Assignment 1

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Subject: Java Programming

Code: CSPC-23

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1. Multiply digits

Write a program that reads an integer between 0 and 1000 and multiplies all the digits in the integer. For example, if an integer is 932, the multiplication of all its digits is 54.

```java
import java.util.Scanner;

public class foobar {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter the number --> ");
        int num = sc.nextInt();
        int result = multiply(num);

        System.out.println("Multiplication of all digits --> " + result);
    }

    public static int multiply(int num) {
        int result = 1;
        while(num > 0) {
            result *= num % 10;
            num /= 10;
        }
        return result;
    }
}
```

```
[getpsyched@Manjaro Lab Assignment]$ java "1. Multiplication.java"
Enter the number --> 123
Multiplication of all digits --> 6
[getpsyched@Manjaro Lab Assignment]$ java "1. Multiplication.java"
Enter the number --> 652
Multiplication of all digits --> 60
```

2. Minutes to years

Write a program that prompts the user to enter the minutes (e.g., 1 billion), and displays the number of years and remaining days for the minutes. For simplicity, assume that a year has 365 days.

```java
import java.util.Scanner;

public class foorbar {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter time in minutes --> ");
        int min = sc.nextInt();
        int years = min / (365*24*60);

        int days = min - (years * 365*24*60);
        days /= 24 * 60;

        System.out.println(String.format("%s years and %s days", years, days));
    }
}
```

```
[getpsyched@Manjaro Lab Assignment]$ java "2. Minutes to years.java"
Enter time in minutes --> 1000000
1 years and 329 days
[getpsyched@Manjaro Lab Assignment]$ java "2. Minutes to years.java"
Enter time in minutes --> 1000000000
1902 years and 214 days
```

3. BMI Calculator

Body Mass Index (BMI) is a measure of health on weight. It can be calculated by taking your weight in kilograms and dividing, by the square of your height in meters. Write a program that prompts the user to enter a weight in pounds and height in inches and displays the BMI. Note one pound is 0.45359237 kilograms and one inch is 0.0254 meters.

```java
import java.util.Scanner;

public class foobar {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter weight --> ");
        double weight = sc.nextDouble();
        System.out.print("Enter height --> ");
        double height = sc.nextDouble();

        System.out.println(BMI(weight, height));
    }

    public static String BMI(double weight, double height) {
        weight *= 0.45359237;
        height *= 0.0254;
        double bmi = weight / (height*height);

        String str = "";

        if (bmi < 18.5) str = "Underweight";
        else if (bmi >= 18.5 && bmi < 25) str = "Healthy";
        else if (bmi > 25 && bmi < 30) str = "Overweight";
        else if (bmi > 30) str = "Obese";

        return String.format("BMI --> %.2f (%s)", bmi, str);
    }
}
```

```
[getpsyched@Manjaro Lab Assignment]$ java "3. BMI.java"
Enter weight --> 88
Enter height --> 59
BMI --> 17.77 (Underweight)
[getpsyched@Manjaro Lab Assignment]$ java "3. BMI.java"
Enter weight --> 156.5
Enter height --> 68.9
BMI --> 23.18 (Healthy)
[getpsyched@Manjaro Lab Assignment]$ java "3. BMI.java"
Enter weight --> 200
Enter height --> 80
BMI --> 21.97 (Healthy)
[getpsyched@Manjaro Lab Assignment]$ java "3. BMI.java"
Enter weight --> 250
Enter height --> 70
BMI --> 35.87 (Obese)
```

4. Interest Rate

If you know the balance and the annual percentage interest rate, you can compute the interest on the next monthly payment using the following formula:

`interest = balance * (annualInterestRate/1200)`

Write a program that reads the balance and the annual percentage interest rate and displays the interest for the next month.

```java
import java.util.Scanner;

public class foobar {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter balance --> ");
        double bal = sc.nextDouble();
        System.out.print("Enter interest rate --> ");
        double rate = sc.nextDouble();

        System.out.println(String.format("Next month's interest --> %.2f", bal * (rate/1200)));
    }
}
```

```
[getpsyched@Manjaro Lab Assignment]$ java "4. Interest.java"
Enter balance --> 10000
Enter interest rate --> 10
Next month's interest --> 83.33
[getpsyched@Manjaro Lab Assignment]$ java "4. Interest.java"
Enter balance --> 5000
Enter interest rate --> 4
Next month's interest --> 16.67
```

5. Check if multiple

Write an application that reads two integers, determines whether the first is a multiple of the second and prints the result. [Hint: Use the remainder operator]

```java
import java.util.Scanner;

public class foobar {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter first number --> ");
        int num1 = sc.nextInt();
        System.out.print("Enter second number --> ");
        int num2 = sc.nextInt();

        if (num1 % num2 == 0)
            System.out.println("The first number is a multiple of second");
        else
            System.out.println("The first number is not a multiple of second");
    }
}
```

```
[getpsyched@Manjaro Lab Assignment]$ java "5. Check multiple.java"
Enter first number --> 10
Enter second number --> 5
The first number is a multiple of second
[getpsyched@Manjaro Lab Assignment]$ java "5. Check multiple.java"
Enter first number --> 17
Enter second number --> 2
The first number is not a multiple of second
```

6. Convert base

Write a program that reads an integer and prints it in binary, octal, and hexadecimal.

```java
import java.util.Scanner;

public class foobar {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);

      System.out.print("Enter the number --> ");
      int num = sc.nextInt();

      System.out.println("Binary --> " + Integer.toBinaryString(num));
      System.out.println("Octal --> " + Integer.toOctalString(num));
      System.out.println("Hexadecimal --> " + Integer.toHexString(num));
   }
}
```

```
[getpsyched@Manjaro Lab Assignment]$ java "6. Base.java"
Enter the number --> 10
Binary --> 1010
Octal --> 12
Hexadecimal --> a
[getpsyched@Manjaro Lab Assignment]$ java "6. Base.java"
Enter the number --> 600
Binary --> 1001011000
Octal --> 1130
Hexadecimal --> 258
[getpsyched@Manjaro Lab Assignment]$ java "6. Base.java"
Enter the number --> 257
Binary --> 100000001
Octal --> 401
Hexadecimal --> 101
```