

Assignment-6.3

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B-10

TASK-1

Prompt :

Write a Java Student class with attributes name, roll number, and branch.
Include constructor and displayDetails() method.

Code :

```
import java.util.Scanner;

class Student {
    String name;
    int rollNo;
    String branch;
    Student(String name, int rollNo, String branch) {
        this.name = name;
        this.rollNo = rollNo;
        this.branch = branch;
    }
    void displayDetails() {
        System.out.println("\n--- Student Details ---");
        System.out.println("Name: " + name);
        System.out.println("Roll No: " + rollNo);
        System.out.println("Branch: " + branch);
    }
    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter Name: ");
        String name = sc.nextLine();
```

```

System.out.print("Enter Roll Number: ");
int rollNo = sc.nextInt();
sc.nextLine(); // clear buffer

System.out.print("Enter Branch: ");
String branch = sc.nextLine();

Student s1 = new Student(name, rollNo, branch);

s1.displayDetails();

sc.close();
}
}

```

Output :

The screenshot shows a Java development environment with multiple tabs open. The active tab is 'Student.java'. The code defines a 'Student' class with a constructor taking name, rollNo, and branch as parameters, and methods for displaying details and a main method. Below the code editor is a terminal window showing the execution of the program and its output.

```

File Edit Selection View Go Run ...
EXPLORER J PrimeNum.java M J Student.java U J EnergyBillCalculator.java U J fibo.java U J CentimeterConverter.java U ...
AI ASSISTED CODE J Student.java
1 import java.util.Scanner;
2
3 class Student {
4     String name;
5     int rollNo;
6     String branch;
7     Student(String name, int rollNo, String branch) {
8         this.name = name;
9         this.rollNo = rollNo;
10        this.branch = branch;
11    }
12    void displayDetails() {
13        System.out.println("\n--- Student Details ---");
14        System.out.println("Name: " + name);
15        System.out.println("Roll No: " + rollNo);
16        System.out.println("Branch: " + branch);
17    }
18    public static void main(String[] args) {
C:\Users\deept\Downloads\OneDrive\Desktop\AI ASSISTED CODE>java Student
Enter Name: Arthi Reddy
Enter Roll Number: 1595
Enter Branch: CSE
--- Student Details ---
Name: Arthi Reddy
Roll No: 1595
Branch: CSE

```

Explanation :

This program uses a `Student` class with constructor and methods to store and display student details. It demonstrates object creation and basic Object-Oriented Programming concepts.

TASK-2

Prompt :

Write a Java program to take a number from the user and print its first 10 multiples.

Use both for loop and while loop to show the result.

Code :

```
import java.util.Scanner;
```

```
class Multiples {
```

```
    static void multiplesFor(int n) {
        System.out.println("\nUsing For Loop:");
        for(int i = 1; i <= 10; i++) {
            System.out.println(n * i);
        }
    }

    static void multiplesWhile(int n) {
        System.out.println("\nUsing While Loop:");
        int i = 1;
        while(i <= 10) {
            System.out.println(n * i);
            i++;
        }
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int n = sc.nextInt();

        multiplesFor(n);
        multiplesWhile(n);

        sc.close();
    }
}
```

Output :

```
File Edit Selection View Go Run ... Q AI ASSISTED CODE
EXPLORER J PrimeNum.java M J Student.java U J Multiples.java X J EnergyBillCalculator.java U J fibo.java U J Centim... ...
AI ASSISTED CODE J Multiples.java
J java U
J Bank.class U
J Bank.java U
J Bill.java U
J Bill.class U
J CentimeterConverter.class U
J CentimeterConverter.java U
J duplicate.java U
J EnergyBillCalculator.class U
J EnergyBillCalculator.java U
J EthicalLogging.class U
J fibo.java U
J FileLineCount.class U
J FileLineCount.java U
E javac U
J Multiples.class U
J Multiples.java U
J NameFormatter.class U
J NameFormatter.java U
J palindrome.java U
J PrimeNum.class U
J PrimeNum.java M
J ProductRecommendation.class U
J ProductRecommendation.java U
Using For Loop:
3
6
12
15
18
21
24
27
30
Using While Loop:
3
6
9
PROBLEMS OUTPUT DEBUG CONSOLE PORTS TERMINAL GITLENS
+ - | ☰ cmd cmd
cmd cmd
Ln 28, Col 26 Spaces: 4 UTF-8 CRLF Java Go Live
```

Explanation :

This program takes a number from the user and prints its first 10 multiples using both for and while loops

TASK-3

Prompt :

Write a Java program to take age as input from the user and classify the person as child, teenager, adult, or senior using conditional statements.

Code :

```
import java.util.Scanner;
```

```
class AgeClassification {
```

```
    static String classifyAge(int age) {
```

```
        if(age < 13)
            return "Child";
        else if(age < 20)
            return "Teenager";
```

```

        else if(age < 60)
            return "Adult";
        else
            return "Senior";
    }

public static void main(String[] args) {

    Scanner sc = new Scanner(System.in);

    System.out.print("Enter age: ");
    int age = sc.nextInt();

    String result = classifyAge(age);

    System.out.println("Category: " + result);

    sc.close();
}
}

```

Output :

```

File Edit Selection View Go Run ... ← → Q AI ASSISTED CODE 00 - ⌂ X
EXPLORER ... J PrimeNum.java M J Student.java U J Multiples.java U J AgeClassification.java U J EnergyBillCalculator.java U D ⌂ ...
AI ASSISTED CODE
J java U
J AgeClassification.class U
J AgeClassification.java U
J Bank.class U
J Bankjava U
J Bill.class U
J CentimeterConverter.class U
J CentimeterConverter.java U
J duplicate.java U
J EnergyBillCalculator.class U
J EnergyBillcalculator.java U
J EthicalLogging.class U
J fibo.java U
J FileLineCount.class U
J FileLineCount.java U
javac U
Multiples.class U
J Multiples.java U
J NameFormatter.class U
J NameFormatter.java U
J NameFormatter.java U
J palindrome.java U
J PrimeNum.class U
J PrimeNum.java M
C:\Users\deept\Downloads\OneDrive\Desktop\AI ASSISTED CODE>javac AgeClassification.java
C:\Users\deept\Downloads\OneDrive\Desktop\AI ASSISTED CODE>java AgeClassification
Enter age: 19
Category: Teenager

```

Explanation :

This program takes age as input and checks conditions using if-else statements to decide the age group.

It demonstrates decision making and conditional logic in Java.

TASK-4

Prompt :

Write a Java program to take a number n from the user and calculate the sum of the first n natural numbers.

Code :

```
import java.util.Scanner;
```

```
class SumNumbers {
    static int sumFor(int n) {
        int sum = 0;
        for(int i = 1; i <= n; i++) {
            sum += i;
        }
        return sum;
    }
    static int sumWhile(int n) {
        int sum = 0, i = 1;
        while(i <= n) {
            sum += i;
            i++;
        }
        return sum;
    }
    static int sumFormula(int n) {
        return n * (n + 1) / 2;
    }

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

```

System.out.print("Enter n: ");
int n = sc.nextInt();

System.out.println("Sum using For loop: " + sumFor(n));
System.out.println("Sum using While loop: " + sumWhile(n));
System.out.println("Sum using Formula: " + sumFormula(n));

sc.close();
}
}

```

Output :

The screenshot shows a Java code editor interface with the following details:

- File Explorer:** Shows various Java files in the project, including PrimeNum.class, PrimeNum.java, ProductRecommendation.class, ProductRecommendation.java, recursion.java, reversearray.java, SecureLogging.class, SecureLogging.java, SentimentAnalysis.class, SentimentAnalysis.java, SentimentAnalyzer.class, SimpleMLModel.class, SimpleMLModel.java, Student.class, Student.java, Sum.class, sum.java, SumNumbers.class, and SumNumbers.java.
- Code Editor:** The current file is SumNumbers.java. It contains three static methods: sumFor, sumWhile, and sumFormula. The sumWhile method is currently selected.
- Terminal:** The terminal window shows the command-line output of running the program with input '3'. It displays three results: 'Sum using For loop: 6', 'Sum using While loop: 6', and 'Sum using Formula: 6'.

Explanation :

This program calculates the sum of first n numbers using loops and a mathematical formula.

Task-5

Prompt :

Write a Java program to create a BankAccount class with deposit, withdraw, and check balance methods.

Code :

```
import java.util.Scanner;

class BankAccount {

    String name;
    double balance;

    // Constructor
    BankAccount(String name, double balance) {
        this.name = name;
        this.balance = balance;
    }

    // Deposit money
    void deposit(double amount) {
        balance += amount;
        System.out.println("Amount Deposited: " + amount);
    }

    // Withdraw money
    void withdraw(double amount) {
        if(amount <= balance) {
            balance -= amount;
            System.out.println("Amount Withdrawn: " + amount);
        } else {
            System.out.println("Insufficient Balance");
        }
    }

    // Check balance
    void checkBalance() {
        System.out.println("Current Balance: " + balance);
    }

    public static void main(String[] args) {
```

```

Scanner sc = new Scanner(System.in);

System.out.print("Enter Account Holder Name: ");
String name = sc.nextLine();
BankAccount acc = new BankAccount(name, balance);

System.out.print("Enter deposit amount: ");
acc.deposit(sc.nextDouble());

System.out.print("Enter withdraw amount: ");
acc.withdraw(sc.nextDouble());

acc.checkBalance();

sc.close();
}
}

```

The screenshot shows a Java development environment with multiple tabs open at the top: Student.java, Multiples.java, AgeClassification.java, SumNumbers.java, and BankAccount.java. The BankAccount.java tab is active. The code editor displays the following Java code:

```

import java.util.Scanner;
class BankAccount {
    String name;
    double balance;

    // Constructor
    BankAccount(String name, double balance) {
        this.name = name;
        this.balance = balance;
    }

    // Deposit money
    void deposit(double amount) {
        balance += amount;
        System.out.println("Amount Deposited: " + amount);
    }

    // Withdraw money
    void withdraw(double amount) {
        if (balance >= amount) {
            balance -= amount;
            System.out.println("Amount Withdrawn: " + amount);
        } else {
            System.out.println("Insufficient Balance");
        }
    }

    // Check balance
    void checkBalance() {
        System.out.println("Current Balance: " + balance);
    }
}

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter Account Holder Name: ");
        String name = sc.nextLine();
        System.out.print("Enter Initial Balance: ");
        double balance = sc.nextDouble();
        BankAccount acc = new BankAccount(name, balance);
        System.out.print("Enter deposit amount: ");
        acc.deposit(sc.nextDouble());
        System.out.print("Enter withdraw amount: ");
        acc.withdraw(sc.nextDouble());
        acc.checkBalance();
    }
}

```

The terminal window below the code editor shows the execution of the program:

```

C:\Users\deeps\Downloads\OneDrive\Desktop\AI ASSISTED CODE>java Main
Enter Account Holder Name: Arthi reddy
Enter Initial Balance: 5000
Enter deposit amount: 3000
Amount Deposited: 3000.0
Enter withdraw amount: 2000
Amount Withdrawn: 2000.0
Current Balance: 6000.0

```

Explanation :

This program creates a BankAccount class to manage money transactions like deposit, withdraw, and balance checking.

