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Fresher's Java Training Pathway

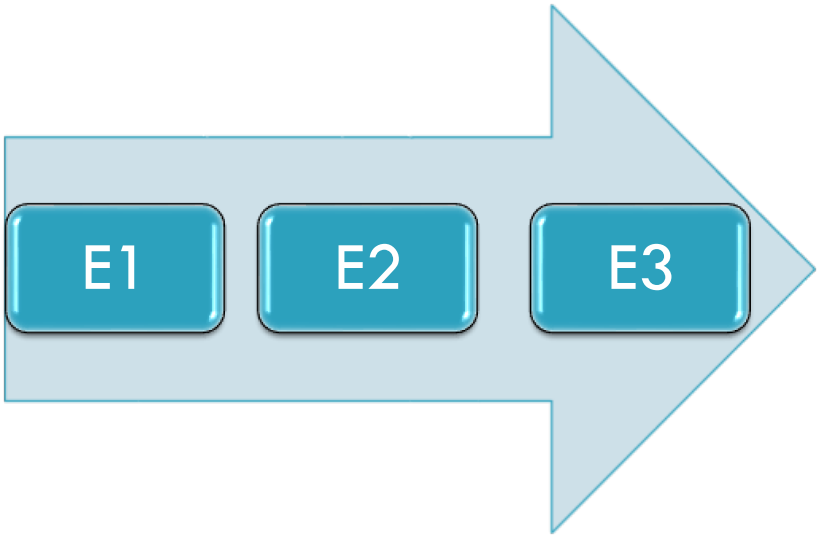
Nagarro

CoE Applications & Solutions

Introduction

- Designed for a fresher joining Nagarro Software Pvt. Ltd., undergoing training on Java/Java EE technologies
- Complete Course will be carried out for the duration of 9 weeks which includes 9 modules
- Each week/module includes study material and assignment(s)
- Expected output of this course is working knowledge in Java technology

Java Competency Levels



E1: Core Java And JDBC Competency

E2: Web Components Competency

E3: Web Frameworks Competency

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Java Training Modules

Java Env. Setup including SVN

Core Java Basics

Advance Core Java including Threads

Maven and Ant Introduction

JAVA 8 New Features

SQL Basics and JDBC

ORM and Hibernate

Hibernate Env. Setup

E1

Web Server and Application Server Basics

Web Components and Framework Basics

OOPs Concepts

Basic Design Patterns

HTML5, CSS3, JavaScript and AngularJS2

E2

Coding Standards and Guidelines

Build and CI

Web Services

SOAP and REST

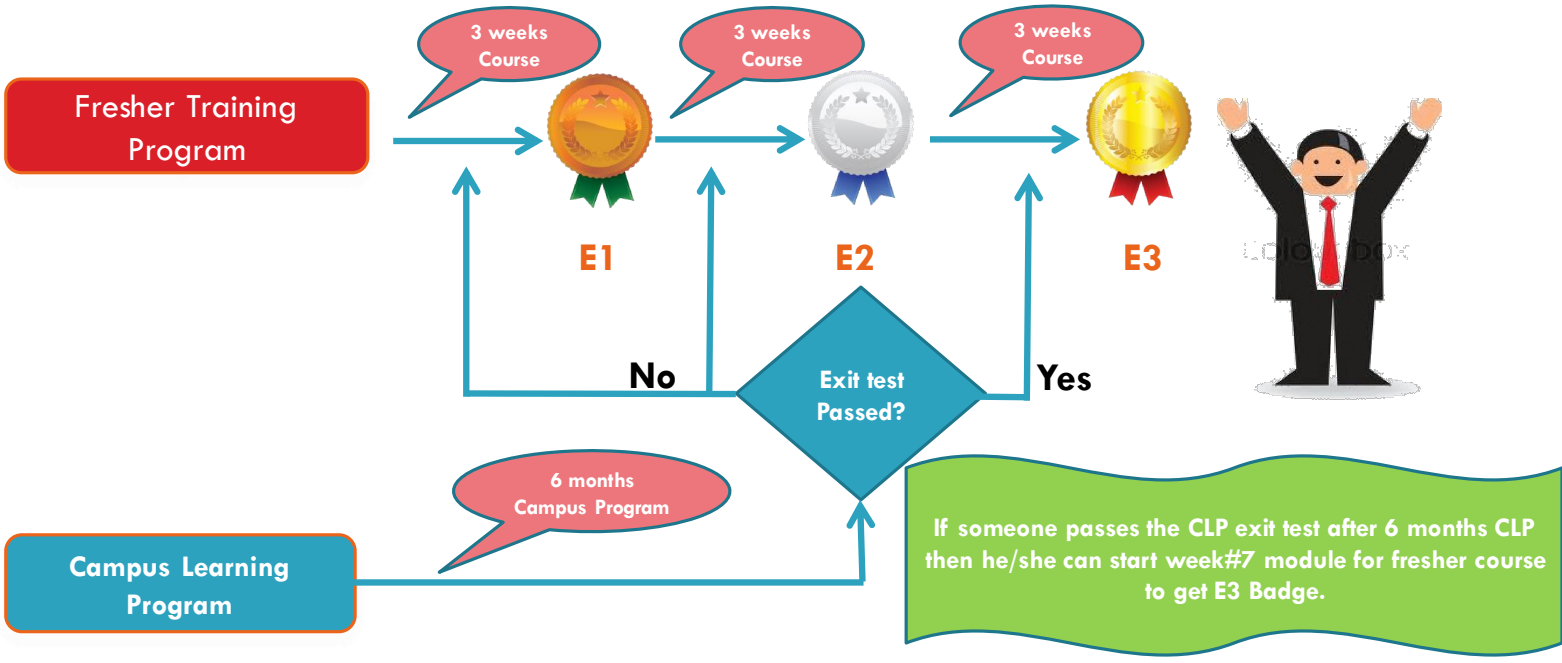
Spring Env. Setup

Spring Basics

Spring and Hibernate Integration

E3

Java Training Pathways



Week#1

Java Env. Setup and Core Java Basics

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Getting Started

Objective

- Java Env. Setup Using Eclipse
- SVN Usage
- Core Java Basic Programming

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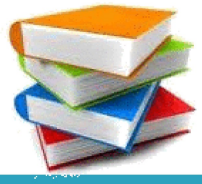
Course Content

- Setting up the Env (Duration -11h)
  - ✓ Eclipse installation
  - ✓ Eclipse features introduction
  - ✓ Run a Java Program from Command line and eclipse
  - ✓ SVN Eclipse Plugin Setup
  - ✓ Use Eclipse SVN Plugin
- Basic Core Java (Duration -19h)
  - ✓ Java Introduction
  - ✓ Variables And Operators
  - ✓ Classes
  - ✓ Control Statements
  - ✓ Inheritance And Composition
  - ✓ String, String Builder, Serialization And I/O
  - ✓ Basic Exception Handling

Module Plan

Day	Activities
Day#1	Java env setup + Eclipse setup | Java Eclipse Installation Pdf | Introduction to Eclipse Pdf Java Sample Program Run Pdf | Run Program from Eclipse Pdf | Eclipse Beginner Document Pdf
Day#2	Installation Eclipse SVN Plugin | Use SVN plugin in Eclipse pdf | Eclipse shortcuts Pdf How to Wok with SVN | Eclipse-working with Subversion | Tutorial for Beginners
Day#3	Java Fundamental Part-1 | Core Java
Day#4	Core Java | Assignment#1
Day#5	Assignment#1

Study Material



Books

- ✓ Java eclipse installation Pdf [2h]
- ✓ Introduction to eclipse Pdf [2h]
- ✓ Java sample program run Pdf [15m]
- ✓ Run program from eclipse Pdf [15m]
- ✓ Eclipse Beginner Document Pdf [3h]
- ✓ Install eclipse SVN plugin Pdf [30m]
- ✓ Use SVN plugin in eclipse Pdf [1h]
- ✓ Eclipse shortcuts Pdf [1h]
- ✓ Core Java [11h]

Further References

- Video Material

- ✓ How to Wok with SVN [8m]
- ✓ Eclipse-working with Subversion [46 m]
- ✓ Tutorial for Beginners [12m x 16 videos]
- ✓ Java Fundamental Part-1 [4h 13m]

Assignment

Assignment # 1

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Problem Statement

Write a standalone java program that accepts items details and calculate the effective cost after applying the tax rules.

Input

1. ***Item name*** 2. ***Item type*** 3.***Item price*** 4.***Item quantity***

Input should be accepted with following command line options:

-name <first item name>

-price <price of first item>

-quantity <quantity of first item>

-type <type of first item>

Problem Statement…

Business Rules

Item type can have 3 possible values ***Raw***, ***Manufactured*** and ***Imported*** and tax rules for 3 types are as follows:

- ✓ **Raw**: 12.5% of the item cost
- ✓ **Manufactured**: 12.5% of the item cost **+** 2% of (item cost + 12.5% of item cost)
- ✓ **Imported**: 10% import duty on item cost **+** a surcharge (surcharge is: Rs. 5 if the final cost after applying tax & import duty is up to Rs. 100, Rs. 10 if the cost exceeds 100 and up to 200 and 5% of the final cost if it exceeds 200).

Expected Behaviour And Output

- All options other than item name can come in any order i.e. after *-name* you can have *-price*, *-type* option. Item type is a mandatory option.
- The system should provide functionality to add more than one items i.e. Once the details of first item is entered it should display a message saying:

  "Do you want to enter details of any other item (y/n):"
- Make use of java's object oriented capabilities for implementing this business logic
- Exception handling is expected in the program
- Jdk8 should be used for development

Output

- item name, item price, sales tax liability per item, final price (sales tax + item price) to the console.

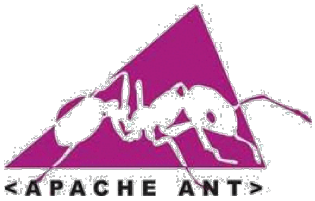
Evaluation Criteria

- Code Completeness and Correctness
- Choice of Data Structure
- Usage of SVN
- Usage of OO Principles, package/class structure, class/function/variable names
- Code should be in running condition
- Presentation Skills

Week#2

Advance Core Java, Maven and Ant Introduction

maven



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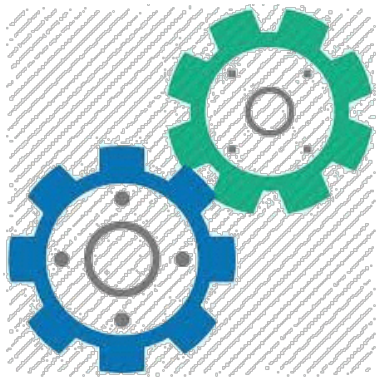
Learn Advance Java

Objective

- Learn Advance Java
- Learn Maven Fundamentals
- Learn Ant Fundamentals



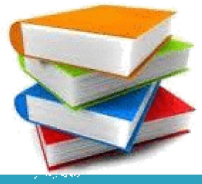
Course Content

- Advance Java Programming (Duration -23.5h)
  - ✓ Collections And Generics
  - ✓ Inner Classes
  - ✓ Annotations
  - ✓ Threads Basics
  - ✓ Java 8 new features
- Ant and Maven Introduction (Duration -7.5h)
  - ✓ Introduction to Build Tools
  - ✓ Ant Introduction And Setup
  - ✓ Run Sample Build from Ant
  - ✓ Maven Introduction And Setup
  - ✓ Create And Build Maven Project

Module Plan

Day	Activities
Day#1	Exception, Threads and Essential classes | Java Collection Framework | Java Date Time API
Day#2	Java Fundamentals: The Core Platform
Day#3	Advance Java | Maven Fundamentals | Maven Tutorial
Day#4	New Features in Java 8 | Build Tools - Ant And Maven | Ant Tutorial | Assignment#2
Day#5	Assignment#2

Study Material



Books

- ✓ Exception, Threads and Essential classes [3h 30m]
- ✓ Java Collection Framework [2h 30m]
- ✓ Java Date Time API [2h]
- ✓ Maven Tutorial [1h 30m]
- ✓ Build Tools - Ant And Maven [2h]
- ✓ Ant Tutorial [1h 30m]

Further References

- Video Material

- ✓ Java Fundamentals: The Core Platform [7h 25m]
- ✓ Advance Java [3h 48m]
- ✓ Maven Fundamentals [2h 30m]
- ✓ New Features in Java 8 [4h 15m]

Assignment

Assignment # 2

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Problem Statement

Implement a standalone flight search program in Java that lists matching flights for a traveller who is looking to fly between 2 locations on a given date. The input locations should be 3 letter location code format as present in airlines flight data.

You are given 3 CSV files, each containing the available flight data for Air India, Jet Air, IndiGo respectively. Sample CSV files links are attached here for reference. You can add more data in existing files or can add more CSV files for another airlines.

Air India Data

Jet Air Data

Indigo Data

Problem Statement…

CSV File Data Details

CSV Fields	Details
FLIGHT_NO	Unique flight number, starting with 2 letter airline code
DEP_LOC	Departure location code
ARR_LOC	Arrival location code
VALID_TILL	Date (DD-MM-YYYY) till which each flight is available. It means that this flight will fly once everyday till this date
FLIGHT_TIME	local time (HHmm) at which flight departs from departure location
FLIGHT_DUR	Flight Duration from departure location to arrival location
FARE	This is the fare of the flight per person in INR
SEAT_AVAILABILITY	Y or N
CLASS	E or B or EB [E- economic, B- Business]

Problem Statement

Input

Program should accept 5 input parameters

a. **Departure Location**
b. **Arrival Location**
c. **Flight Date**
d. **Flight Class**
e. **Output Preference**

"Flight Class" is a String which has two possible values like '**E**' and '**B**'. E=Economic and B=Business.

"Output Preference" is a String which suggests whether flight result should be sorted only by fare or by both fare and flight duration.

Expected Behaviour and Output

- After getting the inputs, program should search for the flights in all 3 csv files and list the results on standard output, sorted by Fare and Flight Duration
- Program should be written considering that there could be more csv files and at runtime program should load the files. Please make use of Thread which will look for any new file at particular location after some configurable time and load the provided file
- If the Departure location or/and Arrival location is not present in any csv files then program should return a user friendly error
- Write a ant script to build a jar file for the same java program
- Convert the same java project to maven enabled project and run the program
- Maven 3.x should be used

Output

Program should display the list of available flights with details on console for provided user inputs and if user enters "***Flight Class***" as 'B' then fare should be increased by 40% of the base fare.(CSV file has the base fare only)

Evaluation Criteria

- Code Completeness and Correctness
- Use of Java Collections, Threads and Annotations
- Usage of OO Principles, package/class structure, class/function/variable names
- Code in running condition
- Face to face discussion

Week#3

SQL Basics, JDBC and Hibernate

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Learn SQL Basics and ORM

Objective

- Learn SQL Fundamentals
- Learn JDBC Usage
- Learn ORM Framework

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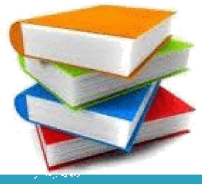
Course Content

- SQL Basics and JDBC (Duration -17h)
  - ✓ SQL Introduction
  - ✓ Basic CRUD Operations
  - ✓ How to setup JDBC?
  - ✓ JDBC Connections, Statements, Result Sets
  - ✓ JDBC Transactions, Exceptions, Batch processing
- ORM And Hibernate (Duration -13h)
  - ✓ ORM Fundamentals
  - ✓ Hibernate Env. Setup
  - ✓ Define Hibernate Mappings
  - ✓ Use Hibernate for CRUD Operations

Module Plan

Day	Activities
Day#1	SQL Env Setup | Installation of MySQL DB | JDBC Tutorial | SQL Basics | SQL Advanced
Day#2	Introduction to SQL | SQL Tutorial
Day#3	SQL Basics Lesson 1 | SQL Basics Lesson 2 | Hibernate Introduction | Hibernate Tutorial for Beginner | Hibernate Introduction
Day#4	Hibernate Tutorial | Assignment#3
Day#5	Assignment#3

Study Material



Books

- ✓ JDBC Tutorial [6h]
- ✓ SQL Basics [30m]
- ✓ SQL Advanced [1h]
- ✓ Hibernate Tutorial [8h]

Further References

- Video Material

- ✓ Install MySQL on Windows [6m]
- ✓ Introduction to SQL [3h 23m]
- ✓ SQL Tutorial [5h]
- ✓ SQL Basics Lesson 1 [32 m]
- ✓ SQL Basics Lesson 2 [38 m]
- ✓ Hibernate Tutorial for Beginners [57m]
- ✓ Hibernate Introduction [3h 58m]

Assignment

Assignment # 3

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Problem Statement

Implement a standalone flight search program in Java using ***Hibernate technology and MySQL Database*** that lists matching flights for a traveller who is looking to fly between 2 locations on a given date. The input locations should be 3 letter location code format as present in airlines flight data.

You are given 3 CSV files, each containing the available flight data for Air India, Jet Air, IndiGo respectively. Sample CSV files links are attached here for reference. You can add more data in existing files or can add more CSV files for another airlines.

Air India Data

Jet Air Data

Indigo Data

Problem Statement

CSV File Data Details

CSV Fields	Details
FLIGHT_NO	Unique flight number, starting with 2 letter airline code
DEP_LOC	Departure location code
ARR_LOC	Arrival location code
VALID_TILL	Date (DD-MM-YYYY) till which each flight is available. It means that this flight will fly once everyday till this date
FLIGHT_TIME	local time (HHmm) at which flight departs from departure location
FLIGHT_DUR	Flight Duration from departure location to arrival location
FARE	This is the fare of the flight per person in INR
SEAT_AVAILABILITY	Y or N
CLASS	E or B or EB [E- economic, B- Business]

Problem Statement

Input

Program should accept 5 input parameters

a. **Departure Location**
b. **Arrival Location**
c. **Flight Date**
d. **Flight Class**
e. **Output Preference**

"Flight Class" is a String which has two possible values like '**E**' and '**B**'. E=Economic and B=Business.

"Output Preference" is a String which suggests whether flight result should be sorted only by fare or by both fare and flight duration.

Expected Behaviour And Output

- Create Database tables in MySql Database for flight detail records (csv file data), DDLs should be submitted for evaluation
- Write a standalone java program using ***hibernate*** for inserting the csv data into Database tables and perform basic CRUD operations on flight master data
- After getting the inputs, program should search for the flights in database tables using ***hibernate*** and list the results on standard output, sorted by Fare and Flight Duration
- Write a small java program to insert the values for flight details in database tables using JDBC
- MySql Database version 5.x or above and Hibernate version 5.x should be used.

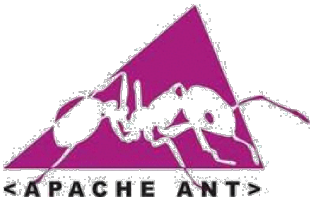
Output

Program should display the list of available flights with details on console for provided user inputs and if user enters "Flight Class" as 'B' then fare should be displayed as 40% increased of the base fare

Evaluation Criteria

- Code Completeness and Correctness
- Usage of Java Collections
- Usage of OO Principles, package/class structure, class/function/variable names
- Code Modularity
- Code should be in running condition
- Face to face discussion
- Data Base Table design

Congratulations !!! You are now Certified with E1 Badge.



Week#4

Web Server Basics And Web Components

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Web Server And Components

Objective

- Web Server And Application Server Basics
- Learn Web Components
- Develop Web Application

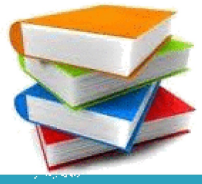
Course Content

- Web Server Basics(Duration -7h)
  - ✓ Web Server And Application Server Introduction
  - ✓ Know About Tomcat
  - ✓ Configure Tomcat with Eclipse
- Web Components (Duration -21h)
  - ✓ JSP And Servlet Basics
  - ✓ JSP Standard Tag Library [JSTL]
  - ✓ Web Application Structure
  - ✓ Sample Web Application

Module Plan

Day	Activities
Day#1	Webserver And Application Server Basics | Tomcat Basics | Tomcat Advanced | Configuring Tomcat in Eclipse Pdf
Day#2	Creating a Web App Using Eclipse | JSP And Servlet Tutorial | Java Web Fundamentals
Day#3	Java EE: Programming Servlets | Servlet Tutorial
Day#4	Servlet Tutorial | JSP Tutorial | Assignment#4
Day#5	Assignment#4

Study Material



Books

- ✓ Tomcat Basics [3h]
- ✓ Tomcat Advanced [3h]
- ✓ Configuring tomcat in eclipse [1h]
- ✓ Servlet Tutorial [5h]
- ✓ JSP Tutorial [5h]

Further References

- Video Material
- ✓ Creating a Web App Using Eclipse [15m]
- ✓ JSP And Servlet Tutorial [4h]
- ✓ Java Web Fundamentals [2h 28m]
- ✓ Java EE: Programming Servlets [4h 26m]

Assignment

Assignment # 4

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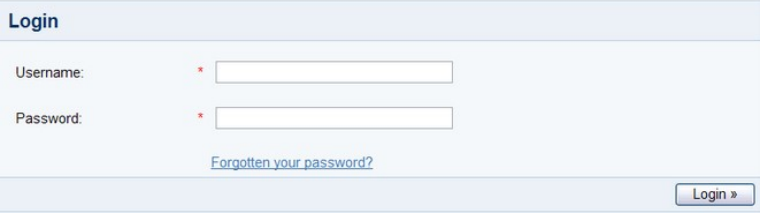
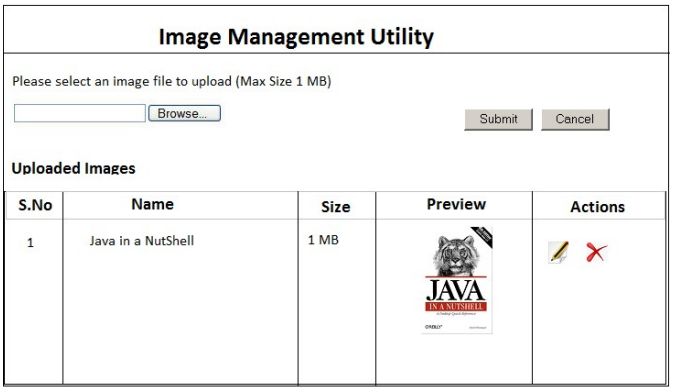
Problem Statement

Develop an image management utility. This utility begins by presenting a login screen that looks like this



- User would enter an username and password for authentication. Upon clicking the Login button, the submitted username / password should be verified (authenticated) against existing users information in the database.
- Upon successful authentication, the user would be presented with a screen as follows:

Problem Statement…



- User should be allowed to edit (change the uploaded image's attributes viz. name, image source) and delete the image and total size of the uploaded images should be displayed at the bottom of the listing on the same page.

Expected Behaviour

Constraints

- Max size of a single file uploaded should be 1 MB
- Max size of all uploaded files should be 10 MB

Key Points

- Design appropriate data model and object model
- Proper validation and info messages should be shown on console where ever required
- Exception Handling is required
- Make use of Hibernate Technology for Data Base connectivity
- While writing APIs no SQL scripts should be used instead use Hibernate POJOs and HQL
- Tomcat version 8 or above and hibernate 5.x should be used

Evaluation Criteria

- Code Completeness and Correctness
- Usage of OO Principles, package/class structure, class/function/variable names
- Code Modularity
- Code should be in running condition
- Face to face discussion
- Data base design and proper use of hibernate technology

Week#5

OOPS Concepts and Design Patterns

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OOPs and Design Patterns

Objective

- OOPS Concepts
- Design Pattern And Concepts

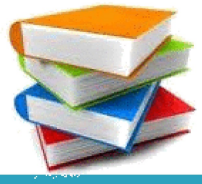
Course Content

- OOPS (Duration -12.5h)
  - ✓ OOPS Introduction
  - ✓ Object State and Behaviour
  - ✓ Abstraction, Encapsulation
  - ✓ Inheritance And Polymorphism
- Design Pattern (Duration -18h)
  - ✓ Basic Design Concepts
  - ✓ Creational Design Pattern
  - ✓ Structural Design Pattern
  - ✓ Behavioural Design Pattern

Module Plan

Day	Activities
Day#1	Object Oriented Concepts | OOPs Concepts | Object Oriented Programming Pdf
Day#2	Object Oriented Programming Pdf | Design Understanding
Day#3	Design Understanding | Design Pattern On-Ramp | Design Patterns -1
Day#4	Design Patterns -2 | Design Patterns -3 | Assignment#5
Day#5	Assignment#5 | Assignment#6

Study Material



Books

- ✓ OOPS Concepts [4h]
- ✓ Object-Oriented Programming [8h]
  (initial five chapters)
- ✓ Design Understanding [6h]

Further References

- Video Material
- ✓ Object Oriented Concepts [24m]
- ✓ Design Pattern On-Ramp [3h 30m]
- ✓ Design Patterns -1 [4h]
- ✓ Design Patterns -2 [2h]
- ✓ Design Patterns -3 [2h 40m]

Assignment

Assignment # 5

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Problem Statement

A 'billing system' of a retail website has to be developed in which different type of customers have different type of discount schemes. And for a given bill, a net payable amount should be generated based on the type of the customer and the product.

Business Rule

- If the user is an employee of the store, he gets a 30% discount
- If the user is an affiliate of the store, he gets a 10% discount
- If the user has been a customer for over 2 years, he gets a 5% discount.
- For every $100 on the bill, there would be a $ 5 discount (e.g. for $ 990, you get $ 45 as a discount).
- The percentage based discounts do not apply on groceries
- A user can get only one of the percentage based discounts on a bill for which discount percentage is maximum

Expected Behaviour And Output

- Use of OOPs concepts
- A small write-up explaining the different OOPs concept used in this application
- Source code (should be refactored) of the application
- Standalone java application

Evaluation Criteria

- Code completeness and correctness
- Usage of OO principles, package/class structure, class/function/variable names
- Code modularity
- Code should be in running condition
- Face to face discussion

Assignment

Assignment # 6

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Problem Statement

Consider a Garment industry which produces various types of garments like shirt, trousers. The consumers can request for the required types of garments through the factory. However from consumer point of view, they don't know the origin of these garments and how they are being produced.

Give a solution to this problem using any suitable design pattern and correct the code provided in the next slide.

Problem Statement…

Bad Design

```java
package com.nagarro.factory;

import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;

public class BadClient {
	public static void main(String[] args) {
		System.out.println("Enter your selection:");
		BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
		String selection = null;

		try {
			selection = br.readLine();
		} catch (IOException e) {
			e.printStackTrace();
		}

		if (selection.equalsIgnoreCase("Trouser")) {
			Trouser trouser = new Trouser();
			trouser.print();
		} else if (selection.equalsIgnoreCase("Shirt")) {
			Shirt shirt = new Shirt();
			shirt.print();
		}
	}
}
```

Expected Behaviour And Output

- Use of OOPs concepts
- Write down the sample code which describes the used design pattern
- Running code

Evaluation Criteria

- Code correctness
- Usage of OO principles, package/class structure, class/function/variable names
- Code modularity
- Code should be in running condition
- Face to face discussion
- Adoption of the correct design pattern

Week#6

HTML5, CSS3, JavaScript and Angular 2

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HTML5, CSS3, JavaScript And Angular 2

Objective

- Learn HTML5 And CSS3
- Learn JavaScript Basics
- Learn Angular 2

Course Content

- HTML5 (Duration -13h)
  - ✓ HTML5 Introduction
  - ✓ Structural elements
  - ✓ Mark-up elements
  - ✓ Obsolete elements
  - ✓ Rich media
  - ✓ Drag and drop
  - ✓ Geolocation API
- CSS3 (Duration -5.5h)
  - ✓ CSS3 Introduction
  - ✓ Selectors
  - ✓ Media Queries and CSS3 layouts
  - ✓ Custom fonts
  - ✓ CSS3 properties
  - ✓ Transformation and animations
- JavaScript (Duration -6h)
  - ✓ JavaScript Introduction
  - ✓ Syntax, Operators and Statements
  - ✓ Functions and Arrays
  - ✓ JavaScript Objects
  - ✓ Traversing and Modifying the DOM Tree
  - ✓ Events And Event Handling
- Angular 2 (Duration -7.5h)
  - ✓ Components
  - ✓ Data bindings, Directives, DI

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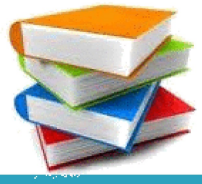
Module Plan

Day	Activities
Day#1	HTML5 Fundamental – 1 | HTML5 Fundamental – 2 | Practical HTML5
Day#2	Practical HTML5 | HTML5 Concepts | Introduction to HTML5 And CSS3
Day#3	CSS3 Tutorial | JavaScript Fundamentals | JavaScript for beginners
Day#4	Angular 2 | Angular 2 Concepts | Assignment#7
Day#5	Assignment#7 | Assignment#8

Study Material



Books

- ✓ HTML5 Concepts [3h]
- ✓ CSS3 Tutorial [3h]
- ✓ JavaScript for beginners [3h]
- ✓ Angular 2 Concepts [3h]

Further References

- Video Material
- ✓ HTML5 Fundamental – 1 [2h 13m]
- ✓ HTML5 Fundamental – 2 [3h 56m]
- ✓ Practical HTML5 [4h]
- ✓ Introduction to HTML5 And CSS3 [2h 35m]
- ✓ JavaScript Fundamentals [2h 53m]
- ✓ Angular 2 [4h 30m]

Assignment

Assignment # 7

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Problem Statement

Part-1

Using HTML5 Canvas element and JavaScript, draw a Smiley face. A reference graphic is shown below:

Part-2

Create an example with HTML5 drag and drop to copy an image into an empty square?

Part-3

Use Media queries along with column layout to reduce number of columns with reducing width of the screen.

Evaluation Criteria

- Code correctness
- Code should be in running condition
- Face to face discussion

Assignment

Assignment # 8

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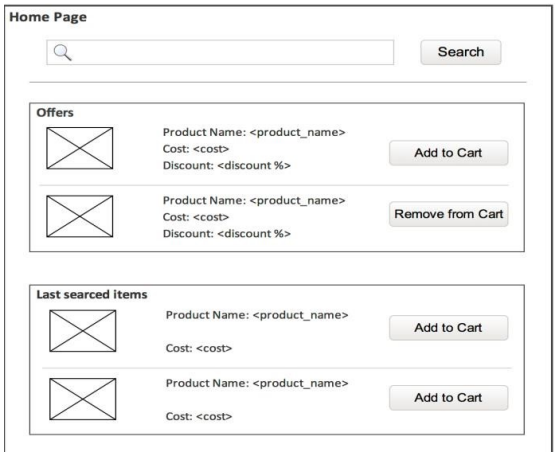
Problem Statement

Create a SPA for ecommerce website with sample data (hard coded) using Angular2 and HTML5. Implement search functionality on offers.



Evaluation Criteria

- Code correctness
- Code should be in running condition
- Use of components, databinding
- Code formatting, coding style and folder structure
- Face to face discussion

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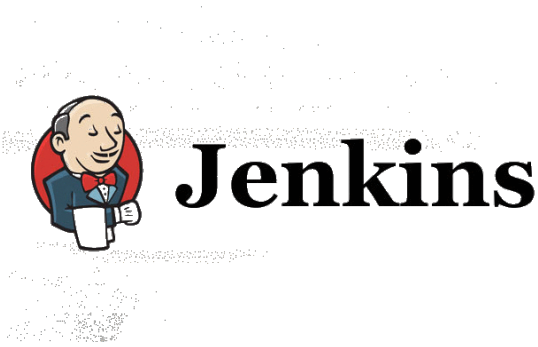
Week#7

Coding Standards and Guidelines, Build And CI



Coding Standards and Guidelines, Build And CI

Objective

- Learn Coding Standards And Guidelines
- Learn Continuous Integration

Course Content

- Coding Standards And Guidelines (Duration 15h)
  - ✓ General Java Guidelines
  - ✓ Junit Guidelines
  - ✓ JSP Guidelines
  - ✓ JavaScript Guidelines
  - ✓ HTML Guidelines
  - ✓ CSS Guidelines
  - ✓ Static Code Analysis
  - ✓ Artifactory Server
  - ✓ Maven Guidelines
- Build And CI (Duration -15h)
  - ✓ What is CI?
  - ✓ Know About Jenkins
  - ✓ Jenkins Setup
  - ✓ Sonar Setup for Jenkins
  - ✓ Accessing Build And Sonar Reports
  - ✓ Events And Event Handling

Module Plan

Day	Activities
Day#1	Learn Java Coding Standards | Java Coding Standard And Guidelines Pdf
Day#2	Java Coding Standard And Guidelines Pdf | Assignment#9
Day#3	Learn Build And CI | Jenkins And Sonar Build Process Pdf | Assignment#9
Day#4	Jenkins And Sonar Build Process Pdf | Assignment#9
Day#5	Assignment#9

Study Material

Books

- ✓ Java Coding Standards And Guidelines [15h]
- ✓ Jenkins And Sonar Build Process [12h]

Further References

- Video Material
- ✓ Jenkins Tutorial for beginners [35m]
- ✓ Jenkins Introduction [2h 38m]

Assignment

Assignment # 9

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Problem Statement

Refactor the Assignment#3 Java code and make it compliant with Java Coding Standards And Guidelines.

Expected Behaviour

- Code should follow Java Coding Standards And Guidelines like Comments, Naming conventions, Indentation, Annotations and General guidelines
- Project should be maven enabled and maven guidelines should be followed
- Running code

Evaluation Criteria

- Code correctness
- Code modularity
- Code should be in running condition
- Face to face discussion
- Adhere to Java Coding Standards And Guidelines
- Adoption of the correct design pattern

Week#8

Web Services

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Web Service

Objective

- Develop Web Application using Web Services

Course Content

- Basics(Duration 11h)
  - ✓ Introduction
  - ✓ REST Core Components
  - ✓ SOAP Core Components
- Advance (Duration 19h)
  - ✓ RESTful Architecture
  - ✓ HTTP methods
  - ✓ Jackson
  - ✓ Validations
  - ✓ Filters
  - ✓ REST with JAX-RS, Jersey, Apache CXF
  - ✓ Webservices with Apache CXF

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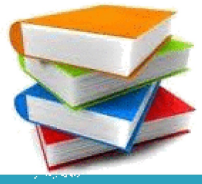
Module Plan

Day	Activities
Day#1	REST Webservices Basics | REST Webservices | SOAP | WSDL
Day#2	SOAP Webservices Basics | RESTful Webservices with JAX-RS
Day#3	RESTful Services in Java using Jersey | Building Asynchronous RESTful Services With Jersey
Day#4	REST Services using CXF | Web Services with Apache CXF | Assignment#10
Day#5	Assignment#10

Study Material



Books

- ✓ REST Webservices Basics (Refer chap. 20) [4h]
- ✓ REST Webservices [2h]
- ✓ SOAP [30m]
- ✓ WSDL [30m]
- ✓ SOAP Webservices Basics (Refer chap. 16) [4h]
- ✓ REST Services using CXF [2h]

Further References

- Video Material
- ✓ RESTful Webservices with JAX-RS [6h]
- ✓ RESTful Services in Java using Jersey [4h 24m]
- ✓ Building Asynchronous RESTful Services With Jersey [3h 11m]
- ✓ Web Services with Apache CXF [3h 17m]

Assignment

Assignment # 10

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Problem Statement

Develop a web application using Angular2 and RESTful webservices using Jersey/CXF for HR Manager. HR manager can login to application and manage employees.

Following functionalities are expected

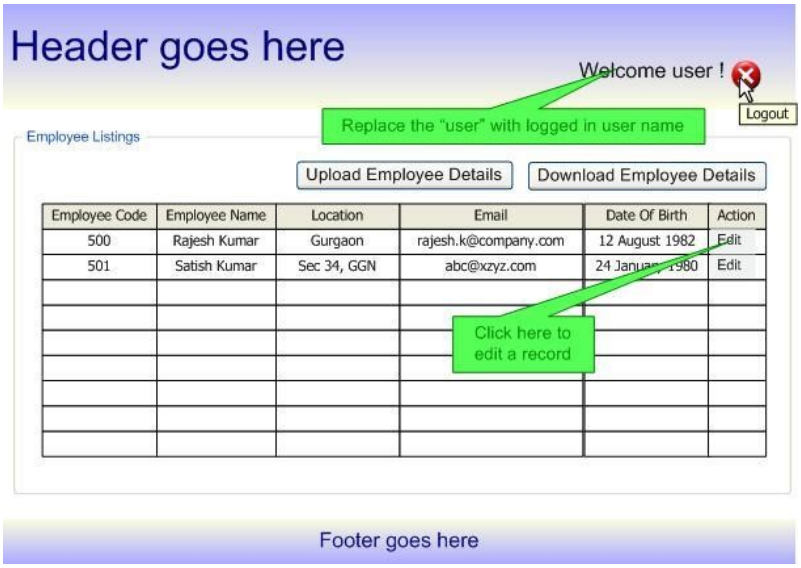
1. HR Manager Login/Logout
2. Employee listing
3. Edit an employee details

Application UI

- HR Manager Login

Application UI…

- List Employees Details



Application UI…

- Edit Details

Expected Behaviour and Output

- The complete assignment should be done using AngularJS2, Jersey, Tomcat, and JDBC only.
- Strictly follow the component based architecture in Angular2 and create SPA.
- Use of jQuery is not allowed.
- Well documented HTML, JS and CSS files
- Code should follow Java Coding Standards, Guidelines and best practices

Evaluation Criteria

- Code correctness
- Code modularity
- Code should be in running condition
- Face to face discussion
- Adhere to Java Coding Standards And Guidelines
- Implementation of 3-tier architecture

Week#9

Spring and Spring Hibernate Integration

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Spring And Spring Hibernate Integration

Objective

- Develop Web Application using Spring
- Spring Hibernate Integration

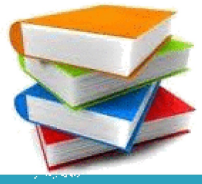
Course Content

- Spring Basics (Duration 7h)
  - ✓ Introduction
  - ✓ Spring Architecture
  - ✓ Spring Env. Setup
  - ✓ Write a small "Hello world" Example
- Spring Core (Duration 24h)
  - ✓ IOC/Dependency Injection
  - ✓ Validation, Data Binding and Type Conversion
  - ✓ Spring AOP
  - ✓ Transaction Management
  - ✓ Spring MVC
  - ✓ Spring JDBC Framework
  - ✓ Hibernate with Spring

Module Plan

Day	Activities
Day#1	Spring Env Setup | Spring Fundamentals | Web Applications with Spring |Spring Tutorials Pdf [Spring Architecture]
Day#2	Spring framework Reference Pdf | Spring Tutorials Pdf [Spring IoC, Validations, Data Binding, Type Conversion And Spring AOP]
Day#3	Spring with JPA and Hibernate | Spring Data JPA
Day#4	Spring REST | Spring MVC Introduction | Spring Hibernate Integration
Day#5	Assignment#11

Study Material



Books

- ✓ Spring Tutorial [5h]
- ✓ Spring-framework-reference [5h]

Further References

- Video Material

- ✓ Spring Fundamentals [2h 55m]
- ✓ Web Applications with Spring [2h]
- ✓ Spring with JPA and Hibernate [5h]
- ✓ Spring Data JPA [3h 16m]
- ✓ Spring Data REST [2h 45m]
- ✓ Spring MVC Introduction [4h]
- ✓ Spring Hibernate Integration [1h 13m]

Assignment

Assignment # 11

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Problem Statement

Implement a flight search Web Application using Spring, ***Hibernate technology*** that lists matching flights for a traveller who is looking to fly between 2 locations on a given date. The input locations should be 3 letter location code format as present in airlines flight data

You are given 3 CSV files, each containing the available flight data for Air India, Jet Air, IndiGo respectively. Sample CSV files links are attached here for reference. You can add more data in existing files or can add more CSV files for another airlines

Air India Data

Jet Air Data

Indigo Data

Problem Statement

CSV File Data Details

CSV Fields	Details
FLIGHT_NO	Unique flight number, starting with 2 letter airline code
DEP_LOC	Departure location code
ARR_LOC	Arrival location code
VALID_TILL	Date (DD-MM-YYYY) till which each flight is available. It means that this flight will fly once everyday till this date
FLIGHT_TIME	local time (HHmm) at which flight departs from departure location
FLIGHT_DUR	Flight Duration from departure location to arrival location
FARE	This is the fare of the flight per person in INR
SEAT_AVAILABILITY	Y or N
CLASS	E or B or EB [E- economic, B- Business]

Problem Statement

Input

Program should accept 5 input parameters

a. **Departure Location**
b. **Arrival Location**
c. **Flight Date**
d. **Flight Class**
e. **Output Preference**

"Flight Class" is a String which has two possible values like '**E**' and '**B**'. E=Economic and B=Business.

"Output Preference" is a String which suggests whether flight result should be sorted only by fare or by both fare and flight duration.

Expected Behaviour And Output

- Create Database tables in MySql Database for flight detail records (csv file data) and inserts the data using SQL
- Create a login Page for the application and after successful login Flight Search Screen will be displayed
- Search screen should have all input parameters specified in previous slides as Departure Location, Arrival Location, Flight Class, Flight Date, Output Preference
- Once Search is triggered after specifying the search parameters, It will display the search results using hibernate
- Use Spring MVC and Spring - Hibernate Integration
- Spring version 3 or 4 should be used

Evaluation Criteria

- Code Completeness and Correctness
- Usage of Spring Framework And Hibernate
- Code Modularity
- Code should be in running condition
- Face to face discussion
- Application UI Design

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Jenkins

HIBERNATE

sonar

Web Service

spring

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Thanks