1.ANS

import java.lang.Math;

class Triangle {

// sides of the triangle

double side1, side2, side3;

// constructor with no parameters

public Triangle() {

// default sides

side1 = 3;

side2 = 4;

side3 = 5;

}

// method to calculate the area of the triangle

double calculateArea() {

double s = (side1 + side2 + side3) / 2;

return Math.sqrt(s \* (s - side1) \* (s - side2) \* (s - side3));

}

// method to calculate the perimeter of the triangle

double calculatePerimeter() {

return side1 + side2 + side3;

}

}

public class TriangleDemo {

public static void main(String[] args) {

// Create an instance of the Triangle class

Triangle myTriangle = new Triangle();

// Calculate and print the area

double area = myTriangle.calculateArea();

System.out.println("Area of the triangle: " + area);

// Calculate and print the perimeter

double perimeter = myTriangle.calculatePerimeter();

System.out.println("Perimeter of the triangle: " + perimeter);

}

}

2.ANS

import java.util.ArrayList;

public class Student {

// Data Members (Attributes)

private int studentID;

private String name;

private String dateOfBirth;

private String address;

private String contactInformation;

private String enrollmentDate;

private ArrayList<String> coursesEnrolled;

private ArrayList<Double> grades;

private double tuitionFees;

private String status; // Active, graduated, on leave, etc.

// Constructor

public Student(int studentID, String name, String dateOfBirth, String address, String contactInformation,

String enrollmentDate, ArrayList<String> coursesEnrolled, ArrayList<Double> grades,

double tuitionFees, String status) {

this.studentID = studentID;

this.name = name;

this.dateOfBirth = dateOfBirth;

this.address = address;

this.contactInformation = contactInformation;

this.enrollmentDate = enrollmentDate;

this.coursesEnrolled = coursesEnrolled;

this.grades = grades;

this.tuitionFees = tuitionFees;

this.status = status;

}

// Methods (Behaviors)

// Register for a Course

public void registerForCourse(String course) {

coursesEnrolled.add(course);

}

// Drop a Course

public void dropCourse(String course) {

coursesEnrolled.remove(course);

}

// Check Grades

public void checkGrades() {

// Print or return the student's grades

System.out.println("Grades: " + grades);

}

// Pay Tuition

public void payTuition(double amount) {

tuitionFees += amount;

}

// Update Contact Information

public void updateContactInformation(String newContactInfo) {

contactInformation = newContactInfo;

}

// View Schedule

public void viewSchedule() {

// Print or return the student's course schedule

System.out.println("Courses Enrolled: " + coursesEnrolled);

}

// Apply for Leave

public void applyForLeave() {

// Logic for applying for leave

}

// Get Student Details

public void getStudentDetails() {

// Print or return all details of the student

System.out.println("Student ID: " + studentID);

System.out.println("Name: " + name);

// ... (print other details)

}

// Graduate

public void graduate() {

status = "Graduated";

}

// Calculate GPA

public double calculateGPA() {

// Logic to calculate GPA based on grades

// For simplicity, let's assume a simple average

double sum = 0.0;

for (double grade : grades) {

sum += grade;

}

return sum / grades.size();

}

}