LAB ASSIGNMENT-3

Question 1: Write a program to input age of a person and check if the age of person is greater than or equal to 18 then print the message. "You are eligible to caste vote".

Ans.
```
import java.util.*;
public class Q1
{
  public static void main (String[] args)
  {
    Scanner sc= new Scanner(System.in);
    System.out.print("Enter the age of the person: ");
    int age= sc.nextInt();
    if (age >=18)
    {
      System.out.println("You are eligible to caste vote");
    }
  }
}
```

Output:

Enter the age of the person: 20
You are eligible to caste vote.

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Question 2 : Alice visited SUM hospital to get treatment for her fever and illness. Doctor adviced her to drink at least 5000ml of water each day. Alice drank x ml of water today. Write a program that print the following message depending on the value of x.

"Yes, Alice is ~~the~~ following doctor's advice".

OR

"No, Alice is not following doctor's advice".

Ans.

```
import java.util.*;
public class Q2
{
  public static void main (String[] args)
  {
    Scanner sc = new Scanner (System.in);
    System.out.print ("Enter the amount of water she
     drink: ");
    double x = sc.nextDouble();
    if (x>=5000)
    {
      System.out.println("Yes, Alice is following
      doctor's advice");
    }
    else
    {
      System.out.println ("No, Alice is not
      following doctor's advice");
    }
    sc.close();
  }
}
```

output : Enter the amount of water she drink : 7500
Yes, Alice is following doctor's advice.

Question 3: WAP that reads three integers from the user and prints "Increasing" if the numbers are in increasing orders, "Decreasing" if the numbers are in decreasing order and "Neither increasing nor decreasing order" otherwise.

Ans.

```
import java.util.*;
public class Q3
{
  public static void main (String args[])
  {
    Scanner sc= new Scanner(System.in);
    int x1, x2, x3;
    System.out.print("Enter first number:");
    x1= sc.nextInt();
    System.out.print("Enter second number:");
    x2=sc.nextInt();
    System.out.print("Enter third number:");
    x3= sc.nextInt();
    if (x1< x2 && x2 < x3)
    {
      System.out.println("\"Increasing\"");
    }
    else if (x3<x2 && x2< x1)
    {
      System.out.println("\"Decreasing\");
    }
    else
    {
      System.out.println("Neither Increasing nor decreasing");
    }
  }
}
```

output:

```
Enter first number: 45
Enter second number: 14
Enter third number: 3
"Decreasing"
```

Question 4: Make a simple game involving computer and a user. The computer first guesses a number between 1 and 9 inclusive, then ask the user to enter a no. between 9 inclusive. If the user guess is correct, then displays "You got it right"; if the guess is close (+1, -1) "Almost got it"; Otherwise "You got it wrong".

Ans.

```
import java.util.*;
public class Q4
{
 public static void main(String[]args)
 {
  Scanner sc=new Scanner(System.in);
  System.out.print("Enter the no.");
  int n=sc.nextInt();
  int min=1, max=9;
  Random r=new Random();
  System.out.print("Computer guesses:");
  int r1=r.nextInt(max-min)+min;
  System.out.println(r1);
  if(n==r1)
  {
   System.out.println("You got it right");
  }
  else if(n==(r1+1)||n==(r1-1));
  {
   System.out.print("You almost got it");
  }
  else
  {
   System.out.println("You got it wrong");
  }
  sc.close();
 }
}
```

Question 5: Write a Java program that takes a year from the user and print if that year is a leap year. Here is a sample run:

Input the year: 2016
2016 a leap year: true.

Input the year: 2008
2008 is not a leap year.

Ans

```
import java.util.*;
public class a5
{
  public static void main(String[] args)
  {
    int y;
    Scanner sc = new Scanner(System.in);
    y = sc.nextInt();
    if(y%4==0)
    { if((y%100)==0)
      {
        if (y%400==0)
        {
          System.out.println(y+" is a leap year ");
        }
        else
        {
          System.out.println(y+" is not a leap year ");
        }
      }
      else
      {
        System.out.println(y+" is a leap year");
      }
    else
      System.out.println(y+" is not a leap year");
    sc.close();
  }
}
```

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Question 6: Write a java program to calculate the monthly electric bill. The tarif is given as:

Rs. 3/-	1st 50 unit
Rs. 4.80/-	51 - 200 unit
Rs. 5.80/-	201 - 400 unit
Rs. 6.20/-	above 400 unit

Ans

```
import java.util.*;
public class Q6
{
  public static void main(String[] args)
  {
    Scanner sc= new Scanner (System.in);
    System.out.print("Enter the unit : ");
    double unit = sc.nextDouble();
    double rs=0;
    if (unit<=50);
    {
      rs= unit*3;
    }
    else if (unit>50 && unit<=200)
    {
      rs=(50*3)+((unit-50)*4.80);
    }
    else if (unit>200 && unit<=400)
    {
      rs=(50*3)+(150*4.80)+((unit-200)*5.80);
    }
    else if (unit>400)
    {
      rs=(50*3)+(150*4.80)+(200*5.80)+((unit-400)
        *6.20);
    }
```

```
        else
        {
          System.out.println("Invalid Input");
        }
        System.out.println("Total amount : "+rs);
        sc.close();
    }
}
```

Output:

```
Enter the unit: 50
Total amount : 150
```

Question 7: From the above question no. (6), write a Java program with a choice if the consumer wants to pays bill online. Consumer who pays their electricity bill online will get a discount of 3%.

Ans.
```
import java.util.*;
public class Q7
{
 public static void main ( String args[])
 {
  Scanner sc= new Scanner. (System.in);
  System.out.printf("Enter the unit:");
  double unit = sc.nextDouble();
  System.out.println("Do you want to pay online(y/n):")
  char a = sc.next().charAt(0);
  double rs=0;
  if (unit <=50)
  {
   rs = unit * 3;
  }
  else if (unit >50 && unit<=200)
  {
   rs= (50*3)+((unit-50)*4.80);
  }
  else if (unit>200 && unit<=400)
  {
   rs= (50*3)+(150*4.50)+((unit-200)*5.80);
  }
  else if (unit>400);
  {
   rs= (50*3)+(150*4.80)+(200*4.80)+((unit-200)
       *6.20);
  }
  else
  {
```

```
            System.out.println("Invalid Input");
        }
        System.out.println("Total amount to pay : Rs."+rs);
        if(a=='y' || a=="Y")
        {
            double discount = rs*(3/100.0);
            System.out.println("Discount is : "+discount);
            System.out.println("Amount payable after discount
            : "+(rs-discount));
        }
        sc.close();
    }
}
```

Output :

```
Enter the unit : 50
Do you want to pay online (y/n) : y
Total amount : 150.0
Discount is 4.5
Amount payable after discount : 145.5
```

Question 8 : Write a Java program that takes x-y coordinates as a point in the cartesian plane and prints a message telling either on x-axis on which the point lies or the quadrant in which it is found.

Ans.
```
import java.util.*;
public class Q8
{
 public static void main (String args[])
 {
  Scanner sc= new Scanner (System.in);
  double x,y;
  System.out.print("Enter x-coordinate: ");
  x=sc.nextDouble();
  System.out.print("Enter y-coordinate: ");
  y=sc.nextDouble();
  if (x>0 && y>0)
  {
   System.out.println("("+x+","+y+") is in
   quadrant I");
  }
  else if (x<0 && y>0)
  {
   System.out.println("("+x+","+y+")is in quandrant
   II");
  }
  else if (x<0 && y<0)
  {
   System.out.println("("+x+","+y+")is in quandrant III");
  }
  else if (x>0 && y<0)
  {
   System.out.println("("+x+","+y+") is in quandrant
   IV");
```

```
        else if (x==0 && y!=0)
        {
          System.out.println("("+x+","+y+") is on y-axis");
        }
        else if (x!=0 && y==0)
        {
          System.out.println("("+x+","+y+") is on x-axis");
        }
        else if (x==0 && y==0)
        {
          System.out.println("("+x+","+y+") is on origin");
        }
        else
        {
          System.out.println("Wrong input");
        }
    }
}
```

Output :

Enter x-coordinate: 5
Enter y-coordinate: 0.
(5,0) is on the x-axis.

Question 9 : Write a program to input 3 integers numbers a, b, c. Find the largest among 3. Also find second largest no.

Ans
```
import java.util.*;
public class Q9
{
  public static void main(String[] args)
  {
    Scanner sc = new Scanner(System.in);
    int a, b, c ;
    System.out.println("Enter three no.");
    a = sc.nextInt();
    b = sc.nextInt();
    c = sc.nextInt();
    if (a > b && a > c)
    {
      System.out.println("Largest no: " + a);
      if (b > c)
      {
        System.out.println("Second largest :" + b);
      }
      else
      {
        System.out.println("Second largest : " + c);
      }
    }
    else if (b > a && b > c)
    {
      System.out.println("Largest no: " + b);
    } if (a > c)
      {
```

```
            System.out.println("Second largest : "+a);
          }
        else
        {
          System.out.println("Second largest : "+c);
        }
      }
      else if (c>a && c>b)
      {
        System.out.println("Largest no. "+c);
        if (a>b)
        {
          System.out.println("Second largest : "+a);
        }
        else
        {
          System.out.println("Second Largest : "+b);
        }
      }
      else
      {
        System.out.println("All are equal no.");
      }
    }
}
```

Output:

```
Enter three no.: 3 4 5
Largest no.: 5
Second largest: 4.
```

Question 10 : A university conducts a 100 mark exam for its student and grades them as follows. Assigns a grade based on the value of the marks. ~~Worth~~ Write a java program to print the grade.

Mark range	Letter grade
>=90	O
>=80 AND <90	A
>=70 AND <80	B
>=60 AND <70	C
>=50 AND <60	D
>=40 AND <50	E
<40	F

Ans.
```
import java.util.*;
public class Q10
{
  public static void main (String[]args)
  {
    int m;
    Scanner sc= new Scanner(System.in);
    System.out.print("Enter mark: ");
    m= sc.nextInt();
    switch (m/10)
    {
      case 10:
      case 9:
          System.out.println("O");
          break;
```

```
            case 8:
                System.out.println("A");
                break;
            case 7:
                System.out.println("B");
                break;
            case 6:
                System.out.println("C");
                break;
            case 5:
                System.out.println("D");
                break;
            case 4:
                System.out.println("E");
                break;
            default:
                System.out.println("F");
        }
    }
}.
```

Output:

```
Enter the mark : 94
O
```

HOME ASSIGNMENT - 3

Q1. Write a java program that plays the popular scissor - rock paper game. The program randomly generates a number 0, 1, or 2 representing scissor, rock and paper. The program prompts the user to generate a number 0, 1, or 2 and displays a message indicating whether the user or the computer wins, loses or draws.

Sample run: scissor(0), rock(1), paper(2): 1
The computer is scissor. You are rock. You win
scissor(0), rock(1), paper(2): 2
The computer is paper. You are paper too. It's a draw

Ans.

```
import java.util.*;
public class hQ1
{
  public static void main ( String[] args )
  {
    Scanner sc = new Scanner ( System.in );
    int min=1, max=3;
    int com = (int) (Math.random() * (max-min+1)) + min;
    System.out.print("Scissor(0), rock(1), paper(2):");
    int user = sc.nextInt();
    System.out.print("the computer is:");
    switch (computer)
    {
      case 0: System.out.print("scissor."); break;
      case 1: System.out.print("rock.");
              break;
      case 2: System.out.print("paper.");
              break;
    }
```

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```
        System.out.print("You are ");
        switch (user)
        {
            case 0: System.out.print("Scissar.");
                    break;
            case 1: System.out.print("rock");
                    break;
            case 2: System.out.print("paper.");
                    break;
        }
        if (com == user)
        {
            System.out.println("too. It is a draw.");
        }
        else
        {
            boolean win = (user == 0 && com == 2) ||
                          (user == 1 && com == 0) ||
                          (user == 2 && com == 1);

            if (win)
            {
                System.out.println("You won");
            }
            else
            {
                System.out.println("You lose.");
            }
        }
    }
}
```

Question 2: Write a java program that prompts the user to enter an integer for today's ~~today~~ of the week (Sunday is 0, Monday is 1, --- and Saturday is 6). Also prompts the user to the enter the number of days after today for a future day and displays the future day of the week.

Ans

```
import java.util.*;
public class hq2
{
  public static void main(String[] args)
  {
    Scanner sc= new Scanner(System.in);
    System.out.print("Enter todays date : ");
    int dt = sc.nextInt();
    System.out.print("Enter number of days ");
    elapsed since today: ");
    int el = sc.nextInt();
    int fd = (dt + el) % 7;
    String dow = " ", xday = " ";
    switch (date)
    {
      case 0: dow = "Sunday";
              break;
      case 1: dow = "Monday";
              break;
      case 2: dow = "Tuesday";
              break;
      case 3: dow = "Wednesday";
              break;
      Case 4: dow = "Thursday";
              break;
```

```
        case 5: dow = "Friday";
                break;
        case 6: dow = "Saturday";
                break;
    }
    if (fd == 0)
    {
      System.out.print
      xday = "Sunday";
    else if (fd == 1)
        x day = "Monday";
    else if (fd == 2)
        xday = "Tuesday";
    else if (fd == 3)
        x day = "Wednesday";
    else if (fd == 4)
        xday = "Thursday";
    else if (fd == 5);
        x day = "Friday";
    else if (fd == 6)
        x day = "Saturday";
  System.out.println("Today is" + dow +
  "and the future day is " + x day);
  }
}
```

Question 3 : Write a java program that randomly generates an integer between 1 and 12 and display the English month name January, February, ---, December for number 1, 2, --- 12 accordingly.

Ans

```
public class HQ3
{
public static void main (String[] args)
{
String month = " ";
int random = (int) (12* Math.random() +1);
switch (random)
{
case 1:
System.out.println("Random no. generated : "+
random);
switch (random)
{
case 1 :
month = "January";
break;
case 2:
month = "February";
break;
case 3:
month = "March"
break;
case 4: month = "April";
break;
case 5 : month = "May";
break;
case 6 : month = "June";
break;
case 7: month = "July";
break;
case 8 : month = "August";
break;
case 9 : month = "September";
break;
case 10: month = "October";
break;
case 11: month = "November";
break;
case 12: month = "December";
break;
}
System.out.println(month);
}
}
```

Question 4 : WAP that prompts the user to enter an integer and determine whether it is divisible by 5 and 6, whether it is divisible by 5 or 6 and whether it is divisible by 5 or 6, but not both.

Ans
```
import java.util.*;
public class HQ4
{
  public static void main (String[] args)
  {
    Scanner sc = new Scanner (System.in);
    System.out.print("Enter an integer : ");
    int x = sc.nextInt();
    boolean divand = (n%5==0 && n%6==0);
    boolean divor = (n%5==0 || n%6==0);
    boolean divxor = (n%5==0 ^ n%6==0);
    System.out.println("Is " + n + " divisible by 5 and 6 ? " + divand);
    System.out.println("Is " + n + " divisible by 5 or 6 ? " + divor);
    System.out.println("Is " + n + " divisible by 5 or 6, but not both ? " + divxor);
    sc.close();
  }
}
```

Output: Enter an integer = 30
Is 30 divisible by 5 and 6 ? True
Is 30 divisible by 5 or 6 ? True
Is 30 divisible by 5 or 6, but not both ? False

Question 5: WAP which will displays an appropriate name for a person, using combination of nested ifs and compound conditions. Ask the user for gender, first name, last name and age. If a person is female and 20 or over, ask if she is married. If so, display "Mrs" infront of her name. If not, display "Ms" infront of her name. If the female is under 20, display her first and last name. If the person is male is 20 or over, display "Mr" infront of his name. Otherwise display his first and last name.

Ans.
```
import java.util.*;
public class HQ5
{
  public static void main(String[] args)
  {
    Scanner sc = new Scanner(System.in);
    System.out.print("What is your Gender(M/F): ");
    String gender = sc.nextLine();
    System.out.print("First name: ");
    String fn = sc.nextLine();
    System.out.print("Last Name: ");
    String ln = sc.nextLine();
    System.out.print("Age:");
    int age = sc.nextInt();
    if (gender == 'F' || gender == "f")
    {
      if (age >= 20)
      {
        System.out.print("Are you married, " + fn + "(y/n)? ");
```

```
            String ch = sc.nextLine();
            if (ch == 'Y' || ch == 'y')
            {
              System.out.println("Then I shall call
              you Mrs." + ~~first~~ fn + " " + ln);
            }
            else
            {
              System.out.println("Then I shall call you
              Ms." + fn + " " + ln);
            }
        else
        {
          System.out.println(fn + " " + ln);
        }
    }
    else if (gender == 'M' || gender == 'm')
    {
      if (age >= 20)
      {
        System.out.println("Then I shall call you
        Mr." + fn + " " + ln);
      }
      else
      {
        System.out.println("Then I shall call
        you" + fn + " " + ln);
      }
    }
    sc.close();
  }
}
```

Output :

What is your Gender (M/F) : M
First name : Suryanadhab
Last name : Moharana
Age : 19
Then I shall call you Suryanadhab Moharana.