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**Topic :- Assignment 3**

**Language used :- Java**

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1) initialize a single dimension array and sort it in ascending order.

public class Array1 {

public static void main(String args[])

{

int i,j;

int arr[]= {20,10,30,5,59,27};

int temp=0;

System.out.println("Array elements are:");

for(i=0;i<arr.length;i++)

{

System.out.println(arr[i]);

}

for(i=0;i<arr.length;i++)

{

for(j=i+1;j<arr.length;j++)

{

if(arr[i]>arr[j])

{

temp=arr[i];

arr[i]=arr[j];

arr[j]=temp;

}

}

}

System.out.println("elements of array in sorted order");

for(i=0;i<arr.length;i++)

{

System.out.println(arr[i]);

}

}

}

2) create a class "DemoArr",with the function "disp". create 4 objects of this class in an array.

Traverse the array and invoke "disp" on each objects.

class ArrayOb

{

int num;

public void display(int num)

{

System.out.println(num);

}

}

public class DemoArr {

public static void main(String[] args) {

// TODO Auto-generated method stub

ArrayOb[] ob1=new ArrayOb[4];

ob1[0]=new ArrayOb();

ob1[1]=new ArrayOb();

ob1[2]=new ArrayOb();

ob1[3]=new ArrayOb();

System.out.println("array 1 element is:");

ob1[0].display(23);

System.out.println("array 2 element is:");

ob1[1].display(24);

System.out.println("array 3 element is:");

ob1[2].display(72);

System.out.println("array 4 element is:");

ob1[3].display(90);

}

}

3)create a class "Shape" with 2 attributes, "width" and "height". Make sure one can not access these attributes directly.

provide accessor methods on these attributes and allow them to call from outside of your class.

**Program:-**

class Shape

{

private int width;

private int height;

void setWidth(int width)

{

this.width=width;

}

int getWidth()

{

return width;

}

void setHeight(int height)

{

this.height=height;

}

int getHeight()

{

return height;

}

}

public class Demo

{

public static void main(String args[])

{

Shape s1=new Shape();

s1.setWidth(6);

s1.setHeight(7);

System.out.println("Width is"+" "+s1.getWidth()+"\t"+"Height is"+" "+s1.getHeight());

}

}

4) Define a class "MyClass" and make sure clients can instantiate it ,

a) without any argument

b) with one int argument

c) with two int arguments

**Program:-**

public class MyClass1

{

int i;

int j;

public MyClass1()

{

}

public MyClass1(int i)

{

this.i=i;

System.out.println(i);

}

public MyClass1(int i,int j)

{

this.i=i;

this.j=j;

System.out.println(i);

System.out.println(j);

}

public int getcont()

{

return i;

}

public static void main(String args[])

{

MyClass1 m1=new MyClass1();

MyClass1 m2=new MyClass1(200);

MyClass1 m3=new MyClass1(300,400);

}

}

5) Define a class "Emp" with private static member "int cnt".

How will u make sure that outsiders can read the value of cnt ?

**Program:-**

public class Emp

{

private static int id;

public static getint()

{

return id;

}

public static void main(String args[])

{

Emp e1=new Emp();

}

6) Define a class "DemoOb".

create an instance of it.

now create a reference and assign the reference created in the above statement.

Discuss what happens?

Now since u have 2 references, take one of the reference and assign a new instance of the class.

Discuss what happens?

(For ur discussion, write necessary comments in the program)

**Program:-**

public class DemoOb {

int num=100;

public int getNum() {

return num;

}

public void setNum(int num) {

this.num = num;

}

public static void main(String[] args) {

// TODO Auto-generated method stub

DemoOb ob1=new DemoOb();

System.*out*.println(ob1.getNum());

ob1.setNum(200);

DemoOb ob2=ob1;

System.*out*.println(ob2.getNum());

ob1=new DemoOb();

System.*out*.println(ob1.getNum());

}

}

***Diagram:-***

ob1 DemoOb

2000

Num=~~100~~

num=200

1000

2000

2000

ob2 DemoOb

num=100

3000 4000

7) Define 3 classes A , B and C

in all these classes create static and nonstatic variables as well as methods.

Now Define a class "Demo" ,in which define "main" function. From this main function try to access all the members of A ,B and C.

**Program:-**

**class** A

{

**int** i;

**static** **int** *j*;

**public** **int** getI() {

**return** i;

}

**public** **void** setI(**int** i) {

**this**.i = i;

}

**public** **static** **int** getJ() {

**return** *j*;

}

**public** **static** **void** setJ(**int** j) {

A.*j* = j;

}

}

**class** B

{

**int** i=4;

**static** **int** *j*=1;

**public** **int** getI() {

**return** i;

}

**public** **void** setI(**int** i) {

**this**.i = i;

}

**public** **static** **int** getJ() {

**return** *j*;

}

**public** **static** **void** setJ(**int** j) {

B.*j* = j;

}

}

**class** C

{

**int** i=9;

**static** **int** *j*=7;

**public** **int** getI() {

**return** i;

}

**public** **void** setI(**int** i) {

**this**.i = i;

}

**public** **static** **int** getJ() {

**return** *j*;

}

**public** **static** **void** setJ(**int** j) {

C.*j* = j;

}

}

**public** **class** Demo {

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

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

A a=**new** A();

B b=**new** B();

C c=**new** C();

a.setI(3);

A.*setJ*(6);

b.setI(9);

B.*setJ*(10);

c.setI(15);

C.*setJ*(16);

System.***out***.println("instance value"+a.getI()+" "+"static value"+A.*getJ*());

System.***out***.println("instance value"+b.getI()+" "+"static value"+B.*getJ*());

System.***out***.println("instance value"+c.getI()+" "+"static value"+C.*getJ*());

}

}

8) define static initializers in the above A,B and C classes and check the order of their execution.

**Program:-**

**class** A1{

**static**

{

System.***out***.println("Static block in A");

}

}

**class** B1{

**static**

{

System.***out***.println("Static block in B");

}

}

**class** C1{

**static**

{

System.***out***.println("Static block in C");

}

}

**public** **class** StaticClass {

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

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

A1 a=**new** A1();//this block will run first

System.***out***.println("Main method");//this is second

B1 b=**new** B1();//this is third

C1 c=**new** C1();//this is fourth

}

}