

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);
```

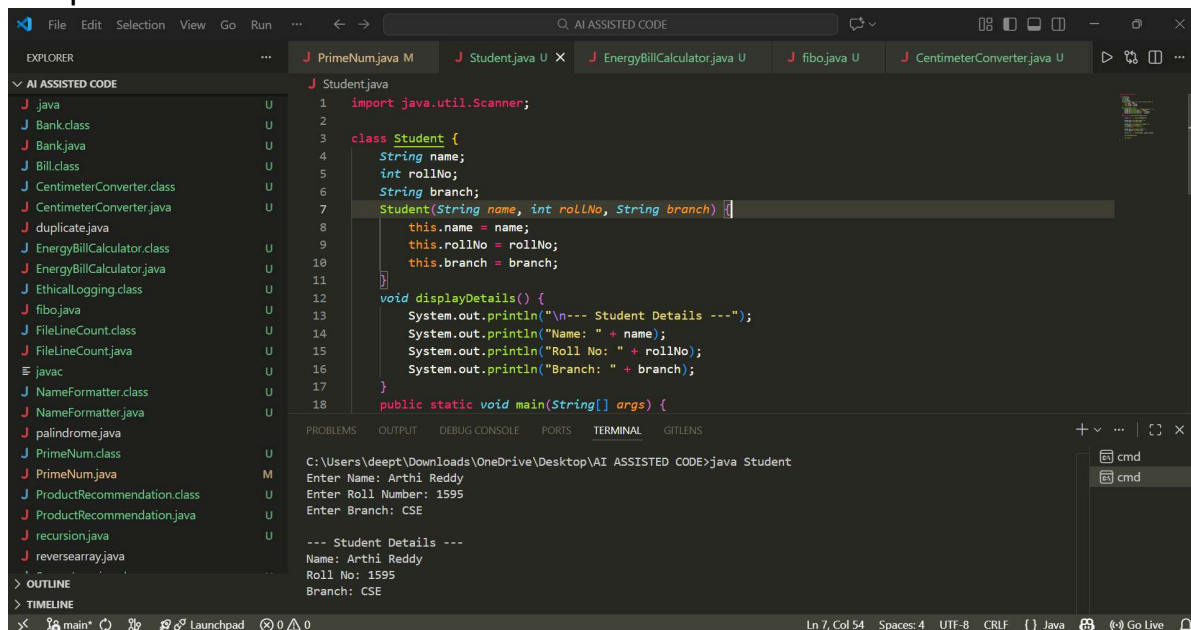
```
s1.displayDetails();
```

```
sc.close();
```

```
}
```

```
}
```

Output :



The screenshot shows an IDE with a project named 'AI ASSISTED CODE'. The Explorer panel on the left lists various Java files. The main editor displays the code for 'Student.java'. The code defines a 'Student' class with attributes 'name', 'rollNo', and 'branch', a constructor, a 'displayDetails()' method, and a 'main()' method. The terminal at the bottom shows the execution of 'java Student', with input for name ('Arthi Reddy'), roll number ('1595'), and branch ('CSE'). The output displays the student's details.

```
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) {  
19        Scanner sc = new Scanner(System.in);  
20        System.out.print("Enter Name: ");  
21        String name = sc.nextLine();  
22        System.out.print("Enter Roll Number: ");  
23        int rollNo = sc.nextInt();  
24        sc.nextLine();  
25        System.out.print("Enter Branch: ");  
26        String branch = sc.nextLine();  
27        Student s1 = new Student(name, rollNo, branch);  
28        s1.displayDetails();  
29        sc.close();  
30    }  
31 }
```

Terminal Output:

```
C:\Users\deep\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);
        }
    }

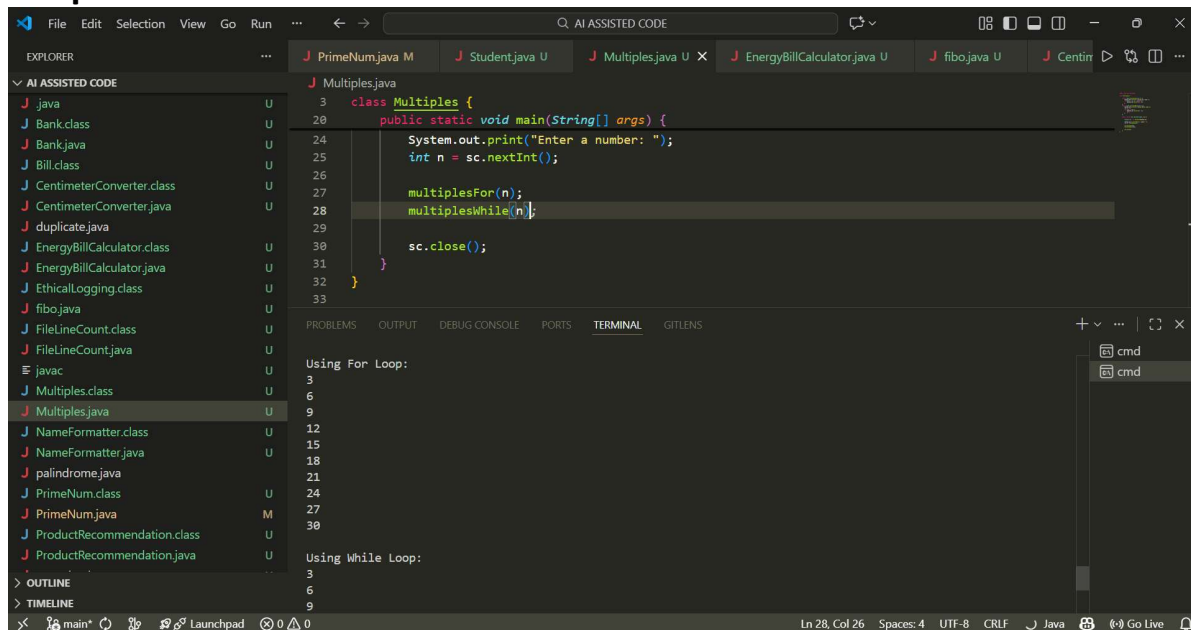
    static void multiplesWhile(int n) {
        System.out.println("\nUsing While Loop:");
        int i = 1;
        while(i <= 10) {
            System.out.println(n * i);
            i++;
        }
    }

    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 :



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

        multiplesFor(n);
        multiplesWhile(n);

        sc.close();
    }
}
```

Using For Loop:

3
6
9
12
15
18
21
24
27
30

Using While Loop:

3
6
9

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 :

The screenshot shows an IDE with the following components:

- EXPLORER:** A list of files on the left, including `AI ASSISTED CODE`, `J.java`, `AgeClassification.class`, `AgeClassification.java`, `Bank.class`, `Bank.java`, `Bill.class`, `CentimeterConverter.class`, `CentimeterConverter.java`, `duplicate.java`, `EnergyBillCalculator.class`, `EnergyBillCalculator.java`, `EthicalLogging.class`, `fibonacci.java`, `FileLineCount.class`, `FileLineCount.java`, `javac`, `Multiplies.class`, `Multiplies.java`, `NameFormatter.class`, `NameFormatter.java`, `palindrome.java`, `PrimeNum.class`, and `PrimeNum.java`.
- EDITOR:** The main window showing the code for `AgeClassification.java`. The code is as follows:


```

1 import java.util.Scanner;
2
3 class AgeClassification {
4
5     static String classifyAge(int age) {
6
7         if(age < 13)
8             return "Child";
9         else if(age < 20)
10            return "Teenager";
11        else if(age < 60)
12            return "Adult";
13        else
14            return "Senior";
15    }
16
17    public static void main(String[] args) {
18

```
- TERMINAL:** The bottom panel showing the execution output:


```

Microsoft Windows [Version 10.0.26280.7785]
(c) Microsoft Corporation. All rights reserved.

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);
```

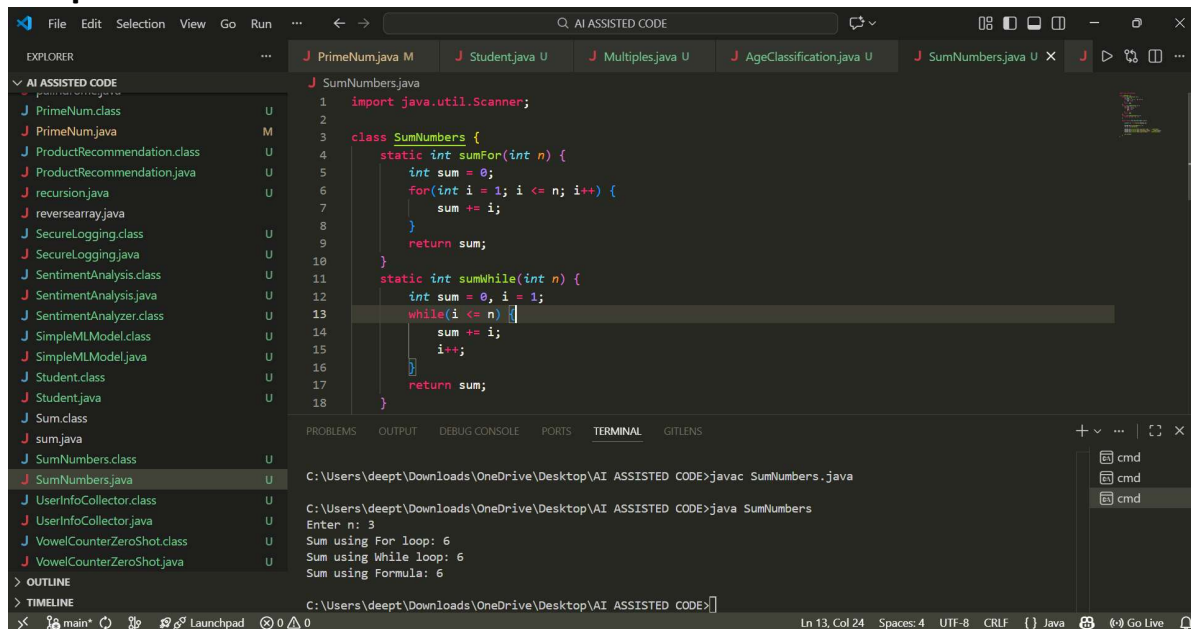
```
System.out.print("Enter n: ");  
int n = sc.nextInt();
```

```
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 an IDE with the following components:

- EXPLORER:** A list of files including PrimeNum.class, PrimeNum.java, ProductRecommendation.class, recursion.java, reversearray.java, SecureLogging.class, SecureLogging.java, SentimentAnalysis.class, SentimentAnalysis.java, SentimentAnalyzer.class, SimpleMLModel.class, Student.class, Student.java, Sum.class, sum.java, SumNumbers.class, SumNumbers.java, UserInfoCollector.class, UserInfoCollector.java, VowelCounterZeroShot.class, and VowelCounterZeroShot.java.
- SumNumbers.java:** The code for the SumNumbers class, which includes methods for calculating the sum of the first n numbers using a for loop, a while loop, and a mathematical formula.
- TERMINAL:** The output of the program, showing the prompt "Enter n: 3" and the 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 an IDE with the following components:

- EXPLORER:** A list of files including `BankAccount.java`, which is currently selected.
- EDITOR:** Displays the code for `BankAccount.java`. The code includes an import statement for `Scanner`, a class definition with attributes `name` and `balance`, a constructor, and methods for `deposit` and `withdraw`.
- TERMINAL:** Shows the output of running the program. It prompts for the account holder's name (Arthi reddy), initial balance (5000), deposit amount (3000), and withdraw amount (2000). It then displays the amount deposited, amount withdrawn, and the current balance (6000.0).

Explanation :

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

