```
import java.util.*;
public class Employee
{
	int empsal,emphrs;
	String empname;
	void getinfo(String name,int sal,int hrs)
	{
		empsal=sal;
		empname=name;
		emphrs=hrs;
	}
	void addsal()
	{
		if(empsal<500)
		empsal=empsal+10;
	}
	void addwork()
	{
		if(emphrs>6)
		empsal=empsal+5;
	}
	public static void main(String args[])
	{
		int s,h,x,i;
		String n;
		Scanner sc=new Scanner(System.in);
		System.out.print("enter no: of employees:");
		x=sc.nextInt();
		Employee e[]=new Employee[x];
		for(i=0;i<x;i++)
		{
			Employee emp=new Employee();
			System.out.print("enter name of employee:");
			n=sc.next();
			System.out.print("enter salary:");
			s=sc.nextInt();
			System.out.print("enter worktime:");
			h=sc.nextInt();
			emp.getinfo(n,s,h);
			emp.addsal();
			emp.addwork();
			e[i]=emp;
		}
		System.out.println("___Final salary of all employess___");
		for(i=0;i<x;i++)
		{
		System.out.println("Name:"+e[i].empname);
```

```
                    System.out.println("Working hours:"+e[i].emphrs);
                    System.out.println("Final salary:"+e[i].empsal);
                }
        }
}
```

pranav06@6sys6:~/pranav06$javac Employee.java

pranav06@6sys6:~/pranav06$java Employee

Output:

enter no: of employees: 2

enter name of employee: roshan

enter salary: 1500

enter worktime: 5

enter name of employee: tino

enter salary: 400

enter worktime: 4

___Final salary of all employess___

Name: roshan

Working hours: 8

Final salary: 1505

Name: tino

Working hours: 4

Final salary: 410

```
import java.util.*;
public class Rectangle {
        float length,breadth;
        void setdim(float length,float breadth)
        {
                this.length=length;
                this.breadth=breadth;
        }
        void getarea()
        {
                float area=(length*breadth);
                System.out.println("area of rectangle:"+area);
        }
        void getperimeter()
        {
                float perimeter=(2*(length+breadth));
                System.out.println("perimeter of rectangle:"+perimeter);
        }
        void getdiagonal()
        {
                 double diagonal=Math.sqrt((length*length)+(breadth*breadth));
                 System.out.println("diagonal of rectangle:"+diagonal);
        }
        void getmidpoint(float x,float y)
        {
         x=((length+(2*x))/2);
         y=((breadth+(2*y))/2);
        System.out.println("midpoint :("+x+","+y+")");
        }
        public static void main(String args[])
        {
                float l,b,x,y;
                Scanner sc=new Scanner(System.in);
                System.out.println("enter length and breadth:");
                l=sc.nextFloat();
                b=sc.nextFloat();
                System.out.println("enter coordinates:");
                x=sc.nextFloat();
                y=sc.nextFloat();
                Rectangle r=new Rectangle();
                r.setdim(l,b);
                r.getarea();
                r.getperimeter();
                r.getdiagonal();
                r.getmidpoint(x,y);
        }
}
```

pranav06@6sys6:~/pranav06$javac Rectangle.java

pranav06@6sys6:~/pranav06$java Rectangle

Output:

enter length and breadth:

10

20

enter coordinates:

3

4

area of rectangle:200.0

perimeter of rectangle:60.0

diagonal of rectangle:22.360679774997898

midpoint :(8.0,14.0)

```
import java.util.*;
class Complex
{
	float real1,imag1,real2,imag2;
	void sum()
	{
		System. out.println("Sum is:"+(real1 +real2)+"+"+(imag1+imag2)+"i");
	}
	void difference()
	{
	System.out.println("Difference is:" +(real1-real2)+"+"+(imag1-imag2)+"i");
	}
	void product()
	{
		float real,imag;
		real=(real1*real2)-(imag1*imag2);
		 imag=(imag1*real2)+(real1*imag2);
		System.out.println("Product is:"+real+"+"+imag+"i");
	}
	public static void main(String args[])
	{
		Scanner sc=new Scanner(System.in);
		Complex c=new Complex();
		System.out.print("Enter the real part of first complex no:");
		c.real1=sc.nextFloat();
		System.out.print("Enter the imaginary part of first complex no:");
		c.imag1=sc.nextFloat();
		System.out. print("Enter the real part of second complex no:");
		 c.real2=sc.nextFloat();
```

```
                System.out.print("Enter the imaginary part of second complex no:");
                c.imag2=sc.nextFloat();
                c.sum();
                c.difference();
                c.product();
        }
}
```

pranav06@6sys6:~/pranav06$javac Complex.java

pranav06@l6sys12:~/pranav06$java Complex

Output:

Enter the real part of first complex no: 2

Enter the imaginary part of first complex no: 3

Enter the real part of second complex no: 1

Enter the imaginary part of second complex no: -2

Sum is: 3.0+1.0i

Difference is: 1.0+5.0i

Product is:8.0+-1.0i

```
import java.util.*;
class Employee
{
   Scanner sc=new Scanner(System.in);
   String name, address;
   float salary;
   int age;
   void getinfo()
   {
     System.out.print("Enter name:");
     name=sc.next();
     System.out.print("Enter age:");
     age=sc.nextInt();
     System.out.print("Enter salary:");
     salary=sc.nextFloat();
     System.out.print("Enter address:");
     address=sc.next();
   }
   void display()
   {
     System.out.println("Name:"+name);
     System.out.println("Age:"+age);
     System.out.println("Address:"+address);
   }
   void printsalary()
   {
     System.out.println("Salary:"+salary);
   }
}
class Officer extends Employee
{
   String specialization;
}
class Manager extends Employee
{
   String department;
}
class EmpInheritance
{
   public static void main(String args[])
   {
      Officer o=new Officer();
      System.out.println("---ENTER OFFICER DETAILS---");
            o.getinfo();
            System.out.print("Enter specialization:");
            o.specialization=o.sc.next();
            Manager m=new Manager();
```

```
            System.out.println("---ENTER MANAGER DETAILS---");
            m.getinfo();
            System.out.print("Enter the department:");
            m.department=m.sc.next();
            System.out.println();
            System.out.println("---OFFICER DETAILS---");
            o.display();
            o.printsalary();
            System.out.println("Specialization:"+o.specialization);
            System.out.println();
            System.out.println("---MANAGER DETAILS---");
            m.display();
            m.printsalary();
            System.out.println("Department:" +m.department);
  }
}
pranav06@6sys6:~/pranav06$javac EmpInheritance.java
pranav06@6sys6:~/pranav06$java EmpInheritance
```

Output:

```
---ENTER OFFICER DETAILS---
Enter name:Ramesh
Enter age:45
Enter salary:50000
Enter address:Chennai,Tamilnadu
Enter specialization:MCA
---ENTER MANAGER DETAILS---
Enter name:Rajesh
Enter age:48
Enter salary:100000
Enter address:Banglore,Karnataka
Enter the department:Marketting
---OFFICER DETAILS---
Name:Ramesh
Age:45
Address:Chennai,Tamilnadu
Salary:50000.0
Specialization:MCA

---MANAGER DETAILS---
Name:Rajesh
Age:48
Address:Banglore,Karnataka
Salary:100000.0
Department:Marketting
```

```
import java.util.*;
class Stack
{
	Scanner sc=new Scanner(System.in);
	int top,size,stack[];
	Stack()
	{
		System.out.println("Stack program!");
	}
	Stack(int size)
	{
		this.size=size;
		top=-1;
		stack=new int[size];
	}
	void push()
	{
	    if(top==size-1)
	       System.out.println("Stack Overflow!");
	    else
	    {
	       top++;
	       System.out.print("Enter the element :");
	       int e=sc.nextInt();
	       stack[top]=e;
	    }
	 }
	 void pop()
	 {
	    if(top==-1)
	       System.out.println("Stack Underflow!");
	    else
	    {
	       System.out.println("Deleted element is:"+stack[top]);
	       top--;
	    }
	 }
	 void display()
	 {
	    int i;
	    if(top==-1)
	       System.out.println("Stack Underflow!");
	    else
	    {
	       System.out.println("Stack elements are:");
	       for(i=0;i<=top;i++)
```

```
                {
                  System.out.print(stack[i]+"\t");
                  System.out.println();

                }
            }
        }
        public static void main(String[] args)
        {
                int n,ch;
                Stack s=new Stack();
                System.out.print("Enter the stack size:");
                n=s.sc.nextInt();
                Stack s1=new Stack(n);
                System.out.print("---MENU---\n1.push.\n2.pop.\n3.display.\n");
                while(true)
                {
                        System.out.print("Enter your choice:");
                        ch=s1.sc.nextInt();
                        switch(ch)
                        {
                                case 1:
                                  s1.push();
                               break;
                                case 2:
                                  s1.pop();
                                  break;
                                case 3:
                                  s1.display();
                                  break;
                                default:
                                  System.exit(0);
                 }
            }
        }
}

pranav06@6sys6:~/pranav06$javac Stack.java
pranav06@6sys6:~/pranav06$java Stack
```

Output:

```
Stack program!
Enter the stack size:3
---MENU---
1.push.
2.pop.
3.display.
Enter your choice:1
Enter the element :4
Enter your choice:1
Enter the element :5
Enter your choice:1
Enter the element :6
Enter your choice:1
Stack Overflow!
Enter your choice:2
Deleted element is:6
Enter your choice:3
Stack elements are:
4
5
Enter your choice:7
```

```
import java.util.*;
class Queue
{
	Scanner sc=new Scanner(System.in);
	int size,rear,front,queue[];
	Queue()
	{
		System.out.println("Queue program!");
	}
	Queue(int size)
	{
		rear=-1;
		front=-1;
		this.size=size;
		queue=new int[size];
	}
	void enqueue()
	{
		if(rear==size-1)
		   System.out.println("Queue Overflow!");
		else if(rear==-1&&front==-1)
		{
		   rear=0;
		   front=0;
		   System.out.print("Enter the element:");
		   int e=sc.nextInt();
		   queue[rear]=e;
		}
		else
		{
		   rear++;
		   System.out.print("Enter the element:");
		   int e=sc.nextInt();
		   queue[rear]=e;
		}
	}
	void dequeue()
	{
		if(rear==-1&&front==-1)
		   System.out.println("Queue Underflow!");
		else
		{
		   System.out.println ("Deleted element is:"+ queue[front]);
		   front++;
		}
	}
```

```
        void display()
        {
                int i;
                if(rear==-1&&front==-1)
                   System.out.println("Queue Underflow!");
                else
                {
                   System.out.print("The queue elements are:\n");
                   for(i=front;i<=rear;i++)
                   {
                       System.out.print(queue[i]+"\t");
                       System.out.println();
                   }
                }
        }
        public static void main(String args[])
        {
                Queue q=new Queue();
                System.out.print("Enter queue size:");
                int n=q.sc.nextInt();
                Queue q1=new Queue(n);
                System.out.print("MENU\n1.Enqueue\n2.Dequeue\n3.display\n");
                while(true)
                {
                        System.out.print("Enter your choice:");
                        int ch=q.sc.nextInt();
                        switch(ch)
                        {
                                case 1:
                                  q1.enqueue();
                                  break;
                                case 2:
                                  q1.dequeue();
                                  break;
                                case 3:
                                  q1.display();
                                  break;
                                default:
                                  System.exit(0);
                                  break;
                    }
                 }
        }
}
pranav06@6sys6:~/pranav06$javac Queue.java
pranav06@l6sys12:~/pranav06$java Queue
```

Output:

```
Queue program!
Enter queue size:3
MENU
1.Enqueue
2.Dequeue
3.display
Enter your choice:1
Enter the element:7
Enter your choice:1
Enter the element:8
Enter your choice:1
Enter the element:9
Enter your choice:1
Queue Overflow!
Enter your choice:2
Deleted element is:7
Enter your choice:3
The queue elements are:
8
9
Enter your choice:4
```

```
import java.util.*;
interface test
{
        int square(int num);
}
class Arithmetic implements test
{
        public int square(int num)
        {
          return(num*num);
        }
}
class Interface
{
        public static void main(String args[])
        {
                Scanner sc=new Scanner(System.in);
                Arithmetic a=new Arithmetic();
                System.out.print("Enter a number:");
                int n=sc.nextInt();
                int result=a.square(n);
                System.out.println("Square of "+n+":"+result);
        }
}
```

```
pranav06@6sys6:~/pranav06$javac Interface.java
pranav06@6sys6:~/pranav06$java Interface
```

Output:

```
Enter a number:10
Square of 10:100
```

```
import java.util.*;
abstract class Shape
{
  abstract void numberOfSides();
}
class Rectangle extends Shape
{
   void numberOfSides()
   {
            System.out.println("Number of sides = 4.");
   }
}
class Triangle extends Shape
{
   void numberOfSides()
   {
            System.out.println("Number of sides = 3.");
   }
}
class Hexagon extends Shape
{
   void numberOfSides()
   {
            System.out.println("Number of sides = 6.");
   }
}
class Abstract
{
   public static void main(String args[])
   {
            Scanner sc=new Scanner(System.in);
            Rectangle r=new Rectangle();
            Triangle t=new Triangle();
            Hexagon h=new Hexagon();
            System.out.print("\nMENU:\n1.Rectangle\n2.Triangle\n3.Hexagon");
            while(true)
            {
                     System.out.print("\nEnter your choice:");
                     int ch=sc.nextInt();
                     switch(ch)
                     {
                              case 1:
                                 r.numberOfSides();
                                 break;
                              case 2:
                                 t.numberOfSides();
```

```
                    break;
                case 3:
                    h.numberOfSides();
                    break;
                default:
                    System.exit(0);
                    break;
            }
        }
    }
}
```

```
pranav06@6sys6:~/pranav06$java Abstract
pranav06@6sys6:~/pranav06$javac Abstract.java
```

Output:

```
MENU:
1.Rectangle
2.Triangle
3.Hexagon
Enter your choice:1
Number of sides = 4.

Enter your choice:2
Number of sides = 3.

Enter your choice:3
Number of sides = 6.

Enter your choice:4
```

Package program

```
package Palindrome;
public class PalindromeNumber
{
        int r,sum,temp;
        public boolean PalindromeChecker(int num)
        {
                temp=num;
                while(num!=0)
                {
                        r=num%10;
                        sum=sum*10+r;
                        num=num/10;
                }
                if(sum==temp)
                  return true;
                else
                  return false;
         }
}
```

Main program

```
import java.util.*;
import Palindrome.PalindromeNumber;
class PalindromeNumberMain
{
        public static void main(String args[])
        {
                Scanner sc=new Scanner(System.in);
                PalindromeNumber p=new PalindromeNumber();
                System.out.print("Enter the number:");
                int n=sc.nextInt();
                if(p.PalindromeChecker(n))
                  System.out.println(n+"\tis palindrome");
                else
                  System.out.println(n+"\tis not palindrome");
        }
}
pranav06@6sys6:~/pranav06$javac -d . PalindromeNumber.java
pranav06@6sys6:~/pranav06$javac PalindromeNumberMain.java
pranav06@6sys6:~/pranav06$java PalindromeNumberMain
Output:
Enter the number:111
111 is palindrome
Enter the number:123
123 is not palindrome
```

Package program

```
package PrimePackage;
public class Prime
{
        public static boolean PrimeChecker(int num)
        {
                if(num==0||num==1)
                  return false;
                else if (num==2)
                  return true;
                else
                {
                  int flag=0,i;
                  for(i=2;i<=num/2;i++)
                  {
                    if(num%i==0)
                    {
                      flag=1;
                      break;
                    }
                  }
                  if(flag==0)
                     return true;
                  else
                     return false;
                }
         }
}
```

Main program

```
import java.util.*;
import PrimePackage.Prime;
public class PrimeOrNot
{
        public static void main(String args[])
        {
                Scanner sc=new Scanner(System.in);
                System.out.print("enter the no:");
                int n=sc.nextInt();
        if(Prime.PrimeChecker(n))
           System.out.println(n+"\tis prime");
                else
                  System.out.println(n+"\tis not prime");
        }
 }
```

```
pranav06@6sys6:~/pranav06$javac -d . Prime.java
pranav06@6sys6:~/pranav06$javac PrimeOrNot.java
pranav06@6sys6:~/pranav06$java PrimeOrNot
```
Output:
```
enter the no:2
2 is prime
enter the no:9
9 is not prime
```