Java Fresher's Training

July 16

Name:	
Emp. Id	

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"Education is not the filling of a pail, but the lighting of a fire."

— William Butler Yeats (1865-1939)

Training Schedule

Day	Topic	Trainer	Date	Time
1	Introductory session by SME	K Vidya Sagar	07-07-16	11.00 am to 11.30 am
2			07-08-16	
3	Introduction to Java	Spandana K	07-08-16	12.00 pm to 01.00 pm
4	OOPs and Inheritance	Susan	07-11-16	11.00 am to 01.00 pm
5	Abstract Classes and Interfaces	Susan	07-12-16	02.00 pm to 04.00 pm
6	Java5 Features and Annotations	Spandana K	13-07-2016	02.00 pm to 04.00 pm
7	Exception Handling and Collections Framework	Raju E	14-07-2016	02.00 pm to 04.00 pm
8	Collections Framework and Generics	Raju E	15-07-2016	02.00 pm to 04.00 pm
9				
10	Multithreading & Synchronization	Sreenatha C	18-07-2016	02.00 pm to 04.00 pm
11	IO, Serialization, Networking	Spandana K	22-07-2016	02.00 pm to 04.00 pm
12	JDBC	Narendra M	25-07-2016	02.00 pm to 04.00 pm
13	Java 6 and 7 Features	Spandana K	25-07-2016	2.30 pm to 04.30 pm

Contents

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Notes for assignments:

- Make assumptions wherever necessary, and mention the same against the question.
- Use Exception Handling wherever required.
- Paste the solution application on the share folder (information will be provided during training).

1.Introduction to Java Introduction

Agenda

- Evolution of java
- History of Java
- Java Buzzwords
- Language Introduction
- Primitive data types

2. Fundamentals of Java : 1

Agenda

- Basic class structure
  Java Coding Conventions
- Accessors & Mutators
- Default Constructor
- Constructor Overloading
- "this"
- Types of variables

Assignments

Assignment # 1

Create a class Greeting to print a message: "Hello World"

Assignment # 2

Create a class Employee & write Accessors & Mutators
Create objects with default constructor & set values using mutators.
Display/print values of attributes of each object created.

Assignment # 3

Write a class Date. Overload the constructor to initialize the attributes.
Create Date objects using non-parameterized & parameterized constructors both.
Print values of day, month & year for every object.

3.Fundamentals of Java : 2

Agenda

- Types of variables in Java
- Static
- Memory Layout
- Packages
- Static Imports
- Arrays

Assignments

Assignment # 1

Create an array of Employees & display nos. of Employee objects created.

Assignment # 2

Create a class Calc inside a package "utility". This class will have a method findRoot()which will return the square root of a given number.
Create another class User1 inside a package allusers. User1 calls the method findRoot()to get square root of a number.
These two packages should be in different directories on two different drives. (may be C: & D:)

4. OOPs Concepts

Agenda

- History of OOPs
- Need of OOP
- Object Characteristics
- Major Pillars of OOP
- Minor Pillars of OOP
- Inheritance – subclassing
- Polymorphism: Static & Dynamic
- Super keyword

Assignments

Assignment # 1

Create a class hierarchy: Employee
                        Manager
                        SalesManager
 Override calculateSalary() method. Manager will have allowance field &
SalesManager will have commission field.

Assignment #2

Create a class: Bank Account
Create subclasses: 1. Saving & 2.Current
Rate of interest is different for different types of account.

5. Abstract classes & Interfaces

Agenda

- Abstract classes
- Interfaces
- Difference between Abstract Classes & Interfaces

Assignments

Assignment # 1

Create a class hierarchy :   Animal
                              Cat   Dog   Lion
Animal class will have methods like respirate () & talk()
Override method talk() from Animal class in its each subclass
Create an array of Animal references & observe dynamic polymorphism

Assignment # 2

Create a class hierarchy :   Shape
                              Rectangle   Circle   Triangle
Override method calculateArea() from Shape class in its each subclass
Create an array of Shape references & observe dynamic polymorphism

Assignment # 3

Create an interface: Printable – method print()
Write a class Utiltiy to have a method printAll(Printable [])
Pass different objects (Shapes & Animals) to printAll() to print them.

6. Java Miscellaneous

Agenda

- Object class
- Garbage Collector
- Wrapper classes
- Auto boxing & unboxing
- Annotations

Assignments

Assignment # 1

Override equals(),toString() in Employee & Account class

Assignment # 2

Call System.gc(), check whether GC runs or not

Assignment # 3

Accept numbers from command line arguments & sort them

7. Exception Handling

Agenda

- ➢ **Exception**

  • What are exceptions?

  • Difference between Exception and Errors.

  • Exception Class Hierarchy.

  • Checked and Unchecked Exceptions.

- ➢ **Exception Handling**

  • Try

  • Catch

  • Finally

  • Throw

  • Throws

- ➢ **User Defined Exception**

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Assignments
Assignment # 1 Create a NegativeNumberException to be thrown by the method findSqrRoot() if user enters a negative number.
Assignment # 2 Create an InsufficientBalanceException to be thrown by withdraw() method in Account class if amount to be withdrawn is greater than balance.

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8. Collections & Generics

Agenda

- Collection
- Set
- List
- Map
- Iterator
- Generics

Assignments

Assignment # 1

Create a sorted set of Employee objects.(Sort on Emp ID)

Assignment # 2

Create a list of Employee objects & sort them *by names* in alphabetical order (may be same as above.)

Assignment # 3

Create a HashMap for books & no.of pages.
Display contents of Map using iterator. (Where Book is a class)?
(Override equals() & hashCode() in book class. .note:equal s/hashcode contract should not be violated)

9. IO, Serialization & Networking

Agenda

- I/O Fundamentals
- Stream Classes
- Input and Output Stream
- File I/O
- File Writer
- File Stream
- Scanner
- Intro to Networking
- Client - Server
- Socket
- Port number

Assignments

Assignment # 1

Read input data from keyboard & write it to a file "File1".
Copy contents of File1 to File2.

Assignment # 2

Serialize & deserialize Account object which will have
a Date type of field : doc (date of creation)

Assignment # 3

Create a simple chat application (Client-Server)

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10. Multithreading

Agenda

- Thread
- Thread Scheduling
- Thread Lifecycle
- Synchronization
- Deadlock

Assignments

Assignment # 1

Two members of a joint Account are trying to withdraw Rs.3000 from the account simultaneously & balance is Rs.5000.
Create a multithreaded program to handle this situation

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11. JDBC

Agenda

- Fundamentals of JDBC
- Why we need JDBC?
- What is JDBC?
- JDBC Driver Types
- Driver Manager
- Statement
- Transactions

Assignments

Assignment # 1

Insert & update Employee data in database & display it using Prepared Statement.
Insert some records in Student Table

Assignment # 2

Create a stored procedure for updating the basic salary of employees as 10%HRA should be added to basic salary .

Assignment # 3

Write generic code to display column names of a table along with data in the table (same code should work to display records from Emp table and then for Student table

12. JEE OVERVIEW

Agenda

- N tier Architecture
- JEE Overview
- Web Applications

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13. Servlets Intro

Agenda

- What is a servlet
- Servlet Lifecycle
- Simple Servlet

Assignments
Assignment # 1 Create a simple servlet to print Hello message with User's name
Assignment # 2 Create a simple servlet demo to demonstrate Servlet's Life cycle

Assignment 3: CybageNet with BooksReview assignment (Detailed Testcases enclosed as Annex:1)

1. CybageNet Login: a) Administrator Login

                b) User Login

2. Library System:

 a) Administrator can do following:

      -Insert books into the database

      -Remove books from the database

b) User can do following:

    - Book search (based on Title)

    - Show Details of the selected book (Including reviews)

   - add a review

14. SERVLET Features

Agenda

- Servlet Config
- Servlet Context
- Request Dispatcher

Assignments
Assignment 2: continue with BookReview assignment

15. Session Tracking

Agenda

- Hidden Form Field
- URL Rewriting
- Cookies
- Http Session

Assignments
Assignment 1: continue with BookReview assignment
Assignment # a Adminstrator should be able to check how many users are logged in simulteniously.
Assignment # b Use cookies to show no. of visitors to the site

16. Servlet Filters

Agenda

- Filters Introduction
- Filter Demo

Assignments
Assignment 1: continue with BookReview assignment   Create a simple logging filter to log the information about LogIn timings of the users

17. JSP Intro

Agenda

- JSP Elements
- JSP Scripting
- Implicit Objects

Assignments
Assignment 1: Replace servelets by JSPs in BookReview assignment **(Example:Login & Books details page)**

18.JSP

Agenda

- JSP standard actions
- Intro to JSTL

Assignments
Assignment 1: continue with BookReview assignment **Create JavaBean for Book (BookBean) & Use useBean standard action**

Java Mini Project

Project Description

Develop a **Dynamic Web Application for Customer Service Dept.:**

A registered customer (Authenticated) is able to carry out following operations: (*There should be a login page where registered users can login & new users can register*)

        a: Launch a new complaint

        b: View status of his complaint

        c: View details of **all customers** who have launched complaints

        d: View details of all **complaints** launched by **a particular customer**

Application should be based on **MVC model II pattern** as under:

        Model   : Java Beans (Use of **VO** -Value Objects)

        View   : JSPs

        Controller : a Servlet

Use **DAO (Data Access Objects) pattern for** Database Access

Create DBConnector class as **Singleton** for Database Connectivity

Note:

Make assumptions wherever necessary.

Use Exception Handling wherever required.

Java Coding Standards Link:

http://cybintranet:8085/QMS%202.0/Documents/Process%20Manual/SDLC/Construction%20Process/S_COP_JCS.doc

Declaration by the Participant
My Understanding

Name:					
Employee ID:					

Sr. No	Topic	Theoretical		Practical	
		Yes	No	Yes	No
1	OOPs and Inheritance				
2	Abstract Classes and Interfaces				
3	Java5 Features and Annotations				
4	Exception Handling and Collections Framework				
5	Collections Framework and Generics				
6	IO, Serialization, Networking				
7	Java 7				
8	Java 8				
9	Multithreading & Synchronization				
10	JDBC				
11	JavaEE				
12	Basics of Servlets & its lifecycle				
13	Servlet features, session tracking				
14	Servlet filters				
15	JSP basics & scripting				
16	JENKIN				
17	RESTful Webservices				
18	Spring Framework intro+ IOC/DI Container +Bean definition, xml config				
19	RESTful Webservices				
20	JSP standard actions				

21	MVC architecture, Intro to Spring MVC				
22	JSTL				
23	Spring MVC				
24	Spring Annotations\REST Support				
25	JPA				
26	Glassfish as a server				
27	HTML5				
28	CSS 3				
29	JavaScript				
30	Angular JS				

Signature of Participant

For Office Use:
Signature of Trainer   **Signature of Evaluator**   **Signature of Training Head**

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