Qu 1 Abstract class staff [extended class office staff]

```
import java.io.*;
import java.util.*;
abstract class staff
{
	protected int id;
	protected String name;

	staff(int id, String name)
	{
		this.id=id;
		this.name=name;
	}
}

class ostaff extends staff
{
	String dname;

	ostaff(int id,String name, String dname)
	{
	   super(id,name);
	   this.dname=dname;
	}
	void display()
	{
	System.out.println("Staff id is::" +super.id+"\n Staff name
is::"+super.name+"\n Staff department is::"+dname);
	}
}

class ademo
{
	public static void main(String args[])
	{
		Scanner sc =new Scanner(System.in);
		int n,i,id;
		String name,dname;
		System.out.println("How many staff you want");
		n = sc.nextInt();
		ostaff o[]=new ostaff[n];
		System.out.println("Enter the staff details");
```

```
                for(i=0;i<n;i++)
                {
                        System.out.println("Enter the staff id");
                        id = sc.nextInt();
                        System.out.println("Enter the staff name");
                   name = sc.next();
                        System.out.println("Enter the staff department");
                   dname = sc.next();
                        o[i]=new ostaff(id,name,dname);
                }
                System.out.println("**********Office staff details**********");
                for(i=0;i<n;i++)
                        o[i].display();
        }
}
```

Qu 2: Abstract class Order [Purchase order and Sales order]

```
import java.io.*;
import java.util.*;

abstract class order
{
        int id;
        String des;
}

class porder extends order
{
        String cname;

        porder(int id, String des, String cname)
        {
                super.id=id;
                super.des=des;
                this.cname=cname;
        }
        void display()
        {
                System.out.println("ID is::"+super.id+"\n Description
is::"+super.des+"\n Customer name is::"+cname);
        }
```

```
}
class sorder extends order
{
	String vname;

	sorder(int id, String des, String vname)
	{
		super.id=id;
		super.des=des;
		this.vname=vname;
	}
	void display()
	{
		System.out.println("ID is::"+super.id+"\n Description
is::"+super.des+"\n Vendor name is::"+vname);
	}
}

public class pdemo
{
	 public static void main(String args[])
	 {
		int i,id;
		String des,cname,vname;

		sorder s[]=new sorder[3];
		porder p[]=new porder[3];

		Scanner sc =new Scanner(System.in);

		System.out.println("*****Enter purchase order details******");
		for(i=0;i<3;i++)
		{
			System.out.println("Enter id");
			id=sc.nextInt();
			System.out.println("Enter description");
		  des=sc.next();
			System.out.println("Enter cusomer name");
		  cname=sc.next();
			p[i]=new porder(id,des,cname);
		}

		System.out.println("*****Enter Sales order details******");
```

```
            for(i=0;i<3;i++)
            {
                System.out.println("Enter id");
                id=sc.nextInt();
                System.out.println("Enter description");
                des=sc.next();
                System.out.println("Enter vendor name");
                vname=sc.next();
                s[i]=new sorder(id,des,vname);
            }



            System.out.println("******Purchase order details******");
            for(i=0;i<3;i++)
                    p[i].display();

            System.out.println("******Sales order details******");
            for(i=0;i<3;i++)
                s[i].display();

        }

}
```

Qu 3: Abstract class Shape [Rectangle, circle and triangle]

```
import java.io.*;
import java.util.*;
abstract class shape
{
   int n1,n2;
   public abstract void printarea();
}

class circle extends shape
{
        circle(int a)
        {
                super.n1= a;
        }
```

```
        public void printarea()
        {
                System.out.println("Area of cirlce is::
"+(3.14*super.n1*super.n1));
        }
}


class rectangle extends shape
{
      rectangle(int l,int b)
      {
            super.n1= l;
               super.n2 = b;
      }

      public void printarea()
      {
            System.out.println("Area of Rectangle is:: "+(super.n1*super.n2));
      }
}

class triangle extends shape
{
      triangle(int h,int b)
      {
            super.n1= h;
            super.n2 = b;
      }

      public void printarea()
      {
            System.out.println("Area of Triangle is:: "+(super.n1*super.n2)/2);
      }
}

class sdemo
{
        public static void main(String args[])
        {
                circle c = new circle(2);
                rectangle r=new rectangle(4,5);
```

```
                triangle t=new triangle(3,2);
                c.printarea();
                r.printarea();
                t.printarea();

        }
}
```

Qu 4 Abstract class [Bank]

```
import java.io.*;

abstract class bank
{
        public abstract void getbalance();
}

class bankA extends bank
{
        double balance = 100;
        public void getbalance()
        {
         System.out.println("Bank balance of BankA is "+balance);
        }
}

class bankB extends bank
{
      double balance = 150;
      public void getbalance()
      {
       System.out.println("Bank balance of BankB is "+balance);
      }
}

class bankC extends bank
{
      double balance = 200;
      public void getbalance()
      {
       System.out.println("Bank balance of BankC is "+balance);
      }
}
```

```
class bankdemo
{
	public static void main(String args[])
	{
		bankA ba = new bankA();
		bankB bb = new bankB();
		bankC bc = new bankC();
		ba.getbalance();
		bb.getbalance();
		bc.getbalance();
	}
}
```

Qu 5 Functional Interface [Cube]

```
import java.io.*;
import java.util.*;
interface cube
{
	int cubecal();
}

class idemo implements cube
{
	public int cubecal()
	{
		Scanner sc =new Scanner(System.in);
		int n;
		System.out.println("Enter the number");
		n = sc.nextInt();
		return n*n*n;
	}

	public static void main(String args[])
	{
		idemo i=new idemo();
		System.out.println("Cube of a number is::" +i.cubecal());
	}
}
```

Qu 6 Functional Interface [Square]

```
import java.io.*;
import java.util.*;
interface square
{
	int squarecal();
}

class idemo2 implements square
{
	public int squarecal()
	{
		Scanner sc =new Scanner(System.in);
		int n;
		System.out.println("Enter the number");
		n = sc.nextInt();
		return n*n;
	}

	public static void main(String args[])
	{
		idemo2 i=new idemo2();
		System.out.println("Square of a number is::" +i.squarecal());
	}
}
```

Qu 7 Interface [operation]

```
import java.io.*;
import java.util.*;

interface operation
{
	final static double pi= 3.14;
	void volume();
}

class cylinder implements operation
{
	double r,h;
```

```
	public void accpet()
	{
		Scanner sc =new Scanner(System.in);
		System.out.println("Enter the radius");
		r = sc.nextFloat();
		System.out.println("Enter the height");
		h = sc.nextFloat();
	}
	public void volume()
	{
		System.out.println("Volume of a cylinder is:: " + (pi*r*r*h));
	}
}

class idemo3
{
	public static void main(String args[])
	{
		cylinder c=new cylinder();
		c.accpet();
		c.volume();
	}
}
```

Qu 8 Marker Inetrface [Product]

```
import java.util.*;

interface markerint
{

}

public class product implements markerint
{
	int pid;
	String pname;
	double cost;
       static int cnt =0;

	product()
       {
```

```
        pid =101;
        pname="Pen";
        cost=20;
            cnt++;
    }

        product(int pid, String pname,double cost)
        {
                this.pid =pid;
        this.pname=pname;
        this.cost=cost;
                cnt++;
        }

        void display()
        {
                System.out.println("Product id is::" +pid+ "\n Product name is::"
+pname + "\n Product Cost is::" +cost + "\n Object Count is::" +cnt);
        }

        public static void main(String args[]) throws
        {
                int pid,n,i;
              String pname;
        double cost;

                product p = new product();
            System.out.println("********* Default Counstructor
Information*********");
            p.display();

                Scanner sc = new Scanner(System.in);
                System.out.println("How many product you want");
                n = sc.nextInt();
                product p1[] = new product[n];

                for(i=0;i<n;i++)
                {
                System.out.println("Enter Product id");
                pid = sc.nextInt();
                System.out.println("Enter Product name");
            pname = sc.next();
                System.out.println("Enter Product Cost");
```

```
            cost = sc.nextDouble();
                p1[i] = new product(pid,pname,cost);
                }

                System.out.println("********* Parameterised Counstructor
Information*********");
                 for(i=0;i<n;i++)
                        p1[i].display();

                }
}
```

Qu 9 Cloneable Interface

```
import java.util.*;

public class product1 implements Cloneable
{
        int pid;
        String pname;
        double cost;

        product1()
      {
            pid =101;
            pname="Pen";
            cost=20;
      }

        product1(int pid, String pname,double cost)
        {
                this.pid =pid;
        this.pname=pname;
        this.cost=cost;
        }

        void display()
        {
                System.out.println("Product id is::" +pid+ "\n Product name is::"
+pname + "\n Product Cost is::" +cost);
        }
```

```
	public static void main(String args[]) throws
CloneNotSupportedException
	{
		int pid;
	       String pname;
	double cost;

		Scanner sc = new Scanner(System.in);

		product1 pp = new product1();
		System.out.println("********* Default Counstructor
Information*********");
		pp.display();


		System.out.println("Enter Product id");
		pid = sc.nextInt();
		System.out.println("Enter Product name");
	    pname = sc.next();
		System.out.println("Enter Product Cost");
	    cost = sc.nextDouble();

		product1 p = new product1(pid,pname,cost);
		System.out.println("********* Parameterised Counstructor
Information*********");
		p.display();

		System.out.println("*********Object  Clone
Information*********");

		product1 p1 =(product1) p.clone();
		p1.display();
	}
}
```