

COMPUTER APPLICATION

CLASS 8

JAVA PROGRAMS

MID TERM SYLLABUS:

1. Chapter – Introduction to Java Programming (Complete Chapter)
 - ✓ Introduction Executing Java Program
 - ✓ JAVA
 - ✓ How Java works? Java Virtual Machine.
 - ✓ Java is Object Oriented
 - ✓ Features of Java Identifiers/Constants or Literals
 - ✓ Java Program
 - ✓ Compiling Java Program
 - ✓ Executing the Java Program
 - ✓ Java Platform
 - ✓ Java Tokens
 - ✓ Java variables or Identifies
 - ✓ Declaration of Variables
 - ✓ Keywords,
 - ✓ Constants or Literals
 - ✓ Operators
 - ✓ Java Statements
 2. Math Functions – Math.pow(), Math.sqrt()
 3. Input in Java – Integer, float, double, char, String
-

1. Write a program to display the following pattern on the screen.

```
#
##
###
####
#####
#####
#####
```

```
class hash
{
    public static void main(String args[])
    {
        System.out.println("#");
        System.out.println("##");
        System.out.println("###");
        System.out.println("####");
        System.out.println("#####");
        System.out.println("#####");
        System.out.println("#####");
    }
}
```

2. Write a program to display the following pattern on the screen.

```
@@@@@@@@
@           @
@           @
@           @
@           @
@           @
@@@@@@@@
```

```
class pattern
{
    public static void main(String args[])
    {
        System.out.println("@@@@@@@@");
        System.out.println("@           @");
        System.out.println("@           @");
        System.out.println("@           @");
        System.out.println("@           @");
        System.out.println("@           @");
        System.out.println("@@@@@@@@");
    }
}
```

3. Write a program to display the following pattern on the screen:

```
C
CO
COM
COMP
COMPU
COMPUT
COMPUTE
COMPUTER
```

```
class computer
{
    public static void main(String[] args)
    {
        System.out.println("C");
        System.out.println("CO");
        System.out.println("COM");
        System.out.println("COMP");
        System.out.println("COMPU");
        System.out.println("COMPUT");
        System.out.println("COMPUTE");
        System.out.println("COMPUTER");
    }
}
```

4. Write a program to display the following using Escape Sequence “\t”, “\n” on the screen.

**Hello Friend.
How Are You?
I Am Fine.
And What
About You?
I Am Also Fine.
Thank You
Friend.**

```
class friend
{
    public static void main(String args[])
    {
        System.out.println("Hello\tFriend.");
        System.out.println("How\tAre\tYou?");
        System.out.println("I\tAm\tFine.");
        System.out.println("And\tWhat\nAbout\tYou?");
        System.out.println("I\tAm\tAlso\tFine.");
        System.out.println("Thank\tYou\nFriend.");
    }
}
```

5. Write a Program to display your Bio-Data consisting of your Name, Father’s Name, Address, Place, State, Contact Number and Email ID.

```
class biodata
{
    public static void main(String args[])
    {
        System.out.println("BIO-DATA");
        System.out.println("Name : Rahul Banerjee");
        System.out.println("Father's Name : Rana Banerjee");
        System.out.println("Address : 132, G. T. Road");
        System.out.println("Place : Durgapur");
        System.out.println("Sate : West Bengal");
        System.out.println("Contact Number : 9832198321");
        System.out.println("Email ID : happy_rahul@rediffmail.com");
    }
}
```

Note : Type Your Details in place of sample data

6. **Write a program in java to assign two number 1273 and 58 in a suitable variable. Find its sum, difference, product, quotient and remainder. Display all values with proper message.**

```
class calculation
{
    public static void main(String args[])
    {
        int a=1273;
        int b=58;
        int sum=a+b;
        int diff=a-b;
        int prod=a*b;
        int quo=a/b;
        int rem=a%b;

        System.out.println("First Number = "+a);
        System.out.println("Second Number = "+b);
        System.out.println("Sum of the Numbers = "+sum);
        System.out.println("Difference of the Numbers = "+diff);
        System.out.println("Product of the Numbers = "+prod);
        System.out.println("Quotient of the Numbers = "+quo);
        System.out.println("Reminder of the Numbers = "+rem);
    }
}
```

7. **Write a program in java to assign 1293 in a variable. Find and display**
- i) Double the Number**
 - ii) Half the Number**
 - iii) 3/4 of the number**

```
class compute
{
    public static void main(String args[])
    {
        int a=1293;
        int d=a*2;
        double h=(1/2.0d)*a;
        double f=(3/4.0)*a;
        System.out.println("Number = "+a);
        System.out.println("Double the Number = "+d);
        System.out.println("Half the number = "+h);
        System.out.println("3/4 of the number = "+f);
    }
}
```

8. **A shopkeeper buys a TV set for Rs. 32,500 and sells it at a profit of 27%. Apart from this a VAT of 12.7% and Service Charge is 3.87% is charged. Display total selling price, profit along with vat and service charge.**

```
class television
{
    public static void main(String args[])
    {
        int cp=32500;
        float p=(27/100.0f)*cp;
        float sp=cp+p;
        float vat=(12.7/100.0f)*cp;
        float sc=(3.87/100.0f)*cp;
        float tsp=sp+vat+sc;

        System.out.println("Cost Price = "+cp);
        System.out.println("Profit = "+p);
        System.out.println("Selling Price = "+sp);
        System.out.println("Vat @ 12.7 % = "+vat);
        System.out.println("Service Charge @ 3.87 % = "+sc);
        System.out.println("Total Selling Price = "+tsp);
    }
}
```

9. **Rohan purchased an old cycle for Rs. 1200 and spend Rs. 250 on repairs, Rs. 350 in coloring and added new accessories worth Rs. 500. Rohan wants to make a profit of Rs. 1500 on selling the cycle. Find the selling price of the cycle. Write a java program to store all values and calculate and display the selling price and profit percent of the cycle.**

```
class cycle
{
    public static void main(String args[])
    {
        int cp=1200, r=250,c=350,a=500,p=1500;
        int tcp=cp+r+c+a;
        int sp=tcp+p;
        double pp = (p*100.0d)/tcp;

        System.out.println("Total Cost Price = "+tcp);
        System.out.println("Selling Price = "+sp);
        System.out.println("Profit % = "+pp);
    }
}
```

10. A train covers 120.5 km in 2.3 hours, next 160.75 km in 3.5 hours and the last 140.9 km in 5.5 hours. Write a java program to store all values and calculate and display average speed.

```
class distance
{
    public static void main(String args[])
    {
        float d1=120.5f, d2=160.75f, d3=140.9f;
        float t1=2.3f , t2=3.5f, t3=5.5f;
        float td=d1+d2+d3;
        float tt=t1+t2+t3;

        float as = td/tt;

        System.out.println("Average Speed = "+as);
    }
}
```

11. An alloy consists of 13 parts of copper and 7 parts of zinc and 5 parts of nickel. What is the percentage of each alloy in the metal? Write a java program to store all values and calculate and display the percentage of each metal.

```
class alloy
{
    public static void main(String args[])
    {
        int c=13,z=7,n=5;
        int sum =c+z+n;

        float pc= (c*100.0f)/sum;
        float pz= (z*100.0f)/sum;
        float pn= (n*100.0f)/sum;

        System.out.println("Percentage of Copper in Alloy = "+pc);
        System.out.println("Percentage of Zinc in Alloy = "+pz);
        System.out.println("Percentage of Nickel in Alloy = "+pn);
    }
}
```

12. A salesperson sells goods worth Rs. 4325.00, Rs. 4996.50, Rs. 8935.00 and Rs. 9960.75 in four months. Write a program to store the above values and calculate and display total and average sales.

```
class average
{
    public static void main(String args[])
    {
        double s1=4325.0d, s2=4996.5d, s3=8935.5d,s4=9960.75d;

        double tot = s1+s2+s3+s4;
        double avg = tot/4.0d;

        System.out.println("Total Sales = "+tot);
        System.out.println("Average Sales = "+avg);
    }
}
```

- 13.. The average height of 6 boys is 158 cm. When the seventh boy joins the group the average height changes to 159 cm. Find the height of the seventh boy in the group. Write a program to store the above data and find and display the height of the seventh boy.

```
class height
{
    public static void main(String args[])
    {
        int avg6=158, avg7=159;
        int tot6=avg6*6;
        int tot7=avg7*7;
        int h7=tot7-tot6;

        System.out.println("Height of Seventh Boy = "+h7+" cm");
    }
}
```

14. The angles of a quadrilateral are in the ratio 14 : 6 : 8 : 10. Write a program to store the given ratio. Find and display each angle of the quadrilateral.

```

class quad
{
public static void main(String args[])
{
int a=14,b=6,c=8,d=10;
int tot=a+b+c+d;

double s1 =(a*360.0)/tot;
double s2 =(b*360.0)/tot;
double s3 =(c*360.0)/tot;
double s4 =(d*360.0)/tot;

System.out.println("First Angle = "+s1);
System.out.println("Second Angle = "+s2);
System.out.println("Third Angle = "+s3);
System.out.println("Fourth Angle = "+s4);
}
}

```

15. Write a program in java to input two numbers. Find and display its sum, difference, product, quotient and remainder.

```

import java .io.*;
class cal
{
public static void main(String[] args)
{
DataInputStream in= new DataInputStream(System.in);

int a,b,sum,diff,prod,quo,rem;
sum=diff=prod=quo=rem=0;

try
{
System.out.print("Enter First Number : ");
a=Integer.parseInt(in.readLine());

System.out.print("Enter Second Number : ");
b=Integer.parseInt(in.readLine());

sum=a+b;
diff=a-b;
prod=a*b;
quo=a/b;
rem=a%b;
}
}

```



```

    System.out.println("Sum of the Numbers = "+sum);
    System.out.println("Difference of the Numbers = "+diff);
    System.out.println("Product of the Numbers = "+prod);
    System.out.println("Quotient of the Numbers = "+quo);
    System.out.println("Reminder of the Numbers = "+rem);
}
catch(Exception e)
{};
}
}

```

- 16. Write a program that will compute and display total bill where a loaf of bread cost Rs. 23.5 and an egg cost Rs. 5.75, where the user enters the loaf of bread and number of eggs to purchase.**

```

import java .io.*;

class bill
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);

        double cd=23.5d, ce=5.75d,bill=0.0d;
        int nb,ne;

        try
        {
            System.out.print("Enter Number of Loafs of bread to purchase : ");
            nb=Integer.parseInt(in.readLine());
            System.out.print("Enter Number of eggs to purchase : ");
            ne=Integer.parseInt(in.readLine());

            bill = nb*cd + ne*ce;

            System.out.println("Total Bill = "+bill);
        }
        catch(Exception e)
        {};
    }
}

```

- 17. Write a program to enter Principal, Rate and Time. Calculate and display Simple Interest and Amount.**

```
import java.io.*;
class bank
{
    public static void main(String args[])
    {
        DataInputStream in = new DataInputStream(System.in);
        double p,t,r,s=0.0,a=0.0;

        try
        {
            System.out.print("Enter Principal : ");
            p=Double.parseDouble(in.readLine());
            System.out.print("Enter Rate : ");
            r=Double.parseDouble(in.readLine());
            System.out.print("Enter Time : ");
            t=Double.parseDouble(in.readLine());
            s=(p*t*r)/100.0;
            a=p+s;
            System.out.println("Simple Interest = "+s);
            System.out.println("Amount = "+a);
        }
        catch(Exception e)
        {
            {};
        }
    }
}
```

- 18. Write a program to enter length and breadth of rectangular field. Calculate and display its area, perimeter and diagonal.**

```
import java.io.*;

class rect
{
    public static void main(String args[])
    {
        DataInputStream in = new DataInputStream(System.in);
```

```

double l,b,a=0.0,p=0.0,d=0.0d;

try
{
    System.out.print("Enter Length : ");
    l=Double.parseDouble(in.readLine());
    System.out.print("Enter Breadth : ");
    b=Double.parseDouble(in.readLine());

    a=l * b;
    p = 2*(l + b);
    d = Math.sqrt(l*l + b*b);

    System.out.println("Area of Rectangle = "+a);
    System.out.println("Perimeter of Rectangle = "+p);
    System.out.println("Diagonal of Rectangle = "+d);
}
catch(Exception e)
{};
}
}

```

- 19. Write a program to input roll (int), Name (String), Class(String) Section (char) marks of three subjects(Float). Calculate and display total and average marks.**

```

import java.io.*;
class datatype
{
    public static void main(String args[])
    {
        DataInputStream in = new DataInputStream(System.in);
        int rl;
        float tot,m1,m2,m3, avg=0.0;
        char sec;
        String nm,,cl,x;
        try
        {
            System.out.print("Enter Roll no : ");
            rl=Integer.parseInt(in.readLine());
            System.out.print("Enter Name : ");
            nm=in.readLine();
            System.out.print("Enter Class : ");
            cl=in.readLine();
            System.out.print("Enter section : ");
            sec=(char)in.read();
            x=in.readLine();

```

```

System.out.print("Enter Marks of subject-1 : ");
m1=Float.parseFloat(in.readLine());
System.out.print("Enter Marks of subject-2 : ");
m2=Float.parseFloat(in.readLine());
System.out.print("Enter Marks of subject-3 : ");
m3=Float.parseFloat(in.readLine());

tot=m1+m2+m3;
avg=tot/3.0f;

System.out.println("Total Marks : "+tot);
System.out.println("Average marks : "+avg);
}
catch(Exception e)
{};
}
}

```

20. Write a program in java to input number of days. Find and display number of years, months and days.

```

import java.io.*;
class days
{
public static void main(String args[])
{
DataInputStream in = new DataInputStream(System.in);
int d,y,m=0;

try
{
System.out.print("Enter no of days :");
d=Integer.parseInt(in.readLine());

y=d/365;
d=d%365;
m=d/30;
d=d%30;
System.out.println("Number of Years =" +y);
System.out.println("Number of Months =" +m);
System.out.println("Number of Days =" +d);
}
catch(Exception e)
{};
}
}

```

21. Write a program to input basic pay of an employee. Calculate da, hra,pf, gp and np. Display gp and np. Where da= 24% of bp, hra = 15% of bp, pf = 8.33 of bp. gp = bp+da+hra, np = gp-pf.

```
import java .io.*;

class salary
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);

        double bp,da,hra,pf,np,gp;
        bp=da=hra=pf=np=gp=0.0d;

        try
        {
            System.out.print("Enter Basic Pay : ");
            bp=Double.parseDouble(in.readLine());

            da=(24/100.0)*bp;
            hra=(15/100.0)*bp;
            pf=(8.33/100.0)*bp;

            gp = bp+da+hra;
            np = gp-pf;

            System.out.println("Gross Pay of employee = "+gp);
            System.out.println("Net Pay of employee = "+np);
        }
        catch(Exception e)
        {
            {};
        }
    }
}
```

22. Write a program to enter temperature in Fahrenheit and convert it to temperature in Celsius using formula $c = 5/9(f-32)$.

```
import java .io.*;

class temperature
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);
```

```

double f,c=0.0d;

try
{
    System.out.print("Enter Temperature in Fahrenheit : ");
    f=Double.parseDouble(in.readLine());

    c = (5/9.0d)*(f-32.0d);

    System.out.println("Temperature in Celsius = "+c);
}
catch(Exception e)
{};
}
}

```

- 23. Write a program in java to enter 3 sides of a triangle. Calculate and display its area using the formula. $\text{Area} = \sqrt{s - (s - a)(s - b)(s - c)}$**

```

import java .io.*;

class triangle
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);

        double a,b,c,s=0.0d,ar=0.0d;

        try
        {
            System.out.println("Enter 3 side of a Triangle : ");
            a=Double.parseDouble(in.readLine());
            b=Double.parseDouble(in.readLine());
            c=Double.parseDouble(in.readLine());

            s=(a+b+c)/2.0d;

            a = Math.sqrt(s*(s-a)*(s-b)*(s-c));

            System.out.println("Area of Triangle = "+a);
        }
        catch(Exception e)
        {};
    }
}

```

24. Write a program to input radius and height of a cone. Calculate and print the volume of the cone using formula: $v = \frac{1}{3}\pi r^2 h$.

```
import java .io.*;

class cone
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);

        double r,h,v=0.0d,p=22/7.0d;

        try
        {
            System.out.println("Enter Radius and Height of Cone : ");
            r=Double.parseDouble(in.readLine());
            h=Double.parseDouble(in.readLine());

            v = (1/3.0d)*p*Math.pow(r,2)*h;

            System.out.println("Area of Cone = "+v);
        }
        catch(Exception e)
        {
            {};
        }
    }
}
```

25. Write a program that will allow the cashier to input Marked Price of the product. The shop keeper offers successive discounts as 50% + 75% on the Marked Price. Calculate and display the successive discount and Selling Price.

```
import java .io.*;

class markedprice
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);

        double mp,d1,d2,nmp,sp;
        mp=d1=d2=nmp=sp=0.0d;
```

```

try
{
System.out.print("Enter Marked Price of Product : ");
mp=Double.parseDouble(in.readLine());

d1 = (50/100.0d)*mp;

nmp = mp-d1;

d2 = (75/100.0d)*nmp;
sp=nmp-d2;

System.out.println("Discount-1 @ 50% = "+d1);
System.out.println("Discount-2 @ 75% = "+d2);
System.out.println("Selling Price = "+sp);
}
catch(Exception e)
{};
}
}

```

- 26. Write a program to enter distance in km and time in hours. Calculate and display the speed in km/hr and m/sec.**

```

import java .io.*;

class speed
{
public static void main(String[] args)
{
DataInputStream in= new DataInputStream(System.in);

double d,t,s1,s2;
s1=s2=0.0d;

try
{
System.out.print("Enter Distance in Kilometer : ");
d=Double.parseDouble(in.readLine());
System.out.print("Enter Time in Hours : ");
t=Double.parseDouble(in.readLine());

s1 = d/t;
s2 = s1*(5/18.0); // to convert Km/Hr to m/sec multiply by 5/18

```



```

        System.out.println("Speed in Km/Hr = "+s1);
        System.out.println("Speed in m/sec = "+s2);
    }
    catch(Exception e)
    {};
}
}

```

27. Write a program to input values of variable u, t, a respectively. Find and display the value of the following expression. $s = ut + (1/2)at^2$

```

import java .io.*;

class expression
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);
        double u,t,a,s=0.0d;
        try
        {
            System.out.print("Enter Value of a : ");
            a=Double.parseDouble(in.readLine());
            System.out.print("Enter Value of t : ");
            t=Double.parseDouble(in.readLine());
            System.out.print("Enter Value of u : ");
            u=Double.parseDouble(in.readLine());
            s = (u*t) + (1/2.0d)*a*Math.pow(t,2);
            System.out.println("Value of S = "+s);
        }
        catch(Exception e)
        {};
    }
}

```

28. Write a program to input values of a, b, c and x (Integer Values). Compute and display the value of v, where $v = ax^3 + (bx)^2 + abc + 2bc$

```

import java .io.*;

class evaluate
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);

```

```

int a,b,c,x;
double v=0.0d;

try
{
    System.out.print("Enter Value of a : ");
    a=Integer.parseInt(in.readLine());
    System.out.print("Enter Value of b : ");
    b=Integer.parseInt(in.readLine());
    System.out.print("Enter Value of c : ");
    c=Integer.parseInt(in.readLine());
    System.out.print("Enter Value of x : ");
    x=Integer.parseInt(in.readLine());

    v = a*Math.pow(x,3) + Math.pow((b*x),2) + a*b*c - 2*b*c;

    System.out.println("Evaluated Value of v = "+v);
}
catch(Exception e)
{
};
}
}

```

- 29. The sum of interior angles of polygon = $(n - 2) \times 180$, where n = number of sides of the polygon. Write a program to enter number of sides of a polygon and find and display the sum of the interior angles of a polygon.**

```

import java .io.*;

class polygon
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);
        int n,sum=0;
        try
        {
            System.out.print("Enter Number of sides of a polygon : ");
            n=Integer.parseInt(in.readLine());
            sum = (n-2)*180;
            System.out.println("Sum of the interior angles of polygon = "+sum);
        }
        catch(Exception e)
        {
};
}
}

```

30. Write a program to input necessary values and evaluate the following expression.

$$s = \sqrt{a^2/b^5 + c^2}$$

```
import java .io.*;
class expression
{
    public static void main(String[] args)
    {
        DataInputStream in= new DataInputStream(System.in);

        int a,b,c;
        double s=0.0d;
        try
        {
            System.out.println("Enter Vales of a, b and c : ");
            a=Integer.parseInt(in.readLine());
            b=Integer.parseInt(in.readLine());
            c=Integer.parseInt(in.readLine());

            s= Math.sqrt((Math.pow(a,2)/Math.pow(b,5))+Math.pow(c,2));

            System.out.println("Evaluated Value of s = "+s);
        }
        catch(Exception e)
        {
        };
    }
}
```

Note: Any other program can be done provided the formula is given

FINAL TERM SYLLABUS:

1. Chapter – JAVA – More Features

- ✓ Introduction
- ✓ if statement
- ✓ if – else statement
- ✓ if - else with and (&&)
- ✓ if - else with or (||)
- ✓ if - else with not (!)
- ✓ Conditional Operator (? :)
- ✓ Looping statements – for loop increment decrement series
- ✓ Counters
- ✓ Accumulators
- ✓ Prefix/Postfix
- ✓ Counters & Logical Operators and /or/not
- ✓ Increment/Decrement and Prefix/Postfix

1st Term JAVA syllabus to be included

-
1. Write a program in java to input an integer, test and print if the number is POSITIVE, NEGATIVE OR ZERO.

```
import java .io.*;
class number
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n;
        try
        {
            System.out.print("Enter Any Number : ");
            n=Integer.parseInt(in.readLine());

            if(n>0)
                System.out.println("POSITIVE NUMBER");

            if(n<0)
                System.out.println("NEGATIVE NUMBER");
            if(n==0)
                System.out.println("ZERO");
        }
        catch(Exception e)
        {};
    }
}
```

2. **Write a program to input cost price and selling price. Find and display profit and profit percent or loss or loss percent. If CP equal to SP display NO PROFIT – NO LOSS.**

```
import java .io.*;
class profit
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        int cp,sp,p=0,l=0;
        double pp=0.0d,lp=0.0d;
        try
        {
            System.out.print("Enter cost Price : ");
            cp=Integer.parseInt(in.readLine());

            System.out.print("Enter Selling Price : ");
            sp=Integer.parseInt(in.readLine());

            if(sp>cp)
            {
                p=sp-cp;
                pp=(p*100.0d)/cp;

                System.out.println("Profit = "+p);
                System.out.println("Profit % = "+pp);
            }

            if(cp>sp)
            {
                l=cp-sp;
                lp=(l*100.0d)/cp;

                System.out.println("Loss = "+l);
                System.out.println("Loss % = "+lp);
            }

            if(cp==sp)
                System.out.println("NO PROFIT - NO LOSS");
        }
        catch(Exception e)
        {
            {}
        }
    }
}
```

3. **Write a program in java to input an integer, test and print if the number is EVEN or ODD.**

```
import java .io.*;
class even
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n;

        try
        {
            System.out.print("Enter Any Number : ");
            n=Integer.parseInt(in.readLine());
            if(n%2==0)
                System.out.println("EVEN");
            else
                System.out.println("ODD");
        }
        catch(Exception e)
        {};
    }
}
```

4. **Write a program in java to input two integer numbers. If the first number is greater than the 2nd number, then print the greater number and it's double otherwise print the smaller number and its square root.**

```
import java .io.*;

class greater
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int a,b;
        try
        {
            System.out.print("Enter First Number : ");
            a=Integer.parseInt(in.readLine());
            System.out.print("Enter Second Number : ");
            b=Integer.parseInt(in.readLine());
        }
    }
}
```

```

if(a>b)
{
    System.out.println("Greater Number is : "+a);
    System.out.println("Double of the Greater Number is : "+(a*2));
}
else
{
    System.out.println("Smaller Number is : "+a);
    System.out.println("Square Root of Smaller Number is : "+Math.sqrt(a));
}
}
catch(Exception e)
{};
}
}

```

5. **Write a program in java to input an integer, test and print whether it is perfect square or not. Print appropriate message.**

```

import java .io.*;
class perfect_sq
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n,sq=0;
        try
        {
            System.out.print("Enter Any Number : ");
            n=Integer.parseInt(in.readLine());
            sq = (int)Math.sqrt(n);
            if((sq*sq)==n)
                System.out.println("PERFECT SQUARE");
            else
                System.out.println("NOT A PERFECT SQUARE");
        }
        catch(Exception e)
        {};
    }
}

```

6. **Write a program to input two angles. Find and display it forms a Complementary Angle or not.**

```

import java .io.*;

class cangle
{
public static void main(String args[])
{
    DataInputStream in= new DataInputStream(System.in);

    int a,b,s=0;

    try
    {
        System.out.print("Enter First Angle : ");
        a=Integer.parseInt(in.readLine());

        System.out.print("Enter Second Angle : ");
        b=Integer.parseInt(in.readLine());

        s=a+b;

        System.out.println("Sum of Angles = "+s);

        if(s==90)
            System.out.println("It is a Complementary Angle");
        else
            System.out.println("It is NOT a Complementary Angle");
    }
    catch(Exception e)
    {};
}
}

```

Note : In the same way programs on Supplementary , Triangle and Quadrilateral can be done.

7. A whole-seller gives incentives in the form of discounts on the net bill. Write a program to input the net bill and calculate the discount as follows:

<u>Net Bill in Rupees</u>	<u>Discount %</u>
<5000	5
>=5000 and <10000	10
>=10000	15

Display Discount %, Discount Amount and Amount Payable.


```

import java .io.*;

class prog6
{
public static void main(String args[])
{
    DataInputStream in= new DataInputStream(System.in);

    int nb,dp=0;
    double dis=0.0d,amt=0.0d;

    try
    {
        System.out.print("Enter Net Bill : ");
        nb=Integer.parseInt(in.readLine());

        if(nb<5000)
            dp=5;

        if(nb>=5000 && nb<10000)
            dp=10;

        if(nb>=10000)
            dp=15;

        dis = (dp/100.0d)*nb;
        amt = nb - dis;

        System.out.println("Discount % = "+dp);
        System.out.println("Discount Amount = "+dis);
        System.out.println("Amount Payable after Discount = "+amt);
    }
    catch(Exception e)
    {};
}
}

```

8. Write a program that will allow the teacher to input the marks obtained in Physics, Chemistry and Biology. Find and display average marks and grade. Grade is as follows:

<u>AVERAGE</u>	<u>GRADE</u>
0 to 50	C
51 to 70	B
71 to 90	A
91 to 100	*

```

import java .io.*;

class card
{
public static void main(String args[])
{
    DataInputStream in= new DataInputStream(System.in);

    int phy,chem,bio;
    double avg=0.0d;
    char gr= ' ';
    try
    {
        System.out.print("Enter Physics Marks : ");
        phy=Integer.parseInt(in.readLine());

        System.out.print("Enter Chemistry Marks : ");
        chem=Integer.parseInt(in.readLine());

        System.out.print("Enter Biology Marks : ");
        bio=Integer.parseInt(in.readLine());

        avg=(phy+chem+bio)/3.0d;

        if(avg>=0 && avg<=50)
            gr='C';

        if(avg>=51 && avg<=70)
            gr='B';

        if(avg>=71 && avg<=90)
            gr='A';

        if(avg>=91 && avg<=100)
            gr='*';

        System.out.println("Average : "+avg);
        System.out.println("Grade : "+gr);
    }
    catch(Exception e)
    {
        {};
    }
}
}

```

9. A salesman is paid commission on the following basis:

<u>Sales Amount in Rupees</u>	<u>Commission %</u>
Up to 10,000	2
10,001 to 20,000	4
20,001 to 50,000	8
More than 50,000	15

Write a program to input sales amount. Calculate and display the commission% and commission amount paid to the sales person.

```
import java .io.*;
class commission
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        int sa,cp=0;
        double cpaid=0.0d;
        try
        {
            System.out.print("Enter Total Sales : ");
            sa=Integer.parseInt(in.readLine());

            if(sa<=10000)
                cp=2;

            if(sa>=10001 && sa<=20000)
                cp=4;

            if(sa>=20001 && sa<=50000)
                cp=8;

            if(sa>50000)
                cp=15;

            cpaid = (cp/100.0d)*sa;

            System.out.println("Commission % = "+cp);
            System.out.println("Commission Payable = "+cpaid);
        }
        catch(Exception e)
        {
            {};
        }
    }
}
```

10. Write a program to enter basic pay and compute dearness allowance (DA) and house rent allowance (HRA) as following:

<u>Basic Pay in Rupees</u>	<u>DA%</u>	<u>HRA%</u>
Up to 30,000	58.5	12.0
30,001 to 50,000	65.0	16.5
More than 50,000	73.0	24.8

Calculate da, hra and gp. $gp = bp + da + hra$. Display Gross Pay.

```
import java .io.*;
class payslip
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int bp;
        double dp,hp,da,hra,gp;
        dp=hp=da=hra=gp=0.0d;
        try
        {
            System.out.print("Enter Basic Pay : ");
            bp=Integer.parseInt(in.readLine());
            if(bp<=30000)
            {
                dp=58.5d;
                hp=12.0d;
            }
            if(bp>=30001 && bp<=50000)
            {
                dp=65.0d;
                hp=16.5d;
            }
            if(bp>50000)
            {
                dp=73.0d;
                hp=24.8d;
            }
            da = (dp/100.0d)*bp;
            hra = (hp/100.0d)*bp;
            gp = bp+da+hra;
            System.out.println("Gross Pay = "+gp);
        }
        catch(Exception e)
        {};
    }
}
```

11. Write a program that will allow the user to input any character from the keyboard. Find and display if it is Upper Case Alphabet, Lower Case Alphabet or Digit.

```
import java .io.*;

class alphabet
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        char ch;
        String x;

        try
        {
            System.out.print("Enter Any Character : ");
            ch=(char)System.in.read();
            x=in.readLine();

            if(ch>='A' && ch<='Z')
                System.out.println("It is Upper Case Alphabet");

            if(ch>='a' && ch<='z')
                System.out.println("It is Lower Case Alphabet");

            if(ch>='0' && ch<='9')
                System.out.println("It is Digit");
        }
        catch(Exception e)
        {
        }
    }
}
```

12. Write a program to input three numbers. Find and display the maximum number.

```
import java .io.*;

class prog14
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int a,b,c,max=0;
```

```

try
{
    System.out.println("Enter 3 Numbers : ");
    a=Integer.parseInt(in.readLine());
    b=Integer.parseInt(in.readLine());
    c=Integer.parseInt(in.readLine());

    if(a>b && a>c)
        max=a;

    if(b>a && b>c)
        max=b;

    if(c>a && c>b)
        max=c;

    System.out.println("Maximun Number is "+max);
}
catch(Exception e)
{
}
}
}

```

Note : In the same way programs on Minimum Number can be done.

13. Write a program to enter units consumed. Find and display total bill as per the following:

<u>Units Consumed</u>	<u>Rate per Unit</u>
First 200 Units	4.50
Next 200 Units	5.50
More than 400 Units	6.50

Apart from this every consumer pays a meter rent of Rs. 35

```

import java .io.*;

class electricity
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        int u,mr=35;
        double bill=0.0d;
    }
}

```

```

try
{
    System.out.print("Enter Units Consumed : ");
    u=Integer.parseInt(in.readLine());

    if(u<=200)
        bill = u * 4.5d;

    if(u>200 && u<=400)
        bill = 200*4.5 + ((u-200) * 5.5d);

    if(u>400)
        bill = 200 * 4.5d + 200 * 5.5d + ((u-400) * 6.5d);

    bill = bill + mr;

    System.out.println("Bill with Meter Rent = "+bill);
}
catch(Exception e)
{
}
}
}

```

14. **Write a program that will allow the user to input marks of three terms. Find and display if the student has passed or failed. A student is given “PASS” if he scores 50 or above in the average of the three exams or if he scores 63 or above in the second and third exams.**

```

import java .io.*;

class grade
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int m1,m2,m3;
        double avg1=0.0d, avg2=0.0d;

        try
        {
            System.out.print("Enter Marks of First Term : ");
            m1=Integer.parseInt(in.readLine());
            System.out.print("Enter Marks of Second Term : ");
            m2=Integer.parseInt(in.readLine());
            System.out.print("Enter Marks of Third Term : ");

```

```

m3=Integer.parseInt(in.readLine());

avg1=(m1+m2+m3)/3.0d;
avg2=(m2+m3)/2.0d;

System.out.println("Average of three terms = "+avg1);
System.out.println("Average of Second and third terms = "+avg2);
if(avg1>=50 || avg2>=63)
    System.out.println("Pass");
else
    System.out.println("Fail");
}
catch(Exception e)
{};
}
}

```

15. Write a program in java to input an angle. Find and display if it is :-

- | | |
|---|---------------------------|
| i) Acute Angle | ii) Right Angle |
| iii) Obtuse Angle | iv) Straight Angle |
| v) Reflex Angle | vi) Complete Angle |
| vii) Invalid Angle (>360 or <=0) | |

```

import java .io.*;

class angle
{
public static void main(String args[])
{
    DataInputStream in= new DataInputStream(System.in);

    int a;

    try
    {
        System.out.print("Enter Any Angle : ");
        a=Integer.parseInt(in.readLine());

        if(a>0 && a<90)
            System.out.println("It is an Acute Angle");

        if(a==90)
            System.out.println("It is an Right Angle");
    }
}
}

```



```

if(a>90 && a<180)
    System.out.println("It is an Obtuse Angle");

if(a==180)
    System.out.println("It is an Straight Angle");

if(a>180 && a<360)
    System.out.println("It is an Reflex Angle");

if(a==360)
    System.out.println("It is an Complete Angle");

if(a<=0 || a>360)
    System.out.println("It is an Invalid Angle");
}
catch(Exception e)
{};
}
}

```

- 16. Write a program to print the following series: 10 , 20 , 30 , 40 , n terms.**

```

import java .io.*;
class series
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n,i;
        try
        {
            System.out.print("Enter number of terms : ");
            n=Integer.parseInt(in.readLine());
            for(i=1;i<=n;i++)
            {
                System.out.print((i*10)+"\t");
            }
        }
        catch(Exception e)
        {};
    }
}

```

17. Write a program to print the following series:
-100, -90, -80, ..., 0, 10, 20, 30, ..., 100

```
class series1
{
    public static void main(String args[])
    {
        int i;

        for(i= -100; i<=100; i=i+10)
        {
            System.out.print(i+"\t");
        }
    }
}
```

Note : In the same way programs on other series can be done.

- a) 1, 2, 3, 4, ..., n terms (Natural Numbers)
- b) 1, 3, 5, 7, ..., n terms (Odd Numbers)
- c) 2, 4, 6, 8, ..., n terms (Even Numbers)
- d) 1, 4, 9, 16, ..., n terms (Square of Natural Numbers)
- e) 1, 8, 27, 64, ..., n terms (Cubes of Natural Numbers)
- f) 0, 3, 8, 15, ..., n terms (Square of Natural Numbers minus 1)
- g) 2, 5, 10, 17, ..., n terms (Square of Natural Numbers plus 1)
- h) 0, 7, 26, 63, ..., n terms (Cubes of Natural Numbers minus 1)
- i) 2, 9, 28, 65, ..., n terms (Cubes of Natural Numbers plus 1)
- j) 1, 2, 4, 8, 16, ..., n terms (Powers of 2)

18. Write a program in java to input any number and print the multiplication table of that number up to 20 in the given format. If the input is 7, than output will be

```
7 x 1 = 7
7 x 2 = 14
:
:
:
7 x 20 = 140
```

```
import java .io.*;

class table
{
    public static void main(String args[])
    {
```

```

DataInputStream in= new DataInputStream(System.in);

int n,i;

try
{
    System.out.print("Enter number whose table you want to print : ");
    n=Integer.parseInt(in.readLine());

    for(i=1;i<=20;i++)
    {
        System.out.println(n + " x " + i + " = " +(n*i));
    }
}
catch(Exception e)
{};
}
}

```

- 19. Write a program to input 20 numbers. Count and display how many of the inputs are positive, negative and zero. Also display how many numbers have 7 in units place.**

```

import java .io.*;
class count
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n,i,pos,neg,ze,sev;
        pos=neg=ze=sev=0;
        try
        {
            for(i=1;i<=20;i++)
            {
                System.out.print("Enter any number : ");
                n=Integer.parseInt(in.readLine());
                if(n>0)
                    pos++;

                if(n<0)
                    neg++;

                if(n==0)
                    ze++;

                if(n%10==7)

```

```

        sev++;
    }
    System.out.println("Number of Positive Numbers = "+pos);
    System.out.println("Number of Negative Numbers = "+neg);
    System.out.println("Number of Zeros = "+ze);
    System.out.println("Number of numbers Ending with 7 = "+sev);
}
catch(Exception e)
{};
}
}

```

20. Write a program to generate and print the first n even numbers greater than 53.

```

import java .io.*;

class even53
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        int x=0,n=53,i;

        try
        {
            System.out.print("How many even numbers to print : ");
            x=Integer.parseInt(in.readLine());

            for(i=1;i<=x;)
            {

                if(n%2==0)
                {
                    System.out.print(n+"\t");
                    i++;
                }
                n++;
            }
        }
        catch(Exception e)
        {};
    }
}

```

21. Write a program to input n numbers. Find and display sum of even and odd numbers.

```
import java .io.*;

class odd_number
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        int n,i,x,ev=0,od=0;

        try
        {
            System.out.print("How many numbers to input : ");
            n=Integer.parseInt(in.readLine());

            for(i=1;i<=n;i++)
            {
                System.out.print("Enter any number : ");
                x=Integer.parseInt(in.readLine());

                if(x%2==0)
                    ev=ev+x;
                else
                    od=od+x;
            }
            System.out.println("Sum of Even Numbers = "+ev);
            System.out.println("Sum of Odd Numbers = "+od);
        }
        catch(Exception e)
        {
            {}
        }
    }
}
```

Note : In the same way programs on other sum of series can be done.

- a) $1 + 2 + 3 + 4 + \dots + n$ terms (Natural Numbers)
- b) $1 + 3 + 5 + 7 + \dots + n$ terms (Odd Numbers)
- c) $2 + 4 + 6 + 8 + \dots + n$ terms (Even Numbers)
- d) $1 + 4 + 9 + 16 + \dots + n$ terms (Square of Natural Numbers)
- e) $1 + 8 + 27 + 64 + \dots + n$ terms (Cubes of Natural Numbers)
- f) $0 + 3 + 8 + 15 + \dots + n$ terms (Square of Natural Numbers minus 1)
- g) $2 + 5 + 10 + 17 + \dots + n$ terms (Square of Natural Numbers plus 1)
- h) $0 + 7 + 26 + 63 + \dots + n$ terms (Cubes of Natural Numbers minus 1)

i) $2+ 9+ 28+ 65+ \dots n$ terms (Cubes of Natural Numbers plus 1)

j) $1 + 2+ 4+ 8+ 16 + \dots n$ terms (Powers of 2)

22. Write a program to generate and print the first n terms of the Fibonacci series. The first few terms of the series are : 0 , 1 , 1 , 2 , 3 , 5 , 8 , 13 , , n terms.

```
import java .io.*;
class fibonacci
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        int a,b,c,n,i;
        a=0;
        b=1;
        try
        {
            System.out.print("Enter number of terms : ");
            n=Integer.parseInt(in.readLine());

            System.out.print(a+"\t"+b+"\t");

            for(i=3;i<=n;i++)
            {
                c = a + b;
                System.out.print(c+"\t");
                a=b;
                b=c;
            }
        }
        catch(Exception e)
        {
        }
    }
}
```

23. Blue Lite Company wishes to generate salary slip for 50 employees. Write a program to enter basic pay and compute dearness allowance (DA) and house rent allowance (HRA) as following :

<u>Basic Pay in Rupees</u>	<u>DA%</u>	<u>HRA%</u>
Up to 30,000	58.5	12.0
30,001 to 50,000	65.0	16.5
More than 50,000	73.0	24.8

Calculate da, hra and gross pay. $gp = bp + da + hra$ Display Gross Pay of each employee

```

import java .io.*;
class loop
{
public static void main(String args[])
{
DataInputStream in= new DataInputStream(System.in);
int bp,i;
double dp,hp,da,hra,gp;
dp=hp=da=hra=gp=0.0d;
try
{
for(i=1;i<=50;i++)
{
System.out.print("\nEnter Basic Pay for employee-" +i+ " : ");
bp=Integer.parseInt(in.readLine());

if(bp<=30000)
{
dp=58.5d;
hp=12.0d;
}

if(bp>=30001 && bp<=50000)
{
dp=65.0d;
hp=16.5d;
}

if(bp>=50000)
{
dp=73.0d;
hp=24.8d;
}

da = (dp/100.0d)*bp;
hra = (hp/100.0d)*bp;
gp = bp+da+hra;

System.out.println("Grass Pay = "+gp);
}
}
catch(Exception e)
{};
}
}

```

24. Write a program to display the sum of the following series :

$$s = 1/a^1 + 2/a^2 + 3/a^3 + \dots + n/a^n$$

```
import java .io.*;

class sum_series1
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        int n,i,a;
        double s=0.0d;

        try
        {
            System.out.print("Enter value of N : ");
            n=Integer.parseInt(in.readLine());

            System.out.print("Enter value of A : ");
            a=Integer.parseInt(in.readLine());

            for(i=1;i<=n;i++)
            {
                s = s + (i/Math.pow(a,i));
            }
            System.out.println("Sum of Series = "+s);
        }
        catch(Exception e)
        {
        }
    }
}
```

25. Write a program to display the sum of the following series :

$$s = 1/a^2 + 3/a^4 + 5/a^6 + \dots + n \text{ terms}$$

```
import java .io.*;

class sum_series2
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
```



```

int n,i,a,x=1;
double s=0.0d;

try
{
    System.out.print("Enter value of N : ");
    n=Integer.parseInt(in.readLine());

    System.out.print("Enter value of A : ");
    a=Integer.parseInt(in.readLine());

    for(i=1;i<=n;i++)
    {
        s = s + (x/Math.pow(a,(x+1)));
        x=x+2;
    }
    System.out.println("Sum of Series = "+s);
}
catch(Exception e)
{
}
}
}

```

- 26. Write a program to input 10 numbers. Count and display how many are multiples of 5. Also display the sum and average of the numbers.**

```

import java .io.*;

class average
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);

        int n,i,sum=0,f=0;
        double avg=0.0d;
    }
}

```

```

try
{
    for(i=1;i<=10;i++)
    {
        System.out.print("Enter any number : ");
        n=Integer.parseInt(in.readLine());

        sum = sum + n;
        if(n % 5 ==0)
            f++;
    }
    avg=sum/10.0d;
    System.out.println("Sum of numbers = "+sum);
    System.out.println("Average of numbers = "+avg);
    System.out.println("Number of numbers divisible by 5 = "+f);
}
catch(Exception e)
{};
}
}

```

- 27. Write a program to input any number and print its factorial of the number.
 Factorial of 5 = 1 x 2 x 3 x 4 x 5 = 120**

```

import java .io.*;
class factorial
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n,i,f=1;
        try
        {
            System.out.print("Enter any number : ");
            n=Integer.parseInt(in.readLine());
            for(i=1;i<=n;i++)
            {
                f=f*i;
            }
            System.out.println("Factorial of the number : "+n +" is = "+f);
        }
        catch(Exception e)
        {};
    }
}

```

28. Write a program to input any number. Find and print if it is prime number or not. A prime number is number which has two factors only. Example 7, 11, 13, etc.

```
import java .io.*;

class prime
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n,i,f=0;
        try
        {
            System.out.print("Enter any number : ");
            n=Integer.parseInt(in.readLine());

            for(i=1;i<=n;i++)
            {
                if(n%i==0)
                    f++;
            }
            if(f==2)
                System.out.println("It is a Prime Number");
            else
                System.out.println("It is NOT a Prime Number");
        }
        catch(Exception e)
        {
            {}
        }
    }
}
```

29. Write a program to input any number and print the factors of the number. Example : Factors of 15 are 1, 3, 5, and 15.

```
import java .io.*;

class factors
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n,i;
        try
        {
            System.out.print("Enter any number : ");
            n=Integer.parseInt(in.readLine());
```

```

System.out.println("Factors of the number are :-");
for(i=1;i<=n;i++)
{
    if(n%i==0)
        System.out.print(i+"\t");
}
}
catch(Exception e)
{};
}
}

```

- 30. Write a program to input any number. Find and print if it is perfect number or not. A Perfect Number is one whose sum of the factors of the number excluding the number is = to the number itself. Example 6 is perfect number. Factors of 6 are 1,2 and 3. Sum of 1+2+3=6. Since 6 = 6. It is a perfect number.**

```

import java .io.*;
class perfect_number
{
    public static void main(String args[])
    {
        DataInputStream in= new DataInputStream(System.in);
        int n,i,s=0;
        try
        {
            System.out.print("Enter any number : ");
            n=Integer.parseInt(in.readLine());
            for(i=1;i<=n/2;i++)
            {
                if(n%i==0)
                    s=s+i;
            }
            if(n==s)
                System.out.println("It is a Perfect Number");
            else
                System.out.println("It is NOT a Perfect Number");
        }
        catch(Exception e)
        {};
    }
}

```
