Module: Java + UI + PHP

Course: Core Java

Session 4: Class Design and Encapsulation

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) |
| 30 | Encapsulation | Reference to  Reading  Material and  Slides | Facilitate,  Elicit  responses | Think,  Respond,  Identify | Remember,  Understand | Intrapersonal,  interpersonal |
| 30 | Employee Example | 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

* Explain the need and importance of Encapsulation
* Demonstrate how to applying encapsulation for java classes
* Demonstrate Employee example

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

* To encapsulate private data members with get and set methods
* 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 provide access control mechanisms for the fields in the classes of the payroll system application.
* Classes given to you in the candidate project are: Employee, Trainer, Sourcing, Manager, Organization and TaxUtil. These classes already have fields, constructors and the respective methods. The Trainer, Manager and sourcing classes are sub-classes of Employee.
* The fields in the classes have been declared protected or private and hence they cannot be accessed outside the class. This prevents changing the fields unpredictably or illegally. Provide getter and setter methods for each field of the classes such that the following rules apply:
  + Provide one get and one set method for all fields of all the classes in the given candidate project.
  + The get methods should return the current field value.
  + The set methods must have validations so that the fields are not set to improper values.
  + The set methods of all int fields must test to see if the new value is greater than or equal to Zero. If the input values are negative, DO NOT set the fields, leave them as it is.
  + The setter methods for the field “name” in both Employee and Organization must make sure that the input is not null, and contains only alphabets and spaces. Any input with numbers or special characters should be rejected and the field should be left as it was before.