**Writing Clean Code**

Try to implement clean code practices in the following snippets.

1. **class Calculator**

**{**

**public static void Main()**

**{**

**int firstNumber = 10; int secondNumber = 20;**

**int result = addition(firstNumber, secondNumber);**

**Console.WriteLine("The result is: " + result); }**

**public static int addition(int x, int y) {**

**return x + y;**

**}**

**}**

2. **public class Employee {**

**String name;**

**double salary;**

**void setInfo(String name, double salary) {**

**this.name = name;**

**this.salary = salary;**

**}**

**void displayInfo() {**

**System.out.println("Employee Name: " + name); System.out.println("Employee Salary: " + salary);**

**}**

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

**Employee emp = new Employee();**

**emp.setInfo("John", 50000.0);**

**emp.display();**

**}**

**}**

3.

**const PI = 3.141592653589793;**

**function calculateCircleArea(radius) {**

**Return PI \* Math.pow(radius, 2);**

**}**

**let radius = 5;**

**let area = calculateCircleArea(radius);**

**console.log("The area is: " + area);**

4.

**class CalculateSum**

**{**

**static void printSum(int a, int b) {**

**Console.WriteLine(a + b);**

**}**

**static void Main() {**

**printSum(3, 4);**

**}**

**}**

5.

**class ArrayExample {**

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

**int[] numbers = {1, 2, 3, 4, 5};**

**for (int number: numbers)**

**System.out.println(number);**

**}**

**}**

6.

**function multiply(num1, num2) {**

**return num1 \* num2;**

**}**

**let multiplicationResult = multiply(3, 5);**

**console.log(multiplicationResult);**

7.

**class Program {**

**static void Main() {**

**int a = 5, b = 7;**

**string comparisonResult = (a < b) ? "a is less than b" : "b is less than or equal to a”;**

**Console.WriteLine(comparisonResult);**

**}**

**}**

8.

**class Calculator {**

**int add(int x, int y) { return x + y; }**

**int subtract(int x, int y) { return x - y; }**

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

**int result = add(10, 5) + subtract(20, 8); System.out.println("Result: " + result);**

**}**

**}**

9.

**let numbers = [1, 2, 3, 4, 5];**

**let sum = numbers.reduce((acc, num) => acc + num, 0);**

**console.log("The sum is: " + sum);**

10.

**class Point {**

**public int x, y;**

**public Point(int x, int y) {**

**this.x = x;**

**this.y = y;**

**}**

**public void displayCoordinates() {**

**Console.WriteLine($"x = {x}, y = {y}");**

**}**

**}**

**class Program {**

**static void Main() {**

**Point pt = new Point(10, 20);**

**pt.displayCoordinates();**

**}**

**}**

11.

**class Rectangle {**

**int calculateArea(int l, int w) {**

**return l \* w;**

**}**

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

**System.out.println("Area: " + calculateArea(5, 8));**

**}**

**}**

12.

**function greet(name) {**

**const greeting = name ? `Hello,${name}!` : "Hello there!";**

**console.log(greeting);**

**}**

**greet("Alice");**

**greet();**

13. **class TemperatureConverter {**

**public double FarenheitToCelsius(double fahrenheit) {**

**return (fahrenheit - 32) \* 5 / 9;**

**}**

**public double CelsiusToFarenheit(double celsius) {**

**return celsius \* 9 / 5 + 32;**

**}**

**}**

**class Program {**

**static void Main() {**

**TemperatureConverter converter = new**

**TemperatureConverter();**

**double farenheit = converter.FarenheitToCelsius(25);**

**double celsius = converter.CelsiusToFarenheit(98.6);**

**Console.WriteLine($"25 Celsius is {celsius} Fahrenheit");**

**Console.WriteLine($"98.6 Fahrenheit is {fahrenheit} Celsius");**

**}**

**}**

14. **import java.util.Scanner;**

**public class Main**

**{**

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

**Scanner scanner = new Scanner(System.in);**

**System.out.println("Please Select Whose Perimeter and Cost of Fencing do you want to find out ?");**

**System.out.println("1. Fencing of Sqaure Field at Rs.10 per meter ");**

**System.out.println("2. Fencing of Rectangle Field at Rs.12 per meter ");**

**System.out.println("3. Fencing of Circular Field at Rs.13 per meter ");**

**int choice = scanner.nextInt();**

**switch (choice) {**

**case 1:**

**calculateSquareFencing(scanner);**

**break;**

**case 2:**

**calculateRectangleFencing(scanner);**

**break;**

**case 3:**

**calculateCircularFencing(scanner);**

**break;**

**default:**

**System.out.println("Invalid choice!");**

**}**

**}**

**private static void calculateSquareFencing(Scanner scanner) {**

**System.out.print("Enter the side length of the square field: ");**

**int sideLength = scanner.nextInt();**

**int perimeter = 4 \* sideLength;**

**int cost = perimeter \* 10;**

**System.out.println("Total Fencing Cost: Rs. " + cost);**

**}**

**private static void calculateRectangleFencing(Scanner scanner) {**

**System.out.print("Enter the length of the rectangle: ");**

**int length = scanner.nextInt();**

**System.out.print("Enter the breadth of the rectangle: ");**

**int breadth = scanner.nextInt();**

**int perimeter = 2 \* (length + breadth);**

**int cost = perimeter \* 12;**

**System.out.println("Total Fencing Cost: Rs. " + cost);**

**}**

**private static void calculateCircularFencing(Scanner scanner) {**

**System.out.print("Enter the radius of the circle: ");**

**int radius = scanner.nextInt();**

**double perimeter = 2 \* Math.PI \* radius;**

**double cost = perimeter \* 13;**

**System.out.println("Total Fencing Cost: Rs. " + cost);**

**}**

**}**

15. Write a program that takes user input to for X number of Project Managers and Y number of Employees working under those Managers. Prompt the user to enter the following details:

• Manager -

o Manager’s Name

o Project Name

• Employee -

o First Name

o Last Name

o Designation

o Address (House No., Street Name, City, Pincode, State)

Confirm end of input from user.

After taking input, display all the employee details grouped by their projects (managers).

package intern\_assignments;

import java.util.Scanner;

import java.util.List;

import java.util.ArrayList;

class Employee {

private String firstName;

private String lastName;

private String designation;

private String address;

public Employee(String firstName, String lastName, String designation, String address) {

this.firstName = firstName;

this.lastName = lastName;

this.designation = designation;

this.address = address;

}

public String employeeDetails(){

return firstName + " " + lastName + "| Designation: " + designation + "| Address: " + address;

}

}

class ProjectManager {

private String managerName;

private String projectName;

private List<Employee> employees;

public ProjectManager(String managerName, String projectName) {

this.managerName = managerName;

this.projectName = projectName;

this.employees = new ArrayList<>();

}

public void addEmployee(Employee employee) {

employees.add(employee);

}

public void displayProjectDetails() {

System.out.println("Project: " + projectName + " (Managed by " + managerName + ")");

System.out.println("Employee Details:");

for (Employee employee : employees) {

System.out.println(employee.employeeDetails());

}

System.out.println();

}

}

public class CleanCode {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.println("Enter the number of Project Managers: ");

int numManagers = sc.nextInt();

List<ProjectManager> managers = new ArrayList<>();

for (int i = 0; i < numManagers; i++) {

System.out.println("\nEnter details for Project Manager " + (i + 1));

System.out.print("Manager's Name: ");

String managerName = sc.nextLine();

System.out.print("Project Name: ");

String projectName = sc.nextLine();

ProjectManager manager = new ProjectManager(managerName, projectName);

System.out.print("Enter the number of Employees under " + managerName + ": ");

int numEmployees = sc.nextInt();

for (int j = 0; j < numEmployees; j++) {

System.out.println("\nEnter details for Employee " + (j + 1));

System.out.print("First Name: ");

String firstName = sc.nextLine();

System.out.print("Last Name: ");

String lastName = sc.nextLine();

System.out.print("Designation: ");

String designation = sc.nextLine();

System.out.print("Address (House No., Street Name, City, Pincode, State): ");

String address = sc.nextLine();

Employee employee = new Employee(firstName, lastName, designation, address);

manager.addEmployee(employee);

}

managers.add(manager);

}

System.out.println("\nEmployee Details Grouped by Projects:");

for (ProjectManager manager : managers) {

manager.displayProjectDetails();

}

sc.close();

}

}