JAVA PROGRAMMING
ASSIGNMENT 3

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1. The progressive income tax rate is mandated as follows:

Taxable Income	Rate (%)
First $20,000	0
Next $20,000	10
Next $20,000	20
The remaining	30

For example, suppose that the taxable income is $85000, the income tax payable is$20000*0% + $20000*10% + $20000*20% + $25000*30%.Write a program called IncomeTaxCalculator that reads the taxable income (in int). Theprogram shall calculate the income tax payable (in double); and print the result rounded to 2decimal places. Program shall repeat the calculation until user enter -1.

For example,

Enter the taxable income: $41234

The income tax payable is: $2246.80

Enter the taxable income: $-1

bye!

PROGRAM:

```
import java.util.Scanner;
class IncomeTaxCalculator {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        while (true) {
            System.out.print("Enter taxable income (or -1 to quit): ");
            int income = sc.nextInt();
            if (income == -1) {
                System.out.println("bye!");
```

```
            break;
        }
        double tax;
        if (income <= 20000) {
            tax = 0;
        } else if (income <= 40000) {
            tax = (income - 20000) * 0.10;
        } else if (income <= 60000) {
            tax = (20000 * 0.10) + (income - 40000) * 0.20;
        } else {
            tax = (20000 * 0.10) + (20000 * 0.20) + (income - 60000) * 0.30;
        }
        System.out.printf("The income tax payable is: %.2f\n", tax);
    }
  }
}
```

OUTPUT:

```
D:\bmsce\2sem\Java programming\3week>java IncomeTaxCalculator
Enter taxable income (or -1 to quit): 41234
The income tax payable is: 2246.80
Enter taxable income (or -1 to quit): 3000000
The income tax payable is: 888000.00
Enter taxable income (or -1 to quit): -1
bye!
```

2. Both the employer and the employee are mandated to contribute a certain percentage of the employee's salary towards the employee's pension fund. The rate is tabulated as follows:

Employee's Age	Employee Rate (%)	Employer Rate (%)
55 and below	20	17
above 55 to 60	13	13
above 60 to 65	7.5	9
above 65	5	7.5

However, the contribution is subjected to a salary ceiling of $6,000. In other words, if an employee earns $6800, only $6000 attracts employee's and employer's contributions, the remaining $800 does not.

Write a program called PensionContributionCalculator that reads the monthly salary and age(in int) of an employee. Your program shall calculate the employee's, employer's and total contributions (in double); and print the results rounded to 2 decimal places.For example,

Enter the monthly salary: $3000

Enter the age: 30

The employee's contribution is: $600.00

The employer's contribution is: $510.00

The total contribution is: $1110.00

PROGRAM:

```
import java.util.Scanner;

class PensionContribute {

    public static void main(String[] args) {

        final double SALARY_CEILING = 6000;

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter the monthly salary: $");

        double salary = sc.nextDouble();

        System.out.print("Enter the age: ");

        int age = sc.nextInt();

        double contributionSalary = Math.min(salary, SALARY_CEILING);

        double employeeRate;
```

```
        double employerRate;
        if (age <= 55) {
            employeeRate = 0.20;
            employerRate = 0.17;
        } else if (age <= 60) {
            employeeRate = 0.13;
            employerRate = 0.13;
        } else if (age <= 65) {
            employeeRate = 0.075;
            employerRate = 0.09;
        } else {
            employeeRate = 0.05;
            employerRate = 0.075;  }
        double employeeContribution = contributionSalary * employeeRate;
        double employerContribution = contributionSalary * employerRate;
        double totalContribution = employeeContribution + employerContribution;
        System.out.printf("The employee's contribution is: $%.2f\n", employeeContribution);
        System.out.printf("The employer's contribution is: $%.2f\n", employerContribution);
        System.out.printf("The total contribution is: $%.2f\n", totalContribution);
    }
}
```

OUTPUT:

```
D:\bmsce\2sem\Java programming\3week>java PensionContribute
Enter the monthly salary: $3000
Enter the age: 30
The employee's contribution is: $600.00
The employer's contribution is: $510.00
The total contribution is: $1110.00

D:\bmsce\2sem\Java programming\3week>java PensionContribute
Enter the monthly salary: $2000
Enter the age: 21
The employee's contribution is: $400.00
The employer's contribution is: $340.00
The total contribution is: $740.00
```

3. Write a program called ReverseString, which prompts user for a String, and prints the reverse of the String by extracting and processing each character.

The output shall look like:

Enter a String: abcdef

The reverse of the String "abcdef" is "fedcba"

PROGRAM:

```
import java.util.Scanner;

public class ReverseString {

   public static void main(String[] args) {

      Scanner sc = new Scanner(System.in);

      System.out.print("Enter a String: ");

      String input = sc.nextLine();

      String reverse = "";

      for (int i = input.length() - 1; i >= 0; i--) {

         reverse += input.charAt(i);

      }

      System.out.println("The reverse of the String \"" + input + "\" is \"" + reverse + "\"");

   }

}
```

OUTPUT:

```
D:\bmsce\2sem\Java programming\3week>java ReverseString
Enter a String: abcdef
The reverse of the String "abcdef" is "fedcba"

D:\bmsce\2sem\Java programming\3week>java ReverseString
Enter a String: java
The reverse of the String "java" is "avaj"
```

4. Write a program called CountVowelsDigits, which prompts the user for a String, counts the number of vowels (a, e, i, o, u, A, E, I, O, U) and digits (0-9) contained in the string, and prints the counts and the percentages (rounded to 2 decimal places).

For example,

Enter a String: testing12345

Number of vowels: 2 (16.67%)

Number of digits: 5 (41.67%)

PROGRAM:

```
import java.util.*;
class Count{
   public static void main(String args[]){
      Scanner sc= new Scanner(System.in);
      System.out.print("Enter a string:");
      String str=sc.nextLine();
      int n=str.length();
      int vowelCount = 0, digitCount = 0;
      char[] ar = str.toCharArray();
      for (char ch : ar) {
         if (Character.isDigit(ch)) {
         digitCount++;
         } else if ("AEIOUaeiou".indexOf(ch) != -1) {
         vowelCount++;
         } }
      float vowelper=(float)vowelCount * 100 / n;
      float digitper=(float)digitCount * 100 / n;
      System.out.printf("Number of vowels:%d(%.2f)\n",vowelCount,vowelper);
      System.out.printf("Number of digits:%d(%.2f)",digitCount,digitper);
     }
}
```

OUTPUT:

```
D:\bmsce\2sem\Java programming\3week>java Count
Enter a string:testing12345
Number of vowels:2(16.67)
Number of digits:5(41.67)
D:\bmsce\2sem\Java programming\3week>java Count
Enter a string:12programming23
Number of vowels:3(20.00)
Number of digits:4(26.67)
D:\bmsce\2sem\Java programming\3week>
```

5. Write a program called Bin2Dec to convert an input binary string into its equivalent decimal number.

Your output shall look like:

Enter a Binary string: 1011

The equivalent decimal number for binary "1011" is: 11

PROGRAM:

```
import java.util.Scanner;
class Bin2Dec{
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter a binary string:");
      String bString=sc.nextLine();
      int digi=0;
      for(int i=0;i<bString.length();i++){
         if(bString.charAt(i)=='1'){
            digi=digi+(int)Math.pow(2,(bString.length()-1-i));
         }
      }
      System.out.printf("The equivalent decimal number for binary %s is:%d",bString, digi);
  }}
```

OUTPUT:

```
D:\bmsce\2sem\Java programming\3week>java Bin2Dec
Enter a binary string:1011
The equivalent decimal number for binary 1011 is:11
D:\bmsce\2sem\Java programming\3week>java Bin2Dec
Enter a binary string:1111
The equivalent decimal number for binary 1111 is:15
```