Assignment-6.3

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B-10

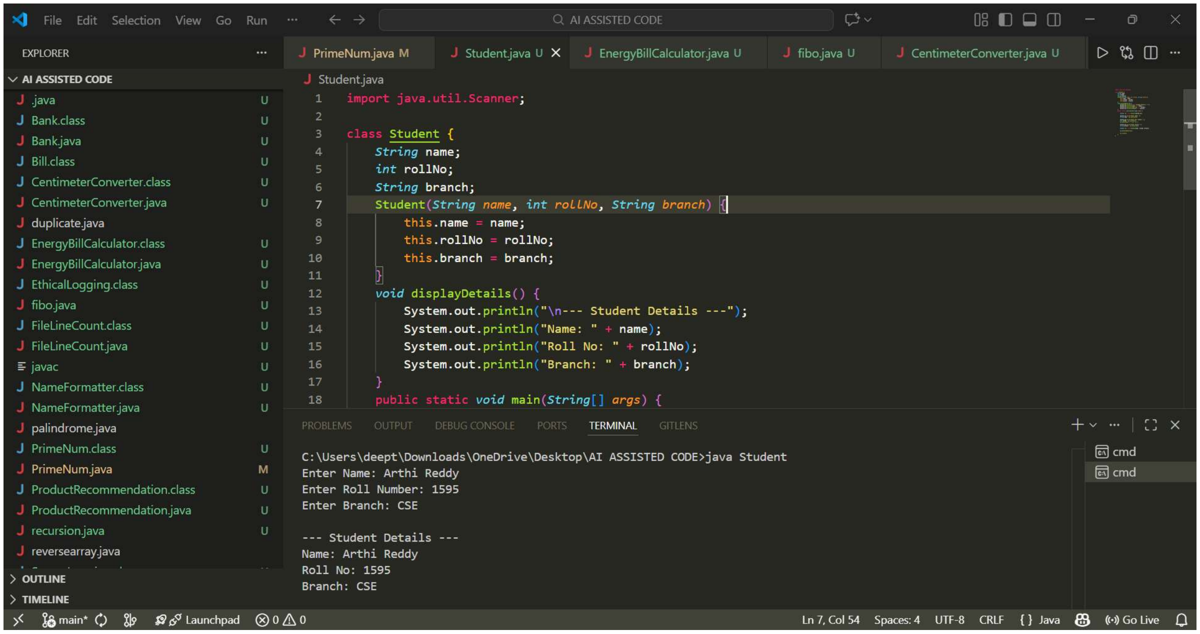
TASK-1

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 :



```
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) {
```

```
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.

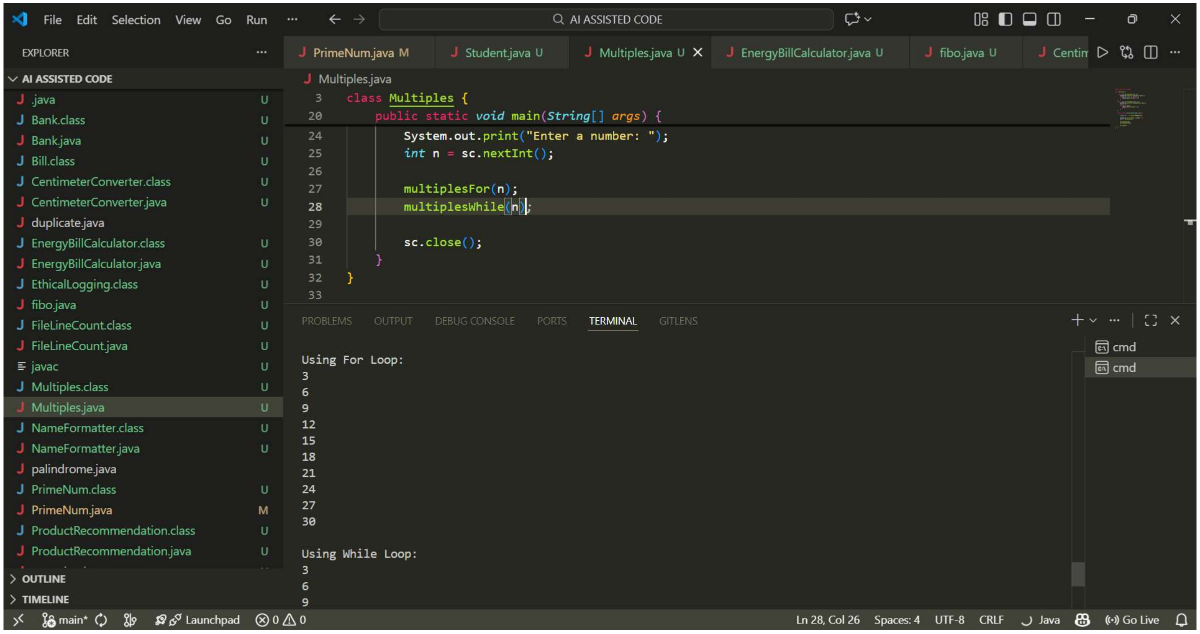
It demonstrates object creation and basic Object-Oriented Programming concepts.

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 :



Multiples.java

```
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

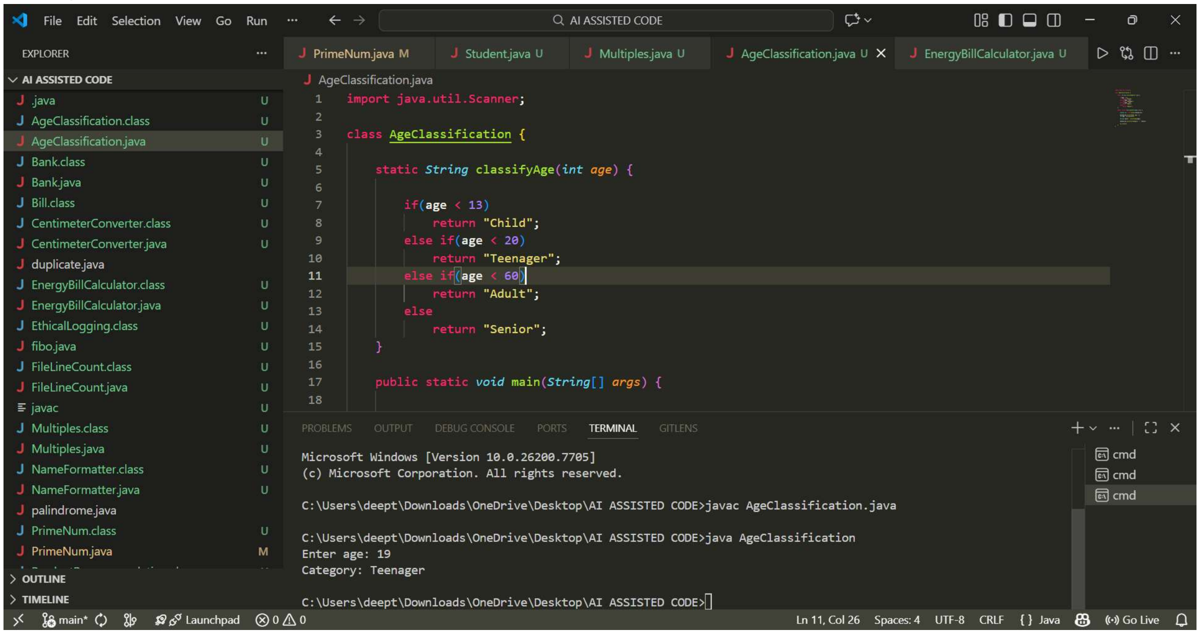
Prompt :

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 :



```
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) {

```

```
Microsoft Windows [Version 10.0.26200.7705]
(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

C:\Users\deept\Downloads\OneDrive\Desktop\AI ASSISTED CODE>
```

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 :

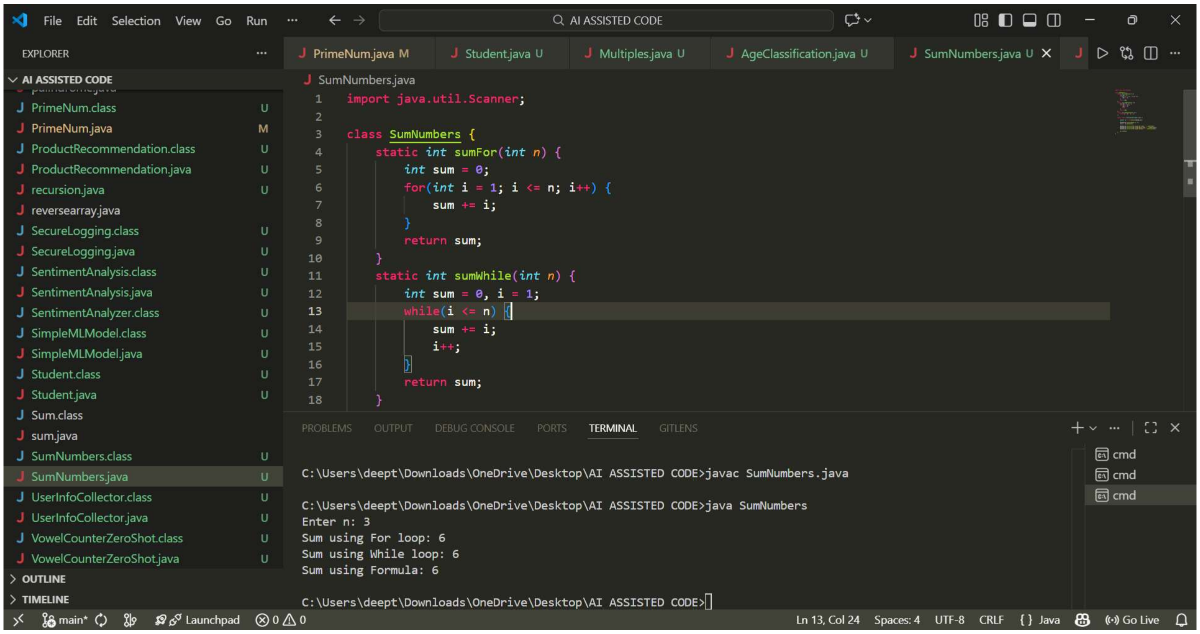
Write a Java program to take a number n from the user and calculate the sum of the first n natural numbers.

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 :



```
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;
    }
```

```
C:\Users\deept\Downloads\OneDrive\Desktop\AI ASSISTED CODE>javac SumNumbers.java

C:\Users\deept\Downloads\OneDrive\Desktop\AI ASSISTED CODE>java SumNumbers
Enter n: 3
Sum using For loop: 6
Sum using While loop: 6
Sum using Formula: 6

C:\Users\deept\Downloads\OneDrive\Desktop\AI ASSISTED CODE>
```

Explanation :

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

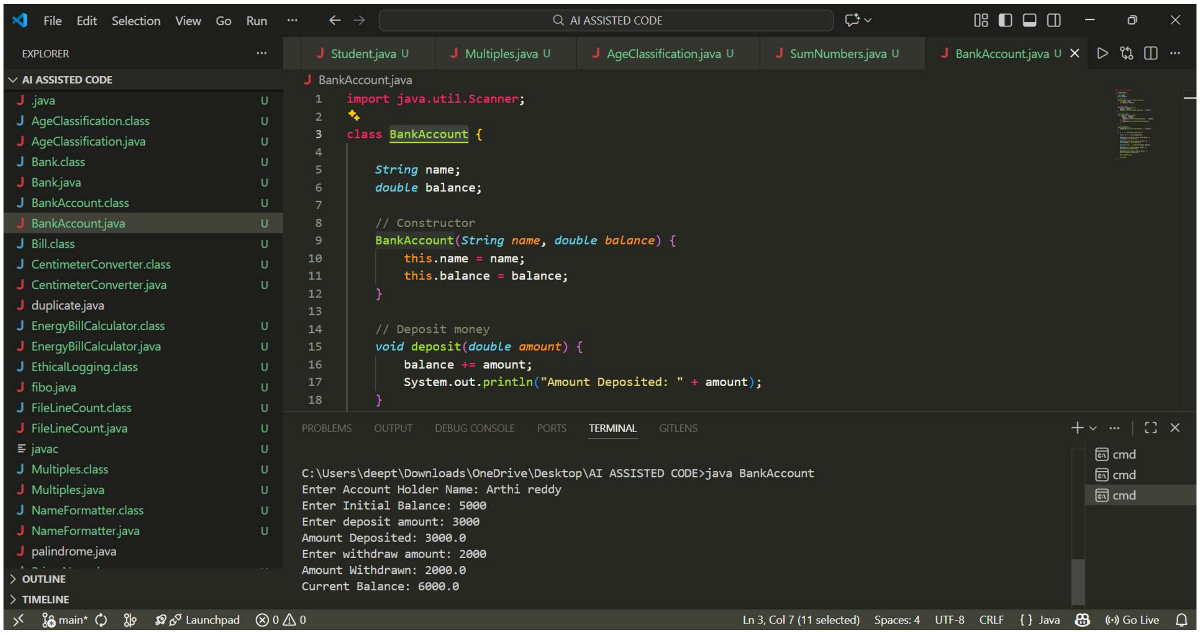
Task-5

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();
    }
}
```



```
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);
    }
```

```
C:\Users\deept\Downloads\OneDrive\Desktop\AI ASSISTED CODE>java BankAccount
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.