ASSIGNMENT-LAB 03

Course Code: CSE-2340 **Course Title:** Software Development 1
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Problem 01: Write a program to determine whether a given number is odd or even.

Answer:

```
import java.util.Scanner;

public class OE
{
    public static void main(String[] args)
    {
        Scanner in = new Scanner(System.in);
        int number = in.nextInt();

        if ((number & 1) == 0)
        {
            System.out.println(number + " is even.");
        }
        else
        {
            System.out.println(number + " is odd.");
        }

        in.close();
    }
}
```

Problem 02: Write a program to find out the largest number among four numbers A,B, C and D.

Answer:

```
import java.util.Scanner;

public class Large
{
    public static void main(String[] args)
    {
        Scanner a = new Scanner(System.in);
        System.out.print("Enter the first number: ");
        int A = a.nextInt();
        System.out.print("Enter the second number: ");
        int B = a.nextInt();
```

```
        System.out.print("Enter the third number: ");
        int C = a.nextInt();
        System.out.print("Enter the fourth number: ");
        int D = a.nextInt();
        int mx1 = Math.max(A, B);
        int mx2 = Math.max(C, D);
        int mx3 = Math.max(mx2, mx1);
        System.out.println(mx3 + " is the largest");
        a.close();
    }
}
```

Problem 03: Write a program that reads a year from the keyboard and determine whether it is leap year or not.

Answer:

```
import java.util.Scanner;
public class Leap
{
    public static void main(String[] args)
    {
        Scanner a=new Scanner(System.in);
        int A=a.nextInt();
        boolean leap=false;
        if((((A%4)==0)&&(A%100)!=0) || (A%400)==0)
            leap=true;
        if(leap)
        System.out.println(A + "is a leap year");
        else
            System.out.println(A + "is not a leap year");
        a.close();
    }
}
```

Problem 04: Write a program that computes an employee's gross pay and net pay using the formulas-

Gross = Hours * Rate

Net = Gross – Tax

Tax is subtracted from the gross only if an employee earns more than TK.5000. Otherwise deduct no tax. Tax rate is 5% of gross pay.

Answer:

```java
import java.util.Scanner;

public class Tax
{
    public static void main(String[] args)
    {
        Scanner in = new Scanner(System.in);
        System.out.print("Enter the number of hours worked: ");
        double hours = in.nextDouble();
        System.out.print("Enter the rate per hour: ");
        double rate = in.nextDouble();
        double gross = hours * rate;
        if (gross > 5000)
        {
            double tax = gross * 0.05;
            double net = gross - tax;
            System.out.println("Gross Pay: Tk " + gross);
            System.out.println("Tax: Tk " + tax);
            System.out.println("Net Pay: Tk " + net);
        }
        else
        {
            System.out.println("Gross Pay: Tk " + gross);
            System.out.println("Net Pay: Tk " + gross);
        }
        in.close();
    }
}
```

Problem 05: Write a program which receives the score of a student and display the grade according to the following classification:

Grade Score

A 80 ..100

B 65 .. 79

C 50 .. 64

D 40 .. 49

F 00 .. 39

Answer:

```java
import java.util.Scanner;
public class Score
{
    public static void main(String[] args)
    {
        Scanner a=new Scanner(System.in);
        int A=a.nextInt();
        if(A>=0 && A<=39)
```

```
            System.out.println("F");
        else if(A>=40 && A<=49)
            System.out.println("D");
        else if(A>=50 && A<=64)
            System.out.println("C");
        else if(A>=65 && A<=79)
            System.out.println("B");
        else if(A>=80 && A<=100)
            System.out.println("A");
        a.close();
    }
}
```

Problem 06: An electricity board charges the following rates to domestic users to discourage the large consumption of energy:
For the first 100 units : Tk. 1.75 per unit
For next 200 units : Tk. 2.25 per unit
Beyond 300 units : Tk. 3.50 per unit
All users are charged a minimum of Tk. 100/=. If the total cost is more than Tk.
1000/= then an additional surcharge of 15% is added.
Write a program to read out the names of users and number of units consumed and print out the charges with names.

Answer:

```
import java.util.Scanner;

public class Electricity
{
    public static void main(String[] args)
    {
        Scanner in = new Scanner(System.in);
        System.out.print("Enter the number of users: ");
        int numberOfUsers = in.nextInt();
        for (int i = 1; i <= numberOfUsers; i++)
        {
            System.out.print("Enter the name of user " + i + ":
");
            String name = in.next();
            System.out.print("Enter the number of units consumed
by " + name + ": ");
            double units = in.nextDouble();
            double total;
            if (units >= 0 && units <= 100)
            {
                total = units * 1.75 + 100;
```

```
            }
            else if (units > 100 && units <= 200)
            {
                total = 100 * 1.75 + (units - 100) * 2.25 + 100;
            }
            else
            {
                total = 100 * 1.75 + 100 * 2.25 + (units - 200)
* 3.50 + 100;
            }
            if (total > 1000)
            {
                double netTotal = total + total * 0.15;
                System.out.println(name + "'s Total Bill
(including 15% surcharge): Tk " + netTotal);
            }
            else
            {
                System.out.println(name + "'s Total Bill: Tk " +
total);
            }
        }
        in.close();
    }
}
```

Problem 07: Write a program that plays the game of "Rock, paper, scissors". In this game, two players simultaneously say "rock", "paper" or "scissors". The winner is one whose choice dominates the other. The rules are: paper dominates (wraps) rock, rock dominates (breaks) scissors, and scissors dominate (cut) paper.

Answer:

```
import java.util.Scanner;

public class RPS
{
    public static void main(String[] args)
    {
        Scanner in = new Scanner(System.in);
        System.out.println("Let's play Rock, Paper, Scissors!");
        System.out.println("Player 1, enter your choice (rock,
paper, or scissors): ");
        String player1 = in.next().toLowerCase();
        System.out.println("Player 2, enter your choice (rock,
paper, or scissors): ");
```

```
        String player2 = in.next().toLowerCase();
        String result = "";
        if (player1.equals(player2))
        {
            result = "It's a tie!";
        }
        else if ((player1.equals("rock") &&
player2.equals("scissors")) ||
                    (player1.equals("scissors") &&
player2.equals("paper")) ||
                    (player1.equals("paper") &&
player2.equals("rock")))
                    {
            result = "Player 1 wins!";
        }
        else
        {
            result = "Player 2 wins!";
        }
        System.out.println(result);
        in.close();
    }
}
```