*Write and implement the following Java Programs in Eclipse:*

**public** **class** Student

{

**int** Rollno;

String Name;

**public** **int** getRollno() {

**return** Rollno;

}

**public** **void** setRollno(**int** rollno) {

Rollno = rollno;

}

**public** String getName() {

**return** Name;

}

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

Name = name;

}

}

**public** **class** StudentMain {

/\*\*

\* **@param** args

\*/

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

// **TODO** Auto-generated method stub

Student stu=**new** Student();

stu.setRollno(100);

stu.setName("abz");

System.*out*.println("Rollno:" +stu.getRollno());

System.*out*.println("Name:" +stu.getName());

}

}

1. Find the average marks of a student scored in Math, Science and English. (Assume each subject is out of 50 marks).

**public** **class** Marks

{

**int** n1,n2,n3;

**float** total=0;

**public** **int** getN1() {

**return** n1;

}

**public** **void** setN1(**int** n1) {

**this**.n1 = n1;

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

**public** **float** getTotal() {

**return** total;

}

**public** **void** setTotal() {

**this**.total=(n1+n2+n3)/3;

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

**public** **int** getN2() {

**return** n2;

}

**public** **void** setN2(**int** n2) {

**this**.n2 = n2;

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

**public** **int** getN3() {

**return** n3;

}

**public** **void** setN3(**int** n3) {

**this**.n3 = n3;

}

}

**public** **class** MarksMain {

/\*\*

\* **@param** args

\*/

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

// **TODO** Auto-generated method stub

Marks mrk=**new** Marks();

mrk.setN1(10);

mrk.setN2(30);

mrk.setN3(50);

mrk.setTotal();

System.*out*.println("N1: " +mrk.getN1());

System.*out*.println("N1: " +mrk.getN2());

System.*out*.println("N1: " +mrk.getN3());

System.*out*.println("Marks:" +mrk.getTotal());

}

}

1. Accept the ages of two people and find who is the younger amongst them.

**public** **class** age

{

**int** age1,age2;

**int** young;

**public** **int** getAge1() {

**return** age1;

}

**public** **void** setAge1(**int** age1) {

**this**.age1 = age1;

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

**public** **int** getAge2() {

**return** age2;

}

**public** **void** setAge2(**int** age2) {

**this**.age2 = age2;

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

**public** **int** getYoung() {

**return** young;

}

**public** **void** setYoung()

{

**this**.young= young;

}

}

**public** **class** ageMain

{

/\*\*

\* **@param** args

\*/

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

// **TODO** Auto-generated method stub

age ag=**new** age();

ag.setAge1(50);

ag.setAge2(30);

ag.setYoung();

System.*out*.println("Age of person 1: " +ag.getAge1());

System.*out*.println("Age of person 2: " +ag.getAge2());

**if**(ag.getAge1()<ag.getAge2())

{

System.*out*.println("young "+ag.getAge1());

}

**else** **if**(ag.getAge2()<ag.getAge1())

{

System.*out*.println("young "+ag.getAge2());

}

**else**

{

System.*out*.println("Both are of same age");

}

}

}

1. Create a class Item with data members Id and Name and member functions to get and display the data members.

**public** **class** Item

{

**int** Id;

String Name;

**public** **int** getId() {

**return** Id;

}

**public** **void** setId(**int** id) {

Id = id;

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

**public** String getName() {

**return** Name;

}

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

Name = name;

}

}

**public** **class** ItemMain {

/\*\*

\* **@param** args

\*/

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

// **TODO** Auto-generated method stub

Item it=**new** Item();

it.setId(100);

it.setName("Mobile");

System.*out*.println("Item Id:" +it.getId());

System.*out*.println("Name:" +it.getName());

}

}

1. Create a class Student with data members Roll No, Age and Name and member functions to get and display the data members from the keyboard.

**import** java.util.Scanner;

**public** **class** students

{

String name;

**int** rollno;

**int** age;

**public** **void** accept()

{

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

System.*out*.print("Enter student name: ");

name = in.nextLine();

System.*out*.print("Enter Roll No. : ");

rollno = in.nextInt();

System.*out*.print("Enter Age : ");

age = in.nextInt();

in.close();

}

**public** **void** display() {

System.*out*.println("Roll:: " + rollno);

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

System.*out*.println("Student Age: " +age);

}

}

**public** **class** studentsMain

{

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

{

students obj = **new** students();

obj.accept();

obj.display();

}

}

1. Create a class Cars with data members Name, Color and Cost and member functions to get and display the data members. Implement the above for two car objects.
2. **import** java.util.Scanner;
3. **public** **class** students
4. {
5. String name;
6. String color;
7. **int** cost;

10. **public** **void** Car1()
11. {
12. Scanner in = **new** Scanner(System.*in*);
13. System.*out*.print("Enter name of a car 1: ");
14. name = in.nextLine();
16. System.*out*.print("Enter Color : ");
17. color = in.next();
19. System.*out*.print("Enter Cost : ");
20. cost = in.nextInt();
21. in.close();
23. }

26. **public** **void** display() {
27. System.*out*.println("Car: " +name);
28. System.*out*.println("Color: " +color);
29. System.*out*.println("Cost: " +cost);
31. }
33. }
34. **public** **class** studentsMain
35. {
36. **public** **static** **void** main(String[] args)
37. {
38. students obj = **new** students();
39. obj.Car1();
41. obj.display();
43. }
44. }
45. Calculate Area of Circle, Rectangle, Square and Triangle using Function overloading. [Area of circle = ; Area of Rectangle = length x breadth; Area of Square = side2; Area of Triangle = ½ x base x height]

**class** AreaMain

{

/\*\*\*

\*

\* **@param** args

\*/

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

{

Area ob = **new** Area();

ob.area(5);

ob.area(11,12);

ob.area(2.5);

ob.area(3.5 , 4.2);

}

}

**class** Area

{

**void** area(**float** x)

{

System.*out*.println("the area of the square is "+Math.*pow*(x, 2)+" sq units");

}

**void** area(**float** x, **float** y)

{

System.*out*.println("the area of the rectangle is "+x\*y+" sq units");

}

**void** area(**double** x)

{

**double** z = 3.14 \* x \* x;

System.*out*.println("the area of the circle is "+z+" sq units");

}

**void** area(**double** a,**double** b)

{

**double** f=(b\*a)\*2;

System.*out*.println("the area of triangle is "+f+" sq units");

}

}

7. To create a class Product with data members id, name and cost and constructors to initialize the data members of the class

**public** **class** product

{

**int** id,cost;

String name;

**public** product(**int** id, **int** cost, String name)

{

**this**.id = id;

**this**.cost = cost;

**this**.name = name;

}

**public** String getName()

{

**return** name;

}

**public** **int** getId() {

**return** id;

}

**public** **int** getCost() {

**return** cost;

}

}

**public** **class** productMain

{

/\*\*

\* **@param** args

\*/

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

{

// **TODO** Auto-generated method stub

product it=**new** product(100, 11500,"mobile");

System.*out*.println(it.getName());

System.*out*.println(it.getId());

System.*out*.println(it.getCost());

}

}

8. Create a class a vehicle having data members brand, name, cost and roadTax and member functions to set and retrieve the values of data members.Also Write a method calculateRoadTax() which will calculate roadTax depending on the option selected by the user i.e. 1 for bike , 2 for car and 3 for truck. if option selected is 1 then roadTax = 500, if option selected is 2 then roadTax = 1000 ,if option selected is 3 then roadTax = 1500. Create an interface Amount which will have a data member govtTax having a constant value of 2000 and a member function to calculate the final amount. Create another class called Result which will inherit from the two above classes and calculate the final amount as the sum of govtTax, cost and roadTax the values of which should be inherited from the above two classes.

9. Demonstrate divide by zero Exception.

**public** **class** ArithEx {

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

**int** num1 = 15, num2 = 0, result = 0;

**try**{

result = num1/num2;

System.*out*.println("The result is" +result);

}

**catch** (ArithmeticException e) {

System.*out*.println ("Can't be divided by Zero " + e);

}

}

}

10. Demonstrate ArrayOutOfBounds Exception.

**public** **class** ArithEx {

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

{

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

**for** (**int** i = 0; i <= ar.length; i++)

System.*out*.println(ar[i]);

}

}