

slip25

```
import java.io.IOException;

import java.nio.file.Files;

import java.nio.file.Path;

import java.nio.file.Paths;

import java.util.List;


public class s24q1 {


    public static void main(String[] args) {


        String filePath = "BBA(CA).txt";


        int digitCount = 0;

        int spaceCount = 0;

        int characterCount = 0;


        try {


            Path path = Paths.get(filePath);

            List<String> lines = Files.readAllLines(path);


            for (String line : lines) {
```

```
for (char c : line.toCharArray()) {
```

```
    if (Character.isDigit(c)) {
```

```
        digitCount++;
```

```
    }
```

```
    else if (Character.isWhitespace(c)) {
```

```
        spaceCount++;
```

```
    }
```

```
    else {
```

```
        characterCount++;
```

```
    }
```

```
}
```

```
}
```

```
System.out.println("Number of digits: " + digitCount);
```

```
System.out.println("Number of spaces: " + spaceCount);
```

```
System.out.println("Number of characters (excluding spaces): " + characterCount);
```

```
} catch (IOException e) {
```

```
    System.out.println("An error occurred while reading the file: " + e.getMessage());
```

```
}
```

```
}
```

```
}
```

/path/to/your/project/

|—— TYBBACA/

| |—— Student.java

| |—— Teacher.java

|—— Main.java

student.java

package TYBBACA;

public class Student {

private int Rno;

private String SName;

private double Per;

public Student(int rno, String sName, double per) {

this.Rno = rno;

this.SName = sName;

this.Per = per;

}

```
public void disp() {  
    System.out.println("Roll Number: " + Rno);  
    System.out.println("Student Name: " + SName);  
    System.out.println("Percentage: " + Per + "%");  
}
```

```
protected void finalize() throws Throwable {  
    try {  
        System.out.println("Finalizing Student: " + SName);  
    } finally {  
        super.finalize();  
    }  
}  
}
```

teracher.java

```
package TYBBACA;
```

```
public class Teacher {  
    private int TID;  
    private String TName;
```

```
private String Subject;
```

```
public Teacher(int tID, String tName, String subject) {
```

```
    this.TID = tID;
```

```
    this.TName = tName;
```

```
    this.Subject = subject;
```

```
}
```

```
public void disp() {
```

```
    if ("Java".equalsIgnoreCase(Subject)) {
```

```
        System.out.println("Teacher ID: " + TID);
```

```
        System.out.println("Teacher Name: " + TName);
```

```
        System.out.println("Subject: " + Subject);
```

```
    } else {
```

```
        System.out.println("This teacher does not teach Java.");
```

```
    }
```

```
}
```

```
protected void finalize() throws Throwable {
```

```
    try {
```

```
        System.out.println("Finalizing Teacher: " + TName);
```

```
    } finally {
```

```
        super.finalize();  
    }  
}  
}
```

main.java

```
import TYBBACA.Student;  
import TYBBACA.Teacher;
```

```
public class Main {  
    public static void main(String[] args) {  
  
        Student[] students = new Student[3];  
        students[0] = new Student(1, "Alice", 85.5);  
        students[1] = new Student(2, "Bob", 78.0);  
        students[2] = new Student(3, "Charlie", 92.0);  
  
        System.out.println("Student Details:");  
        for (Student student : students) {  
            student.disp();  
            System.out.println();  
        }  
    }  
}
```

```
}
```

```
Teacher teacher1 = new Teacher(101, "Dr. Smith", "Java");
```

```
Teacher teacher2 = new Teacher(102, "Mr. Johnson", "Python");
```

```
System.out.println("Teacher Details:");
```

```
teacher1.disp();
```

```
System.out.println();
```

```
teacher2.disp();
```

```
teacher1 = null;
```

```
teacher2 = null;
```

```
System.gc();
```

```
}
```

```
}
```

```
def is_prime(num):
```

```
    if num <= 1:
```

```
        return False

    for i in range(2, int(num**0.5) + 1):

        if num % i == 0:

            return False

    return True


def factorial(num):

    if num < 0:

        raise ValueError("Factorial is not defined for negative numbers.")

    elif num == 0 or num == 1:

        return 1

    else:

        fact = 1

        for i in range(2, num + 1):

            fact *= i

        return fact


try:

    number = int(input("Enter a number: "))

    if is_prime(number):

        print(f"{number} is a prime number.")

    else:

        print(f"{number} is not a prime number.")


fact = factorial(number)

print(f"The factorial of {number} is {fact}.")
```



```
except ValueError as e:
```

```
    print("Invalid input:", e)
```

```
class BasicCalculator:
```

```
    def add(self, a, b):
```

```
        """Return the sum of a and b."""
```

```
        return a + b
```

```
    def subtract(self, a, b):
```

```
        """Return the difference of a and b."""
```

```
        return a - b
```

```
    def multiply(self, a, b):
```

```
        """Return the product of a and b."""
```

```
        return a * b
```

```
    def divide(self, a, b):
```

```
        """Return the quotient of a and b."""
```

```
        if b == 0:
```

```
            raise ValueError("Cannot divide by zero.")
```

```
        return a / b
```

```
calculator = BasicCalculator()
```

```
while True:
```

```
print("\nBasic Calculator")
```

```
print("1. Add")
```

```
print("2. Subtract")
```

```
print("3. Multiply")
```

```
print("4. Divide")
```

```
print("5. Exit")
```

```
choice = input("Select operation (1/2/3/4/5): ")
```

```
if choice == '5':
```

```
    print("Exiting the calculator. Goodbye!")
```

```
    break
```

```
if choice in ['1', '2', '3', '4']:
```

```
    try:
```

```
        num1 = float(input("Enter first number: "))
```

```
        num2 = float(input("Enter second number: "))
```

```
    if choice == '1':
```

```
        result = calculator.add(num1, num2)
```

```
        print(f"{num1} + {num2} = {result}")
```

```
    elif choice == '2':
```

```
        result = calculator.subtract(num1, num2)
```

```
        print(f"{num1} - {num2} = {result}")
```

```
    elif choice == '3':
```

```
result = calculator.multiply(num1, num2)
```

```
print(f"{num1} * {num2} = {result}")
```

```
elif choice == '4':
```

```
result = calculator.divide(num1, num2)
```

```
print(f"{num1} / {num2} = {result}")
```

```
except ValueError as e:
```

```
print("Invalid input:", e)
```

```
else:
```

```
print("Invalid selection. Please choose a valid operation.")
```