COMP 20043

OOPM

LAB EXERCISE WEEK 2

```
/**********************Sample Program ******************:**********************/
class Person {
   String name; int age;
   void talk(String message) {
       System.out.println(name + " says: " + message);
   }
}
class Main {
   public static void main(String[] args) {
       Person john = new Person();
       john.name = "Ahmed";
       john.age = 25;
       john.talk("Hello, I'm Ahmed");}}
```

This program features a class called Person with two instance variables, name and age, and one method called talk(). The talk() method takes a parameter called message and prints a message indicating that the person is talking and the content of the message.

In the Main class, we create an object of the Person class named john, set the values of its properties, and call its talk() method to print a message to the console.

```
/*************************************************:**********************/
```

Task 1

Circle Calculation Program:
Write a Java program that contains a class named Circle with an instance variable: radius. The class should have the following methods:

1. assignRadius(double radius): This method assigns a value to the radius of the circle.
2. area(): This method calculates and returns the area of the circle.
3. circumference(): This method calculates and returns the circumference of the circle.

Additionally, create another class named CircleOperations that contains the main method. Within the main method:
Create an object of the Circle class.
Use the object to call the assignRadius method and assign a sample value to the radius.
Calculate and display the area of the circle using the area method.
Calculate and display the circumference of the circle using the circumference method.

Task 2

Write a Java program that contains a class named Student with instance variables for name, age, and grade. The class should have methods for setting these values and calculating a student's status (e.g., pass or fail based on grade).
Additionally, create another class named StudentOperations that contains the main method. Within the main method:
Create objects of the Student class for multiple students.
Set their names, ages, and grades.
Calculate and display the status of each student (pass or fail).

Task 3

Write a Java program that contains a class named Rectangle with two instance variables: length and width. The class should have the following methods:
assignValues(double length, double width): This method assigns values to the length and width of the rectangle.
area(): This method calculates and returns the area of the rectangle.
perimeter(): This method calculates and returns the perimeter of the rectangle.
Additionally, create another class named RectangleOperations that contains the main method. Within the main method:
Create an object of the Rectangle class.
Use the object to call the assignValues method and assign sample values to the length and width.
Calculate and display the area of the rectangle using the area method.
Calculate and display the perimeter of the rectangle using the perimeter method.