44-542 Object-Oriented Programming

**Static**

The **Static** keyword describes that varible/method is shared across all the instances of class .It is class level variable and not the isntance level.

1.Create a Employee class with below attributes

age of **int** type

name of **String** type

state of **Static String** type and initialize it to “MO”

2.Create a constructor with three attributes are you succeeded in this step? If Not try to understand why and create a constructor with two attributes.

Solution

**public class Employee {**

**int age;**

**private String name;**

**static String state = "MO";**

**public Employee(int age, String name) {**

**this.age = age;**

**this.name = name;**

**}**

**}**

3.Create two objects for the Empoyee class named **emp1** and **emp2** with the follwing values emp1 – age =23 and name = “Employee 1”, emp2 – age =24 and name = “Employee 2”

3.Print the values of the state varible for both the emp objects by accessing the state variable using the emp1 and emp2 objects

4.By looking at the state value for two objects what did you understand?

5.Now, change the state value for employee 1 object , from “MO” to “CA” by accessing the state value using the **emp1.state**

**6.** Print the values of the state varible for both the employee objects by accessing the state variable using the emp1 and emp2 objects.Compare results output from question 4 and 6 .

7.Now, change the state value for employee 1 object , from “MO” to “CA” by accessing the state value using the **Employee.state**

**8.** Print the values of the state varible for both the employee objects by accessing the state variable using the emp1 and emp2 objects.Compare results output from question 6 and 8 .

**9.**Now, try to change the value of age variable to any desired value using the Class name i.e **Employee.age = 28;**

Did you see any error when you write above line ?If yes, what is the error and why you get the error ?

Solution:

We get an error saying that non static varibale age can not be reference from static context.This means that ,as the main method is static we can not direcly access non static methods or varibles with class name.But we access non static mehods or varibles using the instances of the class.

**public static void main(String[] args) {**

**Employee emp1 = new Employee(23, "Employee 1");**

**Employee emp2 = new Employee(25, "Employee 2");**

**System.out.println(emp1.state);**

**System.out.println(emp2.state);**

**// Employee.age = 25; //Uncomment this line see the error and understand why get the error**

**emp1.state = "CA";**

**System.out.println(emp1.state);**

**System.out.println(emp2.state);**

**Employee.state = "IA";**

**System.out.println(emp1.state);**

**System.out.println(emp2.state);**

**}**

**Output**

**run:**

**MO**

**MO**

**CA**

**CA**

**IA**

**IA**

**BUILD SUCCESSFUL (total time: 0 seconds)**

10.Create a static method in Employee class to change the state value and name it as modifyEmployeeAgeStatic it should accept one String parameter and and assign this parameter value to the static variable state

11.Create a non static method with name modifyEmployeeAgeNonStatic which takes int parameter and sets the parameter value to the age variable

12.Invoke the modifyEmployeeAgeNonStatic() on the emp1 object with the value 30 and print the ages of two objects emp1 and emp2 by accessing them using emp1.age and emp2.age and compare the results

13.Invoke the method modifyEmployeeAgeStatic using the class name Employee. modifyEmployeeAgeStatic() with the value “NE”

14. print the states of two objects emp1 and emp2 by accessing them using emp1.state and emp2.state and compare the results

Solution

**public class Employee {**

**int age;**

**private String name;**

**static String state = "MO";**

**public Employee(int age, String name) {**

**this.age = age;**

**this.name = name;**

**}**

**public static void modifyEmployeeAgeStatic(String s) {**

**state = s;**

**}**

**public void modifyEmployeeAgeNonStatic(int ageIn) {**

**age = ageIn;**

**}**

}

//Testing

**public static void main(String[] args) {**

**Employee emp1 = new Employee(23, "Employee 1");**

**Employee emp2 = new Employee(25, "Employee 2");**

**emp1.modifyEmployeeAgeNonStatic(30);**

**System.out.println(emp1.age);**

**System.out.println(emp2.age);**

**Employee.modifyEmployeeAgeStatic("NE");**

**System.out.println(emp1.state);**

**System.out.println(emp2.state);**

**}**

**}**

**run:**

**30**

**25**

**NE**

**NE**

**BUILD SUCCESSFUL (total time: 0 seconds)**