Module: Java + UI + PHP

Course: Core Java

Session 18: Basics of Collection Framework

Trainer Notes

1 Session Plan

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| Time  (min) | Content | Methodology | Trainer  Approach | Learner  Activity | Learning  Outcome  (Bloom's) | Learning  Outcome  (Gardner's) |
| 15 | Collection Interfaces | Reference to  Reading  Material and  Slides | Facilitate,  Elicit  responses | Think,  Respond,  Identify | Remember,  Understand | Intrapersonal,  interpersonal |
| 15 | Collection classes | Reference to  Reading  Material and  Slides | Facilitate,  Elicit  responses | Think,  Respond,  Identify | Remember,  Understand | Intrapersonal,  interpersonal |
| 15 | Demos of basic collections | Reference to  Reading  Material and  Slides | Facilitate,  Elicit  responses | Think,  Respond,  Identify | Remember,  Understand | Intrapersonal,  interpersonal |
| 15 | Ordering collection | Reference to  Reading  Material and  Slides | Facilitate,  Elicit  responses | Think,  Respond,  Identify | Remember,  Understand | Intrapersonal,  interpersonal |
| 25 | Guided Classroom  Activities | Group Activities | Facilitate | Work on guided activities | Remember,  Understand,  Coding | Intrapersonal,  interpersonal |
| 05 | Conclusion | Discussion | Question,  Facilitate,  Guides | Participates,  Recollect  concepts | Remember | Intrapersonal,  interpersonal |

2 Objectives

* Define collections
* Understanding the importance of collections
* Identifying core collection interfaces and their implementation classes.
* Perform basic operations on all collections
* Use Iterator interface and SortedSet.
* Use the Comparator and Comparable interfaces

3 Materials Needed

* Slides

1. Presentation Description

The Facilitator is expected to follow the Presentation Slides as a guideline for the flow of the session.

1. Guided Classroom Activities

**Primitive data types and Wrapper Classes**

* To use Wrapper classes instead of primitive types in the classes of the Employee payroll system.
* The payroll system of an organization involves calculating the gross salary of each type of employee and the tax applicable to each. The entity classes, their fields and methods are already given in your candidate project. Your task today is to replace primitive field types int and double with Wrapper classes Integer and Double respectively.
* Classes given to you in the candidate project are: Employee, Trainer, Sourcing, Manager, Organization, SelfEmployed and TaxUtil. These classes already have fields, constructors and the respective methods. The Trainer, Manager and sourcing classes are sub-classes of Employee.
* Java provides Wrapper classes for primitive data types to enable easier operations on them like conversion from one type to another and formatting to a particular format for display. Listed below are the classes and fields that have primitive types. Change them as follows:
  + Class Employee
    - Int fields that should be changed to Integer : id
    - double fields that should be changed to a Double object: basicSalary, HRAPer,DAPer
  + Class Manager
    - double fields that should be changed to a Double object: projectAllowance
  + Class Trainer
    - Int fields that should be changed to Integer : batchCount
    - double fields that should be changed to a Double object: perkPerBatch
  + Class Sourcing
    - Int fields that should be changed to Integer : enrollmentTarget, enrollmentReached
    - double fields that should be changed to a Double object: perkPerEnrollment
  + Class SelfEmployed
  + double fields that should be changed to a Double object: totalIncome, totalExpense
  + Interface IncomeCalculatorInterface
    - return type of method calculateIncome should be changed from double to Double object
  + Class TaxUtil
    - return type of method calculateTax should be changed from double to Double object
* After making these changes, Make the following changes as well in the above classes.
* Change the getter and setter methods of these fields to use the new Data type.
* Parameter Constructor should be change to accept new data types instead of old.
* In the default constructor, set all Integer fields to 0 and Double fields to 0.0.
* Change the return types and return values of the implemented methods in classes.