(1) Any year is entered through the keyboard, write a program to determine whether the year is leap or not. Use the logical operators && and ||.

```
import java.util.*;

class leapy

{

 public static void main(String[]args)

    {

     Scanner sc=new Scanner(System.in);

System.out.print("\n\t\t\tEnter Any Year: ");

int Year=sc.nextInt();

if((Year%4==0 || Year%400==0) && Year%100!=0)

System.out.println("\n\t\t\tEntered Year is Leap Year");

else
System.out.println("\n\t\t\tEntered Year is not Leap Year");

           }
}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac leapy.java

C:\Program Files\Java\jdk1.8.0_202\bin>java leapy

                        Enter Any Year: 2015

                        Entered Year is not Leap Year
```

---

(2) Any character is entered through the keyboard, write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol.

```
The following table shows the range of ASCII values for various
characters:
Characters   ASCII Values
A – Z      65 – 90
a – z      97 – 122
0 – 9     58 - 64
special symbols
48 – 57
0 - 47, 58 - 64, 91 - 96, 123 - 127(2) Any character is entered through
the keyboard, write a program to
determine whether the character entered is a capital letter, a small
case letter, a digit or a special symbol.
The following table shows the range of ASCII values for various
characters:
Characters   ASCII Values
A – Z      65 – 90
a – z      97 – 122
0 – 9     58 - 64
special symbols
48 – 57
0 - 47, 58 - 64, 91 - 96, 123 - 127*/



import java.util.*;

class ascii

{

 public static void main(String[]args)

    {

     Scanner sc=new Scanner(System.in);

  System.out.print("\n\t\t\tEnter Any Character: ");

char CH=sc.next().charAt(0);

if(CH>=65 && CH<=90)

System.out.println("\n\t\t\tEntered Character is Capital Letter");

else if(CH>=97 && CH<=122)

System.out.println("\n\t\t\tEntered Character is Small Letter");
```

```
else if(CH>=48 && CH<=57)

System.out.println("\n\t\t\tEntered Character is a Number");

else if(CH>=58 && CH<=64 || CH>=0 && CH<=47 || CH>=91 && CH<=96 || CH>=123
&& CH<=127)

System.out.println("\n\t\t\tEntered Character is Special Symbol");

           }
}
OUTPUT:C:\Program Files\Java\jdk1.8.0_202\bin>javac ascii.java

C:\Program Files\Java\jdk1.8.0_202\bin>java ascii

                        Enter Any Character: b

                        Entered Character is Small Letter
```

---

3 If the three sides of a triangle are entered through the keyboard, write a program to check whether the triangle is valid or not. The triangle is valid if the sum of two sides is greater than the largest of the three sides.

```
import java.util.*;

class triangle1

  {

    public static void main(String[]args)

        {

        Scanner sc=new Scanner(System.in);

 System.out.println("\n\t\t\tEnter Sides of Triangle ");


System.out.print("\n\t\t\tEnter First Side of Triangle: ");

int S1=sc.nextInt();
```

```
System.out.print("\n\t\t\tEnter Second Side of Triangle: ");

int S2=sc.nextInt();

System.out.print("\n\t\t\tEnter Third Side Triangle: ");

int S3=sc.nextInt();

if(S1+S2>S3 || S1+S3>S2 || S2+S3>S1)

System.out.println("\n\t\t\tIt is A Valid Triangle");

else

System.out.println("\n\t\t\tIt is not A Valid Triangle");

        }

}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac triangle1.java

C:\Program Files\Java\jdk1.8.0_202\bin>java triangle1

                        Enter Sides of Triangle

                        Enter First Side of Triangle: 5

                        Enter Second Side of Triangle: 5

                        Enter Third Side Triangle: 5

                        It is A Valid Triangle
```

---

(4) If the three sides of a triangle are entered through the keyboard, write a program to check whether the triangle is isosceles, equilateral, scalene or right angled triangle.

```
Import java.util.Scanner;
Class tria
{
        public static void main(String[] args)
        {
```

```
                int x , y , z ;
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter size of 3 side one by one : ");
                x=sc.nextInt();
                y=sc.nextInt();
                z=sc.nextInt();
                if (x == y && y == z )
                        System.out.println("Equilateral Triangle");
                else if (x == y || y == z || z == x )
                        System.out.println("Isosceles Triangle");
                else
                        System.out.println("Scalene Triangle");

        }

}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac tria.java

C:\Program Files\Java\jdk1.8.0_202\bin>java tria
Enter size of 3 side one by one :
3
3
3
Equilateral Triangle
```

---

(6) Using conditional operators determine:
(1) Whether the character entered through the keyboard is a lower case alphabet or not.
(2) Whether a character entered through the keyboard is a special symbol or not.

```
import java.util.*;

class chara

{

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

```
   {

    Scanner sc=new Scanner(System.in);

  System.out.print("\n\t\t\tEnter Any Character: ");

char C=sc.next().charAt(0);

if(C>=97 && C<=122)

System.out.println("\n\t\t\tEntered Character is Lower Case Alphabet");

else if(C>=65 && C<=90)

System.out.println("\n\t\t\tEntered Character is not Lower Case Alphabet");

else if(C>=58 && C<=64 || C>=0 && C<=47 || C>=91 && C<=96 || C>=123 && C<=127)

System.out.println("\n\t\t\tEntered Character is Special Symbol");

else

System.out.println("\n\t\t\tEntered Character is neither Special Symbol nor Lower Case
Alphabet");

      }
}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac chara.java

C:\Program Files\Java\jdk1.8.0_202\bin>java chara

                Enter Any Character: c

                Entered Character is Lower Case Alphabet
```

7.Write a Java program to check whether the triangle is equilateral, isosceles or scalene triangle.

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

```
class train
{

public static void main(String[] args)

    {

Scanner sc=new Scanner(System.in);

System.out.println("\n\t\t\tEnter sides of Triangle ");
 System.out.print("\n\t\t\tEnter first side of Triangle: ");

double S1=sc.nextDouble();

System.out.print("\n\t\t\tEnter Second side Triangle: ");

double S2=sc.nextDouble();

System.out.print("\n\t\t\tEnter Third side of Triangle: ");

double S3=sc.nextDouble();

if(S1==S2 && S2==S3)
System.out.println("\n\t\t\tTriangle is Equilateral Triangle.");


else if(S1==S2 || S2==S3 || S3==S1)
System.out.println("\n\t\t\tTriangle is Isosceles Triangle.");


else
System.out.println("\n\t\t\tTriangle is Scalene Triangle.");



               }

}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac train.java

C:\Program Files\Java\jdk1.8.0_202\bin>java train

                        Enter sides of Triangle

                        Enter first side of Triangle: 34
```

```
Enter Second side Triangle: 34

Enter Third side of Triangle: 45

Triangle is Isosceles Triangle.
```

---

8 Write a Java program to calculate profit or loss.

```
import java.util.*;

class profit

  {

      public static void main(String[]args)

          {

           Scanner sc=new Scanner(System.in);

System.out.print("\n\t\t\tEnter the Cost Price of An Item: ");

int Cost=sc.nextInt();

System.out.print("\n\t\t\tEnter the Selling Price of An Item: ");

int Sell=sc.nextInt();

int Profit=(Sell-Cost);
int Loss=(Cost-Sell);

if(Sell>Cost)
{
System.out.println("\n\t\t\tSeller has made Profit");
System.out.println("\n\t\t\tProfit= " +Profit);
}

else
```

```
{
System.out.println("\n\t\t\tSeller has incurred loss");
System.out.println("\n\t\t\tLoss= " +Loss);
}

            }

}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac profit.java

C:\Program Files\Java\jdk1.8.0_202\bin>java profit

                    Enter the Cost Price of An Item: 567

                    Enter the Selling Price of An Item: 679

                    Seller has made Profit

                    Profit= 112
```

---

9. Write a Java program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:
Percentage >= 90% : Grade A
Percentage >= 80% : Grade B
Percentage >= 70% : Grade C
Percentage >= 60% : Grade D
Percentage >= 40% : Grade E
Percentage < 40% : Grade F*/

```
import java.util.*;

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

 Scanner sc=new Scanner(System.in);

 System.out.println("\n\t\t\tEnter Marks in Below Subjects");
```

```
System.out.print("\n\t\t\t******************************");

 System.out.print("\n\t\t\tEnter Marks Of Physics: ");

 int Physics=sc.nextInt();

System.out.print("\n\t\t\tEnter Marks Of Chemistry: ");

 int Chem=sc.nextInt();

System.out.print("\n\t\t\tEnter Marks Of Biology: ");

 int Bio=sc.nextInt();

System.out.print("\n\t\t\tEnter Marks Of Mathematics: ");

 int Maths=sc.nextInt();

System.out.print("\n\t\t\tEnter Marks Of Computer: ");

 int Comp=sc.nextInt();
System.out.print("\n\t\t\t******************************");

int Marks=(Physics+Chem+Bio+Maths+Comp);
int Percent=((Marks*100)/500);

if(Percent>=90)

 System.out.println("\n\t\t\tGrade A");

else if(Percent>=80)

 System.out.println("\n\t\t\tGrade B");

else if(Percent>=70)

 System.out.println("\n\t\t\tGrade C");

else if(Percent>=60)

 System.out.println("\n\t\t\tGrade D");

else if(Percent>=40)
```

```
 System.out.println("\n\t\t\tGrade E");

else if(Percent<40)

 System.out.println("\n\t\t\tGrade F");

        }

}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac grade.java

C:\Program Files\Java\jdk1.8.0_202\bin>java grade

  Enter Marks in Below Subjects

 Enter Marks Of Physics: 50

 Enter Marks Of Chemistry: 68

 Enter Marks Of Biology: 89

 Enter Marks Of Mathematics: 90

 Enter Marks Of Computer: 65

 Grade C
```

---

10 Write a Java program to input basic salary of an employee and calculate its Gross salary according to following:
Basic Salary <= 10000 : HRA = 20%, DA = 80%
Basic Salary <= 20000 : HRA = 25%, DA = 90%
Basic Salary > 20000 : HRA = 30%, DA = 95%

```
import java.util.*;

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

```
 Scanner sc=new Scanner(System.in);

 System.out.print("\n\t\t\tEnter Basic Salary: ");

double Sal=sc.nextDouble();
double Gross,Gross1,Gross2;
double DA,HRA;

if(Sal<=10000)
{
 DA=(Sal*0.8);
HRA=(Sal*0.2);
Gross=(Sal+DA+HRA);
 System.out.println("\n\t\t\tGross Salary= " +Gross);
}

else if(Sal<=20000)
 {
DA=(Sal*0.9);
HRA=(Sal*0.25);
Gross1=(Sal+DA+HRA);
 System.out.println("\n\t\t\tGross Salary= " +Gross1);
}

else if(Sal>20000)
 {
DA=(Sal*0.95);
HRA=(Sal*0.3);
Gross2=(Sal+DA+HRA);
 System.out.println("\n\t\t\tGross Salary= " +Gross2);
}


        }

}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac salary.java

C:\Program Files\Java\jdk1.8.0_202\bin>java salary

                    Enter Basic Salary: 12000

                    Gross Salary= 25800.0
```

—----------

11. Write a Java program to input electricity unit charges and calculate total electricity bill according to the given condition:
For first 50 units Rs. 0.50/unit
For next 100 units Rs. 0.75/unit
For next 100 units Rs. 1.20/unit
For unit above 250 Rs. 1.50/unit
An additional surcharge of 20% is added to the bill

```
import java.util.*;

class electricity
 {

 public static void main(String[]args)

   {

  Scanner sc=new Scanner(System.in);

 System.out.print("\n\t\t\tEnter Electricity Units : ");
 double Unit=sc.nextDouble();

if(Unit<=50)
 {
  double Bill= Unit*0.50;
  System.out.println("\n\t\t\tYour total electricity bill is : " +Bill);
           }

 else if(Unit<=100)
 {
  double Bill= Unit*0.75;
  System.out.println("\n\t\t\tYour total electricity bill is : " +Bill);
    }

 else if(Unit<=200)
  {
   double Bill= Unit*1.20;
  System.out.println("\n\t\t\tYour total electricity bill is : " +Bill);
     }
```

```
   else if(Unit>250)
   {
           double Bill= Unit*1.50;
     double Charges = Bill*0.2;
     double Amt=Bill+Charges;
    System.out.println("\n\t\t\tYour total electricity bill is : " +Amt);

  }


       }
}
```

OUTPUT:

```
C:\Program Files\Java\jdk1.8.0_202\bin>javac electricity.java

C:\Program Files\Java\jdk1.8.0_202\bin>java electricity

  Enter Electricity Units : 212
```