**1.1**

**package** Practice1;

**import** java.util.\*;

**public** **class** N\_even {

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

Scanner p1=**new** Scanner(System.***in***);

System.***out***.println("enter the number");

**int** n=p1.nextInt();

**int** i=1;

**for**(i=1;i<n;i++) {

**if**(i%2==0) {

  System.***out***.println(i);

}

}

}

}

**1.2**

**package** Practice1;

**public** **class** Rectangle {

**double** length;

**double** breadth;

**double** area;

**public** Rectangle(**double** length, **double** breadth) {

**super**();

**this**.length = length;

**this**.breadth = breadth;

}

**public** **double** getLength() {

**return** length;

}

**public** **void** setLength(**double** length) {

**this**.length = length;

}

**public** **double** getBreadth() {

**return** breadth;

}

**public** **void** setBreadth(**double** breadth) {

**this**.breadth = breadth;

}

**public** **void** calculateArea() {

area = length \* breadth;

}

**public** **void** rectangleDetails() {

System.***out***.println("Length of the rectangle is: " + length);

System.***out***.println("Breadth of the rectangle is: " + breadth);

System.***out***.println("Area of the rectangle is: " + area);

}

}

**package** Practice1;

**import** java.util.\*;

**public** **class** TestRectangle {

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

Scanner p1 = **new** Scanner(System.***in***);

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

**int** recLength = p1.nextInt();

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

**int** recBreadth = p1.nextInt();

Rectangle r1 = **new** Rectangle(recLength, recBreadth);

r1.calculateArea();

r1.rectangleDetails();

sc.close();

}

}

**1.3**

**package** Practice1;

**public** **class** Book {

**private** String bookTitle;

**private** **double** bookPrice;

**public** Book(String bookTitle, **double** bookPrice) {

**super**();

**this**.bookTitle = bookTitle;

**this**.bookPrice = bookPrice;

}

**public** String getBookTitle() {

**return** bookTitle;

}

**public** **void** setBookTitle(String bookTitle) {

**this**.bookTitle = bookTitle;

}

**public** **double** getBookPrice() {

**return** bookPrice;

}

**public** **void** setBook\_price(**double** bookPrice) {

**this**.bookPrice = bookPrice;

}

}

**package** Practice1;

**import** java.util.\*;

**public** **class** TestBook {

**public** **static** Book[] createBooks(**int** n) {

Book[] books = **new** Book[n];

Scanner p1 = **new** Scanner(System.***in***);

**for**(**int** i=0; i<n; i++) {

System.***out***.println("Enter the title of the book: ");

String title = p1.nextLine();

System.***out***.println("Enter the price of the book: ");

**double** price = p1.nextDouble();

p1.nextLine();

books[i] = **new** Book(title, price);

}

p1.close();

**return** books;

}

**public** **static** **void** showBooks(Book[] books) {

**for**(Book book: books) {

System.***out***.println(book.getBookTitle()+" "+book.getBookPrice());

}

}

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

Book[] books = *createBooks*(2);

*showBooks*(books);

}

}

**1.4**

**package** Practice1;

**public** **class** RectangleAP {

**private** **double** length;

**private** **double** width;

**public** RectangleAP(**double** length, **double** width) {

**super**();

setLength(length);

setWidth(width);

}

**public** **double** getLength() {

**return** length;

}

**public** **void** setLength(**double** length) {

**if**(length > 0.0 && length < 20.0) {

**this**.length = length;

}

**else** {

**this**.length = 1.0;

}

}

**public** **double** getWidth() {

**return** width;

}

**public** **void** setWidth(**double** width) {

**if**(width > 0.0 && width < 20.0) {

**this**.width = width;

}

**else** {

**this**.width = 1.0;

}

}

**public** **double** calculatePerimeter() {

**return** 2 \* (length + width);

}

**public** **double** calculateArea() {

**return** length \* width;

}

}

**package** Practice1;

**import** java.util.\*;

**public** **class** TestRectangleAP {

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

Scanner p1 = **new** Scanner(System.***in***);

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

**double** recLength = p1.nextDouble();

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

**double** recBreadth = p1.nextDouble();

RectangleAP r1 = **new** RectangleAP(recLength, recBreadth);

System.***out***.println("Area of the rectangle: " + r1.calculateArea());

System.***out***.println("Perimeter of the rectangle: " + r1.calculatePerimeter());

p1.close();

}

}

**1.5**

**package** Practice1;

**public** **class** Date {

**int** day;

**int** month;

**int** year;

**public** Date(**int** day, **int** month, **int** year) {

**super**();

**if**(isValidDate(day, month, year)) {

**this**.day = day;

**this**.month = month;

**this**.year = year;

}

}

**private** **boolean** isValidDate(**int** day, **int** month, **int** year) {

**if**(month < 1 || month > 12){

**return** **false**;

}

**if**(day < 1 || day > daysInMonth(month, year)) {

**return** **false**;

}

**return** **true**;

}

**private** **int** daysInMonth(**int** month, **int** year) {

**switch**(month) {

**case** 4: **case** 6: **case** 9: **case** 11:

**return** 30;

**case** 2:

**return** (isLeapYear(year)) ? 29:28;

**default**:

**return** 31;

}

}

**private** **boolean** isLeapYear(**int** year) {

**if**(year%4 == 0) {

**if**(year%100 == 0) {

**return** year%400 == 0;

}

**else** {

**return** **true**;

}

}

**return** **false**;

}

**public** **void** addDays(**int** days) {

**while**(days > 0) {

**int** daysInCurrentMonth = daysInMonth(**this**.month, **this**.year);

**if**(**this**.day + days <= daysInCurrentMonth) {

**this**.day += days;

days = 0;

}

**else** {

days -= (daysInCurrentMonth - **this**.day+1);

**this**.day = 1;

**if**(**this**.month == 12) {

**this**.month = 1;

**this**.year++;

}

**else** {

**this**.month++;

}

}

}

}

**public** **int** getDay() {

**return** day;

}

**public** **int** getMonth() {

**return** month;

}

**public** **int** getYear() {

**return** year;

}

**public** String toString() {

**return** day + "/" + month + "/" + year;

}

}

**package** Practice1;

**public** **class** Employee {

**private** **int** employeeNumber;

**private** String employeeName;

**private** Date joiningDate;

**public** Employee(**int** employeeNumber, String employeeName, Date joiningDate) {

**super**();

**this**.employeeNumber = employeeNumber;

**this**.employeeName = employeeName;

**this**.joiningDate = joiningDate;

}

**public** **int** getEmployeeNumber() {

**return** employeeNumber;

}

**public** String getEmployeeName() {

**return** employeeName;

}

**public** Date getJoiningDate() {

**return** joiningDate;

}

**public** **void** displayEmployeeInfo() {

System.***out***.println("Employee Number: " + employeeNumber);

System.***out***.println("Employee Name: " + employeeName);

System.***out***.println("Joining Date: " + joiningDate);

}

}

**package** Practice1;

**public** **class** TestDate {

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

Date date1 = **new** Date(12, 7, 2024);

Date date2 = **new** Date(1, 1, 2001);

Date date3 = **new** Date(15, 3, 2020);

Date date4 = **new** Date(31, 12, 2012);

Date date5 = **new** Date(20, 2, 2004);

Employee emp1 = **new** Employee(101, "pavan", date1);

Employee emp2 = **new** Employee(102, "sai", date2);

Employee emp3 = **new** Employee(103, "kumar", date3);

Employee emp4 = **new** Employee(104, "Devi", date4);

Employee emp5 = **new** Employee(105, "anju", date5);

emp1.displayEmployeeInfo();

date1.addDays(20);

System.***out***.println("New Date after adding days: " + date1);

emp2.displayEmployeeInfo();

date2.addDays(30);

System.***out***.println("New Date after adding days: " + date2);

emp3.displayEmployeeInfo();

emp4.displayEmployeeInfo();

emp5.displayEmployeeInfo();

date5.addDays(50);

System.***out***.println("New Date after adding days: " + date5);

}

}

**2.Vehicle**

**package** Practice1;

**public** **class** Vehicle {

String manufacturer;

String model;

**int** year;

**public** String getManufacturer() {

**return** manufacturer;

}

**public** **void** setManufacturer(String manufacturer) {

**this**.manufacturer = manufacturer;

}

**public** String getModel() {

**return** model;

}

**public** **void** setModel(String model) {

**this**.model = model;

}

**public** **int** getYear() {

**return** year;

}

**public** **void** setYear(**int** year) {

**this**.year = year;

}

**public** **void** displayDetails() {

System.***out***.println("Manufacturer: "+getManufacturer());

System.***out***.println("Model: "+getModel());

System.***out***.println("Year: "+getYear());

}

}

**package** Practice1;

**public** **class** Car **extends** Vehicle {

**int** seatingCapacity;

**public** **int** getSeatingCapacity() {

**return** seatingCapacity;

}

**public** **void** setSeatingCapacity(**int** seatingCapacity) {

**this**.seatingCapacity = seatingCapacity;

}

**public** **void** accelerate() {

System.***out***.println("Car applies to accelerate");

}

**public** **void** brake() {

System.***out***.println("Car applies brake");

}

@Override

**public** **void** displayDetails() {

**super**.displayDetails();

System.***out***.println("Car Seating Capacity: " + getSeatingCapacity());

}

}

**package** Practice1;

**public** **class** Motorcycle **extends** Vehicle {

**double** engineCapacity;

**public** **double** getEngineCapacity() {

**return** engineCapacity;

}

**public** **void** setEngineCapacity(**double** engineCapacity) {

**this**.engineCapacity = engineCapacity;

}

**public** **void** startEngine() {

System.***out***.println("Motorcycle engine started");

}

**public** **void** stopEngine() {

System.***out***.println("Motorcycle engine stoped");

}

@Override

**public** **void** displayDetails() {

**super**.displayDetails();

System.***out***.println("Motorcycle engine Capacity: "+getEngineCapacity());

}

}

**package** Practice1;

**public** **class** Truck **extends** Vehicle {

**double** cargoCapacity;

**public** **double** getCargoCapacity() {

**return** cargoCapacity;

}

**public** **void** setCargoCapacity(**double** cargoCapacity) {

**this**.cargoCapacity = cargoCapacity;

}

**public** **void** loadCargo() {

System.***out***.println("Cargo is loading");

}

**public** **void** unloadCargo() {

System.***out***.println("Cargo is unloading");

}

@Override

**public** **void** displayDetails() {

**super**.displayDetails();

System.***out***.println("Truck Cargo Capacity: "+getCargoCapacity());

}

}

**package** Practice1;

**public** **class** TestVehicle {

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

Car c = **new** Car();

c.setManufacturer("Mahindra");

c.setModel("XUV 3XO");

c.setYear(2016);

c.setSeatingCapacity(5);

c.displayDetails();

c.accelerate();

c.brake();

Truck t = **new** Truck();

t.setManufacturer("Tata");

t.setModel("LPT 4825");

t.setYear(2018);

t.setCargoCapacity(38000);

t.displayDetails();

t.loadCargo();

t.unloadCargo();

Motorcycle m = **new** Motorcycle();

m.setManufacturer("Bajaj");

m.setModel("Pulsar 135");

m.setYear(2010);

m.setEngineCapacity(125);

m.displayDetails();

m.startEngine();

m.stopEngine();

}

}

**3.Shape**

**package** Practice1;

**public** **abstract** **class** Shape {

**public** **abstract** **double** calculateArea();

}

**package** Practice1;

**public** **class** Circle **extends** Shape {

**private** **double** radius;

**public** Circle(**double** radius) {

**super**();

**this**.radius = radius;

}

@Override

**public** **double** calculateArea() {

**return** Math.***PI*** \* radius \* radius;

}

}

**package** Practice1;

**public** **class** Triangle **extends** Shape {

**private** **double** base;

**private** **double** height;

**public** Triangle(**double** base, **double** height) {

**super**();

**this**.base = base;

**this**.height = height;

}

@Override

**public** **double** calculateArea() {

**return** 0.5\*base\*height;

}

}

**package** Practice1;

**public** **class** TestShape {

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

Circle c = **new** Circle(5);

System.***out***.println("Area of Circle: " + c.calculateArea());

Rectangle r = **new** Rectangle(4, 6);

System.***out***.println("Area of Rectangle: " + r.calculateArea());

Triangle t = **new** Triangle(3, 4);

System.***out***.println("Area of Triangle: " + t.calculateArea());

}

}

**package** Practice1;

**public** **class** Rectangle **extends** Shape {

**private** **double** length;

**private** **double** breadth;

**public** Rectangle(**double** length, **double** breadth) {

**super**();

**this**.length = length;

**this**.breadth = breadth;

}

@Override

**public** **double** calculateArea() {

**return** length\*breadth;

}

}

4.Static class methods in java

**package** Practice1;

**public** **class** PerformanceRating {

**final** **static** **int** ***outstanding*** = 5;

**final** **static** **int** ***Good*** = 4;

**final** **static** **int** ***Average*** = 3;

**final** **static** **int** ***Poor*** = 2;

**public** **static** **int** calculatePerformance(Employee e) {

**if** (e.getPoint() >= 80 && e.getPoint() <= 100) {

**return** ***outstanding***;

}

**else** **if**(e.getPoint() >= 60 && e.getPoint() <= 79) {

**return** ***Good***;

}

**else** **if**(e.getPoint() >= 50 && e.getPoint() <= 59) {

**return** ***Average***;

}

**else** {

**return** ***Poor***;

}

}

}

**package** Practice1;

**public** **class** Employee {

**private** String name;

**private** **int** point;

**private** **static** **int** *employeeCount* = 0;

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

**super**();

**this**.name = name;

**this**.point = point;

*employeeCount*++;

}

**public** String getName() {

**return** name;

}

**public** **void** setName(String name) {

**this**.name = name;

}

**public** **int** getPoint() {

**return** point;

}

**public** **void** setPoint(**int** point) {

**this**.point = point;

}

**public** **static** **int** getEmployeeCount() {

**return** *employeeCount*;

}

}

**package** Practice1;

**public** **class** PerformanceCalculator {

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

Employee emp1 = **new** Employee("pavan", 95);

Employee emp2 = **new** Employee("chintu", 75);

Employee emp3 = **new** Employee("kumar", 60);

Employee emp4 = **new** Employee("sai", 45);

System.***out***.println("Total Number of Employees: "+Employee.*getEmployeeCount*()+" and Their Ratings are");

System.***out***.println(emp1.getName()+" Has Performed with a Rating "+PerformanceRating.*calculatePerformance*(emp1));

System.***out***.println("=======================================================================");

System.***out***.println(emp2.getName()+" Has Performed with a Rating "+PerformanceRating.*calculatePerformance*(emp2));

System.***out***.println("=======================================================================");

System.***out***.println(emp3.getName()+" Has Performed with a Rating "+PerformanceRating.*calculatePerformance*(emp3));

System.***out***.println("=======================================================================");

System.***out***.println(emp4.getName()+" Has Performed with a Rating "+PerformanceRating.*calculatePerformance*(emp4));

System.***out***.println("=======================================================================");

}

}