers between 10 to 1000 (121, 131)

WAP to find the given input number is Armstrong or not. (153 = (1\*1\*1)+(5\*5\*5)+(3\*3\*3))

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String

It is a special Data type in Java.

String is immutable in java. Non-modifiable (Final)

Inheritance

1. Simple/Direct Inheritance
2. Multi-Level Inheritance

JAVA doesn’t support multiple inheritance for classes – true

JAVA doesn’t support multiple inheritance for interfaces – false

A is parent class and B is sub class

Class A {

}

Class B extends A {

}

Interface I3 extends I1,I2 {

}

Base class is also called as parent/ super class

Sub class is also called as child/derived class

It will inherit all the public and protected members

Automatic Garbage Collection (Memory Management)

Finalize {}

What is the difference between final, finally and finalize?

Day 3

Interfaces, packages, instance of, threads

Interface

interface Drawable{

}

interface Clonable{

}

interface Serializable {

}

1. In interface all the member methods are by default public and abstract
2. Interface members can’t be private and protected
3. Interface supports multiple inheritance
4. In Interface only public, static and final member properties are allowed
5. By default all the member properties of interface are static and final
6. Generally interfaces will not have concrete methods
7. Interface will have static concrete methods
8. You can’t instantiate an interface
9. You can create interface reference

Javatpoint.com

Packages

1. Something similar to your folder in Operating System
2. Packages are used to resolve the namespace
3. Packages are used to avoid confusion to JVM
4. Fully qualified name means giving the class name with its package name

Configuring build path

String, StringBuilder, StringBuffer, StringTokenizer

StringBuffer will provide synchronization feature (so it is slow)

StringBuilder won’t provide sync feature (so it will be faster)

Java.util.Date java.sql.Date

Thread

1. Multi-Tasking
2. Multi-Threading

Process

1. Heavy weight process (Word)
2. Light weight process (Auto save, spell check, grammar check, auto format)

Program

Parallel execution

Thread Life cycle

1. By extending the Thread class
2. By implementing Runnable Interface
3. NEW
4. RUNNABLE
5. RUNNING
6. NON-RUNNING/BLOCKED
7. DEAD

Day 4 (Exception Handling, IO, Annotations)

1. Exception Handling

Throwable is the root of Exception & Error Hierarchy

Depending upon the time of Exception thrown

1) Run-time Exception (Unchecked Exception)

2) Compile Time Exception (Checked Exception)

Depending upon the developers of exception

1. Built-in Exception (Provided by JAVA developers/System defined Exception)
2. Custom Exception (User defined Exception)

Handling Exception

1. By using throws keyword
2. By using try/catch & finally block

Try block should be followed by either catch or finally block

Try block can have multiple catch blocks but only one finally block

The code inside finally block get executed irrespective of exception occurred or not.

Usage of throw and throws

Throw keyword is used to throw an exception whereas throws keyword is used to inform the JVM that the current method might throw some exceptions.

Annotations (Introduced in JAVA 1.5(5))

1. Metadata (it starts with @symbol)

Built-in/Internal/system-defined annotations (@override,@suppresswarnings ..,)

User-defined/custom/external annotations

MetaAnnotation (This is used while creating custom annotations)

@Target, @Documented, @Repeatable, @Retention, @Inherited

Java IO (Java Input & Output)

Stream

Data flow is from Program to Console – Output

Data flow is from Devices/Files to the Program – Input

1. ByteStream (read/write will happen using 1 byte at a time) Stream
2. Character Stream (read/write will happen using 2 bytes at a time) (Reader/Writter)

Buffered Stream

InputStream

OutputStream

Ctrl+Shift+O – organize import

Serialization is the process of storing the state of an object in a permanent storage. (Normally in a flat file)

Deserialization is reverse of serialization (creating an object from the stored state of flat file system)

If we store the state in DB, then the process is called as persistence.

Class with following properties (User)

1. int userId
2. String firstName
3. String lastName
4. Date dateOfBirth
5. Date dateOfJoining
6. char gender
7. String email;
8. long mobile
9. String qualification
10. Address homeAddress
11. String securityQuestion
12. String answer

Class Address

1. String doorNumber
2. String streetName
3. String areaName
4. String city
5. String State
6. Long pincode
7. String country

Compressed format of your project.

For core JAVA – JAR (Java Archive)

For Adv JAVA – WAR/EAR (Web Archive/Enterprise Archive)

Day 5 Collection Framework

Ctrl+Shift +O --- Organize Imports

Collection framework is used to handle group of objects

1. List (Interfaces) – (List allows duplicate elements)
2. Set (Interfaces) – (Won’t allow duplicate elements)

ArrayList

Arraylist allows duplicate

It maintains Insertion Order

It allows null

If the frequent operation is data retrieval then use arraylist.

It’s not suitable for inserting data in middle

Arraylist is dynamically growing array

Linked List

Linkedlist allows duplicate

It maintains Insertion Order

It allows null

Main difference between arraylist & linkedlist is Linked list uses doubly-linkedlist algorithm

It is suitable for insertion at middle

Set

HashSet

1. It won’t allow duplicate element
2. Allows null only one time
3. It’ll not maintain insertion order

Treeset

1. It won’t allow duplicate element
2. It won’t allow null
3. By default it sorts the inserted data
4. Homogeneous data only allowed

Map

1. It stores the data in key,value pairs
2. In map key should be unique (duplicates not allowed for key)
3. Both key and value are objects
4. It allows null for key only one time
5. It allows null for value many times (provided key value changes)
6. For value map allows duplicate entries