LAB ASSIGNMENT-2

Q1. Write a java program that reads a Fahrenheit degree in a double value from the console, then convert it to Celcius and display the result. The formula for the conversion is as follows:

Celcius = (Fahrenheit - 32) * (5/9)

Hint: In java, 5/9 = 0, but 5.0/9 = 0.556.

Here is a sample run,

Enter a degree in Fahrenheit: 54.

54 Fahrenheit is 12.22 Celcius.

Ans
```
import java.util.*;
public class Q1
{
  public static void main(String args[])
  {
    Scanner sc = new Scanner(System.in);
    double f;
    System.out.print("Enter a degree in Fahrenheit:");
    f = sc.nextDouble();
    double c;
    c = (f-32) * (5.0/9);
    System.out.println(f+"Fahrenheit is"+c+"Celcius");
    sc.close();
  }
}
```

Output: Enter a degree in Farenheit: 54

54 Farhenheit is 12.22 Celcius.

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Question-2

The distance between two cities (in km) is input through the keyboard. Write a java program to convert and print this distance in meters, feet, inches and centimeters.

Hint: 1 km = 1000 meter. 1 km = 39370.0787 inch
1 km = 3280.8399 feet 1 km = 100000 centimeter.

Sample run:

Enter the distance in km = 165
165 km is 165000 metres
165 km is 541338.5835 feet
165 km is 6496062.985499995 inch.
165 km is 16500000 centimetre.

Ans.

```
import java.util.*;
public class Q2
{
  public static void main (String args[])
  {
    Scanner sc = new Scanner(System.in);
    int k;
    System.out.print("Enter the distance in km:");
    k=sc.nextInt();
    double m, f, i, c;
    m = k * 1000;
    f = k * 3280.8399;
    i = k * 39370.0787;
    c = k * 100000;
    System.out.println(k+"km is "+m+"meters");
    System.out.println(k+"km is"+f+"feet");
    System.out.println(k+"km is"+i+"inches");
    System.out.println(k+"km is"+c+"c");
  }
}
```

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Output :

Enter a degree in km = 165

165 km is 165000 meters

165 km is 541338.5835

Question-3:
Enter the basic salary of an employee of an organisation through the keyboard. His dearness allowance (DA) is 40% of basic salary, and house rate allowance (HRA) is 20% of basic salary. Write a program to calculate his gross salary. Print DA, HRA and gross salary.

Ans.
```
import java.util.*;
public class Q3
{
 public static void main(String args[])
 {
  Scanner sc= new Scanner(System.in);
  double s;
  System.out.print("Enter basic salary:");
  s= nextInt();
  double da, hra, gs;
  da=(40.0/100)*s;
  hra=(20.0/100)*s;
  double gs;
  gs=s+da+hrai
  System.out.println("DA is"+DA);
  System.out.println("HRA is'+hra);
  System.out.println("Gross salary is"+gs);
  sc.close();
 }
}
```

output: Enter basic salary: 15600
DA is : 6420.0
HRA is 3120.0
Gross salary is : 24960.0

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Question 4:
Write a java program that reads an integer between 0 and 1000 and adds all the digits in the integer. For ex. if an integer is 749, sum of all the digits is 20.

Hint: 1st use → % operator → to extract digits.
2nd use → / operator → to remove the extracted digits.

Ans.

```
import java.util.*;
public class Q4
{ public static void main(String args[])
  {
   Scanner sc= new Scanner(System.in);
   int i;
   System.out.printtln("Enter a no. between 0 and 1000:");
   i=sc.nextInt();
   int sum=0;
   int r=i%10;
   sum+=r;
   i=i/10;
   r=i%10;
   sum+=r;
   i=i/10;
   r=i%10;
   sum+=r;
   System.out.println("The sum of the digits is"+sum);
  }
}
```

Output: Enter a no. between 0 and 1000: 749.
The sum of digits is 20.

Question 5:

Write a java program that reads the radius of a hemisphere and computes the surface area and volume using the following formulas:

Surface area of Hemisphere = $3\pi r^2$

Volume of hemisphere = $(2/3)\pi r^2$

where π is constant whose value is equal to 3.14 approximately. "r" is the radius of the hemisphere. Hint: Use Math.PI.

Here is a sample run:

Enter the ~~third~~ radius of the hemisphere: 7.0

The surface area of the hemisphere is 461.814.

The volume area of the hemisphere is 718.377.

Ans.

```
import java.util.*;
public class Q5
{ pubbic static void main( String args[])
  {
    Scanner sc= new Scanner (System.in);
    int it;
    System.out.print("Enter a radius of hemisphere:");
    r=sc.nextInt();
    double s;
    double v;
    s=3*(Math.PI)*r*r
    v=(2/3)*(Math.PI)*r*r*r;
    System.out.println("The surface area of the
    hemisphere="+s);
    System.out.println("The volume of the hemisphere
    ="+v);
  }
}
```

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Output:

```
Enter the radius of hemisphere: 15
The surface area of the hemisphere :2120.575
The volume of the hemisphere: 7068.583470577034
```

Question 6:

When a brick is dropped from a tower, it falls faster and faster until it hits the earth. The distance it travels is given by $d = (1/2) g t^2$. Here, d is in feet, t is the time in seconds and $g = 32.174$.

Write a program that ask the user for the number of seconds and then print the distance travelled.

Here is the sample run:

Enter the no. of seconds: 5.4

Distance travelled: 469.096

Ans

```
import java.util.*;
public class Q6
{ public static void main(String args[])
  {
    double g,t,d;
    System.out.println("Enter the no. of seconds:");
    t = sc.nextDouble();
    g = 32.174;
    d = (1.0/2) * g * t * t;
    System.out.println("Distance travelled :" + d);
    sc.close();
  }
}
```

Output: Enter the no. of seconds : 5.4

Distance travelled : 469.09692

Question 7:-

Write a java program that displays the following table. Cast floating point numbers to integers.

a	b	pow(a,b)
1	2	1
2	3	8
3	4	81
4	5	1024
5	6	15625.

Ans.

```
public class Q7
{
  public static void main (String args[])
  {
    System.out.println(" a    b    pow(a,b)");
    System.out.println(" 1    2    "+(int)(Math.pow(1,2));
    System.out.println(" 2    3    "+(int)(Math.pow(2,3));
    System.out.println(" 3    4    "+(int)(Math.pow(3,4));
    System.out.println("4    5    "+(int)(Math.pow(4,5));
    System.out.println("5    6    "+(int)(Math.pow(5,6));
  }
}
```

Output:

a	b	pow(a,b)
1	2	1
2	3	8
3	4	81
4	5	1024
5	6	15625

Using Command-Line Argument :-

Question 1:

Write a java program that takes two integer values from the command lines as dividend and divisor and print its quotient and remainder.

Ans:

```
public class clq1
{
  public static void main (String args[])
  {
    int a, b, q, r;
    a = Integer.parseInt(args[0]);
    b = Integer.parseInt(args[1]);
    q = a/b;
    r = a%b;
    System.out.println("a=" + a);
    System.out.println("b = " + b);
    System.out.println("a/b = " + q);
    System.out.println("a%b =" + r);
  }
}
```

Question-2:

Write a java program that takes two positive integers from command-line argument and print the result of 1st one raised to the power of 2nd one.

Ans.

```
import. java.util. *;
public class clq2
{
 public static void main (String args[])
  {
    int a, b;
    a= Integer. parseInt(args[0]);
    b = Integer. parse Int(args[1]);
    double p = Math. pow(a, b);
    System. out. println (a +" raised to the power" + b
     + "is " + p);
  }
}
```

Question 3: Write a program to print the sum of two random integers between 1 and 6.

```
import java.util.*;
public class Q3
{
    public static void main (String args[])
    {
    int min=1; max=6;
    Random r = new Random();
    int num1 = r.nextInt (max-min+1) +min;
    int num2 = r.nextInt(max-imin+1)+min;
    int sum = num1 + num2;
```

Question 4:

Write a java program that takes a double value t from the command line and print the value of cos(5t) + sin(7t). Use Math.cos() and Math.sin().

Ans

```
import java.util.*;
public class cl q/4
{
  public static void main (String args[])
  {
    double t;
    t = Double.parseDouble (args[0]);
    double sum = Math.cos(5*t) + Math.sin(7*t);
    System.out.println(sum);
  }
}
```

Question 5:

Write a Java program that takes three integer values from the command line and print them in ascending order. Use Math.min() & Math.max().

Ans

```
import java.util.*;
public class clqs
{
  public static void main(String args[])
  { int a, b, c, g, m, s, mn;
    a = Integer.parseInt(args[0]);
    b = Integer.parseInt(args[1]);
    c = Integer.parseInt(args[2]);
    g = Math.max((Math.max(a,b)), c);
    m = Math.min((Math.min(a,b)); c);
    s = a+b+c;
    mn = s-(g+m);
    System.out.println("the no.s in ascending
    order is "+m+","+mn+","+g);
  }
}
```

Question 6:
Write a java program to input a character from the command line and display the ASCII value of the entered character.

Ans.

```
import java.util.*;
public class clq6
{
  public static void main (String args[]),
  {
    char ch= args[0].CharAt(0);
    System.out.println(" ASCII value of"+ch+" is"
    (int) ch);
  }
}
```

Question 7:

Write a java program that takes three positive from the command line arguments and print true if any one of them is less than or equal to the product of the other two and false otherwise.

Ans.

```
public class clq7
{
  public static void main(String args[])
  {
    int a, b, c;
    a = Integer.parseInt(args[0]);
    b = Integer.parseInt(args[1]);
    c = Integer.parseInt(args[2]);
    boolean r = ((a<=(b*c))||(b<=(c*a))||(c<=(a*b)));
    System.out.println(r);
  }
}
```

HOME ASSIGNMENT- II

Using Keyboard Input :

Question 1: Write a java program that prompts the user to enter the minutes (eg. 1 billion) and displays the number of years and days for the minutes.
For simplicity, assume a year has 365 days.
Here is a sample run.
Enter the no. of minutes : 1000000000
1000000000 minutes is approximately 1902 years and 214 days

Ans.

```
import java.util.*;
public class hQ1
{
  public static void main(String args[])
  {
    Scanner sc = new Scanner(System.in);
    System.out.print("Enter the number of minutes: ");
    int min = sc.nextInt();
    int yrs = min/525600;
    int days = (min%525600)/1440;
    System.out.println(min + "minutes is approximately" +
        yrs + "years and " + days + "days");
    sc.close();
  }
}
```

Outputs: Enter the no. of minutes: 1000000000
1000000000 minutes is approximately
1902 years and 214 days.

Question 2: If you have N eggs, you have N/12 dozen eggs, with N%12 eggs left over. Write a Java program that ask the user how many eggs she has and then tells the user how many dozen eggs she has and how many extra eggs are left over. A gross of eggs is equal to 144 eggs. Extend your program so that it will tell the user how many gross, how many dozens and how many left over eggs she has. For example, if the user says that she has 1342 eggs, then your program would respond with Your number of eggs is 9 gross, 3 dozen and 10

Ans.
```
import java.util.*
{
  public static void main (String args[])
  {
    public static void main(String args[])
    {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter no.of eggs:");
      int num, dozen, gross;
      num = sc.nextInt();
      gross = num/144;
      num = num%144;
      dozen = num/12;
      num = num%12;
      System.out.println("Your no.of eggs "+gross+
      "gross,"+dozen+"dozens"+"and"+num+".");
      sc.close()
    }
}
```

Output: How many eggs do you have?: 1342
Your number of eggs is 9 gross
3 dozen and 10 left over.

Question 3 : Write a java program that prompts the user to enter the points $(x1, y1), (x2, y2), (x3, y3)$ of a triangle and display its area. The formula for computing the area of triangle is : $s = (side1 + side2 + side3)$

$area = \sqrt{s*(s-a)*(s-b)*(s-c)}$

Ans.
```
import java.util.*;
public class hQ3
{
  public static void main (String args[])
  {
    Scanner sc = new Scanner (System.in);
    System.out.println("Enter the point of triangle:");
    double x1 = sc.nextDouble();
    double y1 = sc.nextDouble();
    double x2 = sc.nextDouble();
    double y2 = sc.nextDouble();
    double x3 = sc.nextDouble();
    double y3 = sc.nextDouble();
    double side1 = Math.pow(Math.pow(x2-x1,2) +
          Math.pow(y2-y1,2),0.5);
    double side2 = Math.pow(Math.pow(x3-x2,2)+
          Math.pow(y3-y2,2),0.5);
    double side3 = Math.pow(Math.pow(x1-x3,2) +
          Math.pow(y1-y3,2),0.5);
    double s = (side1 + side2 + side3)/2;
    double area = Math.pow(s*(s-side1)*(s-side2)*
          (s-side3),0.5);
    System.out.println("Area of triangle is " + area);
    sc.close();
  }
}
```

Using command-line Argument:

(1) Write a java program that takes three inputs from command line arguments as principle, rate and time. Find Simple Interest.

Ans.

```
import java.util.*;
public class cal
{
  public static void main(String args[])
  {
    double p = Double.parseDouble(args[0]);
    double r = Double.parseDouble(args[1]);
    int t = Integer.parseInt(args[2]);
    double s = (p*r*t)/100;
    System.out.println(s);
  }
}
```

Output:

```
p = 2878.5
r = 2.0
t = 2

115.14
```

(2) The surface area of a cylinder can be defined as $A = \pi r^2 + 2\pi rh$ where r and h are the radius, height of the cylinder respectively. Write a java program to find the area. Hint: Use Math.PI

Ans.

```
import java.util.*;
public class cQ2
{
  public static void main (String args[])
  {
    double r = Double.parseDouble (args[0]);
    double h = Double.parseDouble (args[1]);
    double a = (Math.PI * r * r) + (2 * Math.PI * r * h);
    System.out.println (a);
  }
}
```

Output:

r = 2.1

h = 7.0

Question 3: Write a java program to input a four digit number from command line argument and find the sum of first and last digit of the number.

```
import java.util.*;
public class CQ3
{
  public static void main(String args[])
  {
     int x = Integer.parseInt(args[0]);
     int f = x/1000;
     int r = x%1000;
     int s = f+r;
     System.out.println(s);
  }
}
```

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Output:

x = 2878

10