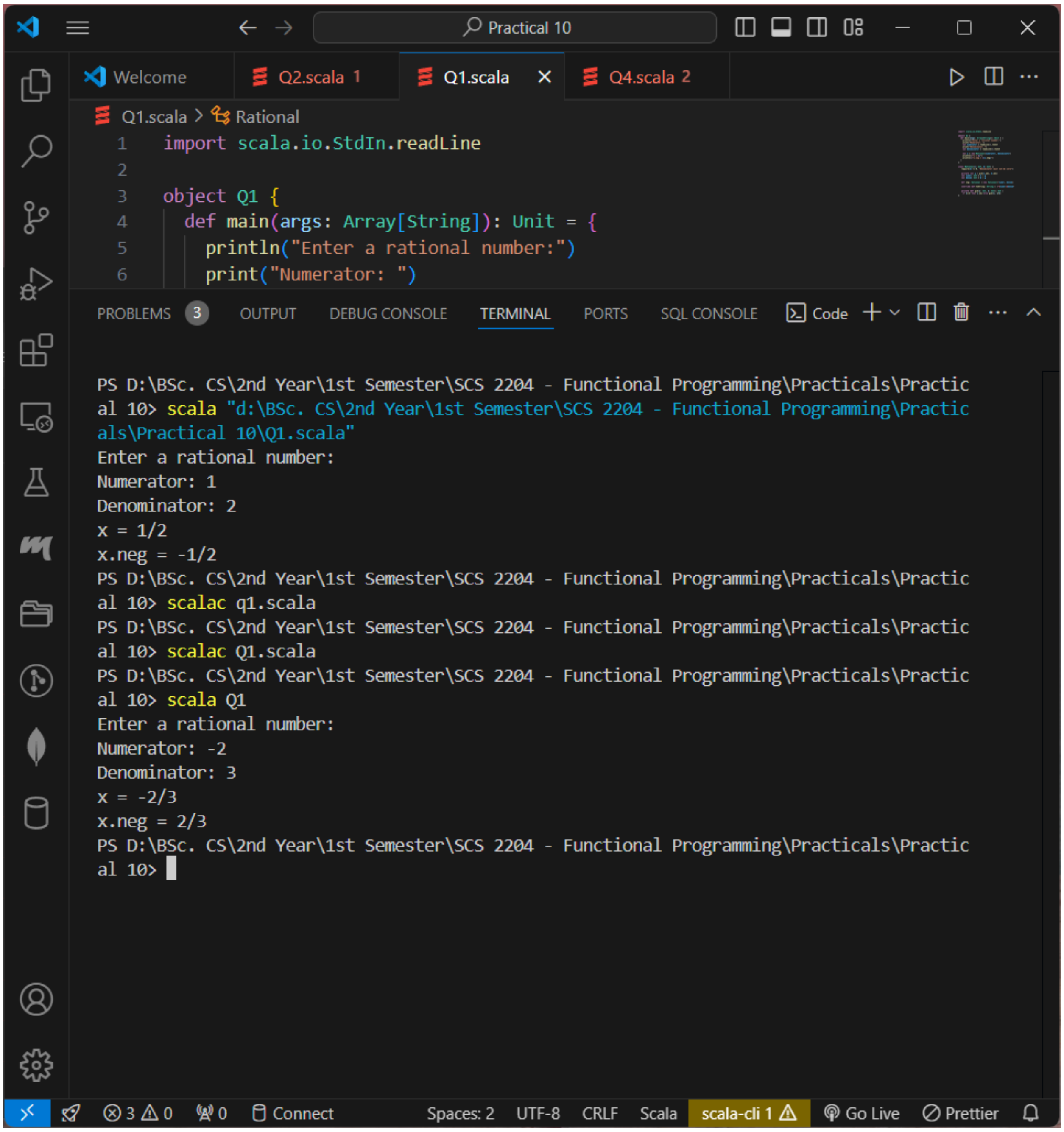
Functional Programming - Practical 10

2022/CS/109

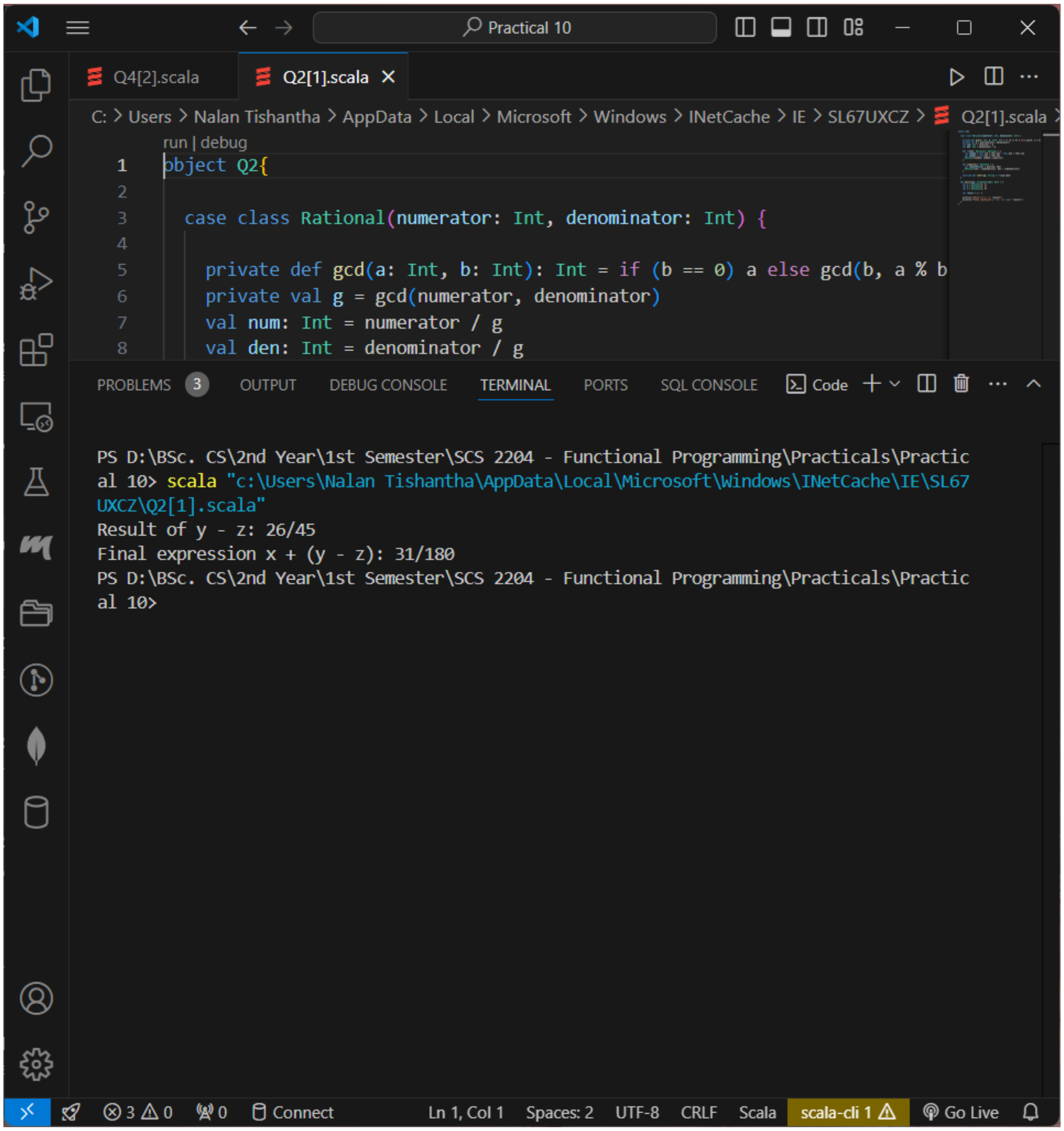
Question 01:



```scala
import scala.io.StdIn.readLine

object Q1 {
  def main(args: Array[String]): Unit = {
    println("Enter a rational number:")
    print("Numerator: ")
```

```
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10> scala "d:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practic
als\Practical 10\Q1.scala"
Enter a rational number:
Numerator: 1
Denominator: 2
x = 1/2
x.neg = -1/2
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10> scalac q1.scala
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10> scalac Q1.scala
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10> scala Q1
Enter a rational number:
Numerator: -2
Denominator: 3
x = -2/3
x.neg = 2/3
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10> 
```

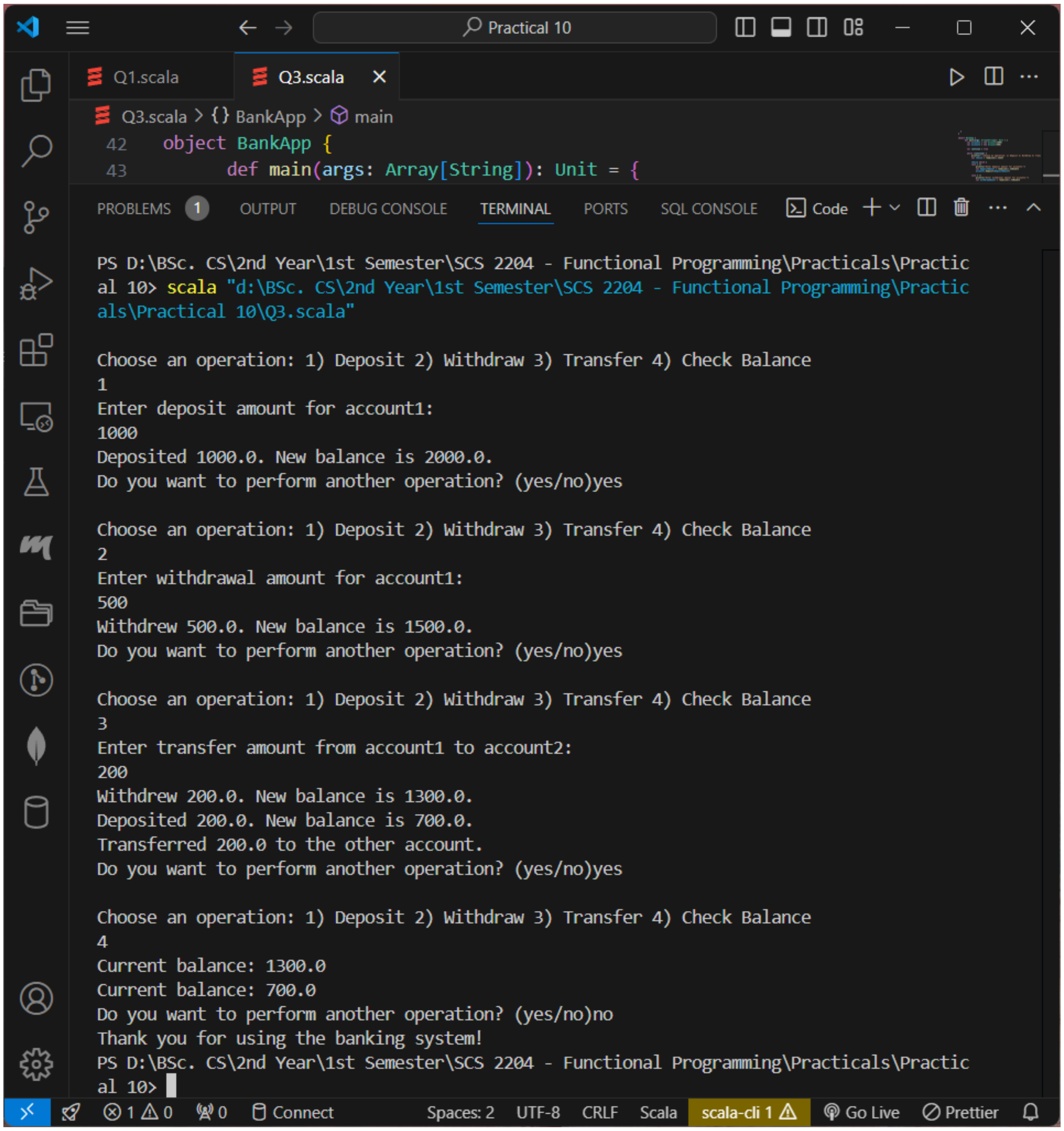
Question 02:



```scala
object Q2{

  case class Rational(numerator: Int, denominator: Int) {

    private def gcd(a: Int, b: Int): Int = if (b == 0) a else gcd(b, a % b
    private val g = gcd(numerator, denominator)
    val num: Int = numerator / g
    val den: Int = denominator / g
```

```
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10> scala "c:\Users\Nalan Tishantha\AppData\Local\Microsoft\Windows\INetCache\IE\SL67
UXCZ\Q2[1].scala"
Result of y - z: 26/45
Final expression x + (y - z): 31/180
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10>
```

Question 03:



Practical 10

Q1.scala Q3.scala

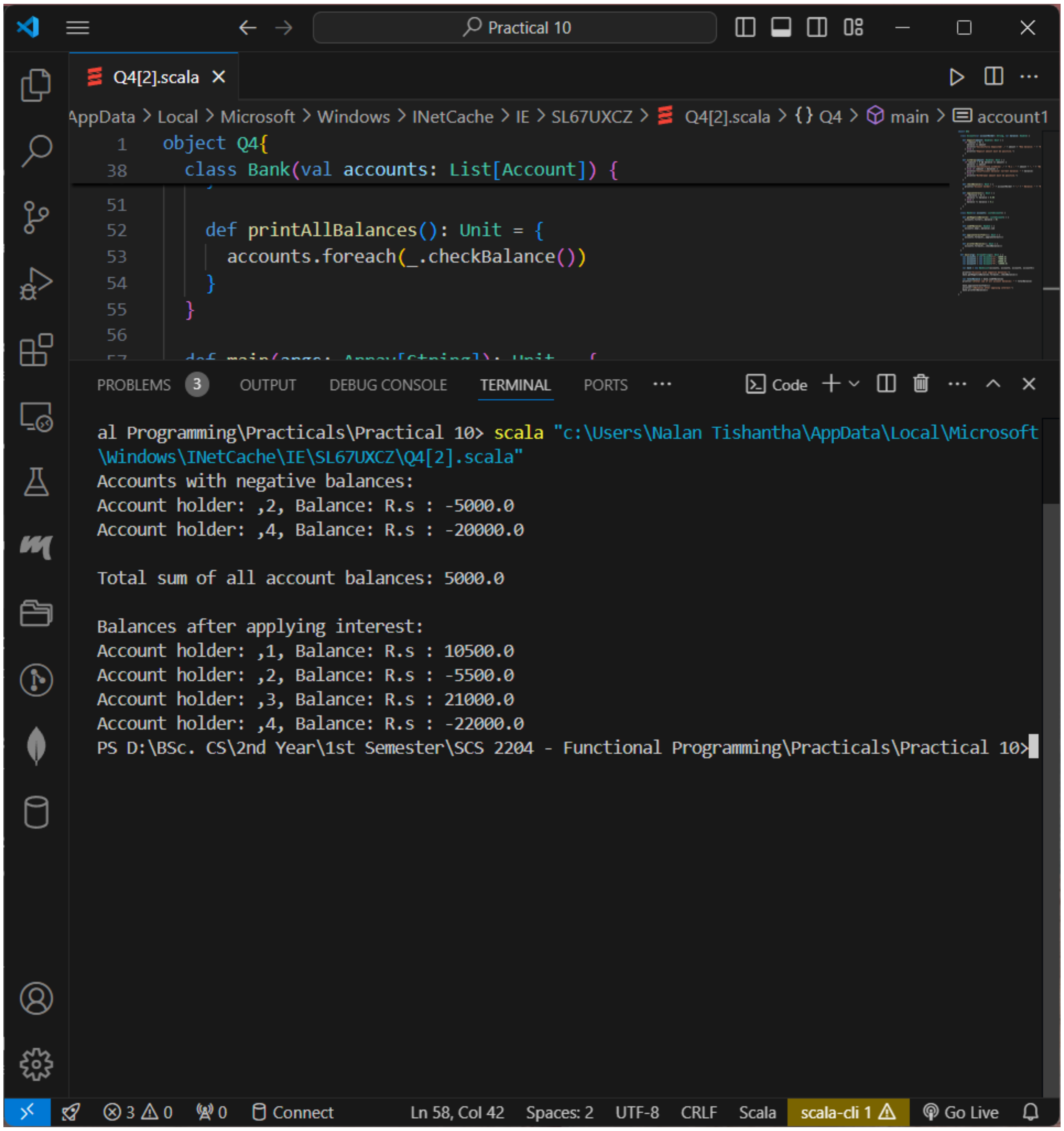
Q3.scala > {} BankApp > main

```
object BankApp {
    def main(args: Array[String]): Unit = {
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS SQL CONSOLE Code

```
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10> scala "d:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practic
als\Practical 10\Q3.scala"

Choose an operation: 1) Deposit 2) Withdraw 3) Transfer 4) Check Balance
1
Enter deposit amount for account1:
1000
Deposited 1000.0. New balance is 2000.0.
Do you want to perform another operation? (yes/no)yes

Choose an operation: 1) Deposit 2) Withdraw 3) Transfer 4) Check Balance
2
Enter withdrawal amount for account1:
500
Withdrew 500.0. New balance is 1500.0.
Do you want to perform another operation? (yes/no)yes

Choose an operation: 1) Deposit 2) Withdraw 3) Transfer 4) Check Balance
3
Enter transfer amount from account1 to account2:
200
Withdrew 200.0. New balance is 1300.0.
Deposited 200.0. New balance is 700.0.
Transferred 200.0 to the other account.
Do you want to perform another operation? (yes/no)yes

Choose an operation: 1) Deposit 2) Withdraw 3) Transfer 4) Check Balance
4
Current balance: 1300.0
Current balance: 700.0
Do you want to perform another operation? (yes/no)no
Thank you for using the banking system!
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10>
```

Question 04:



Practical 10

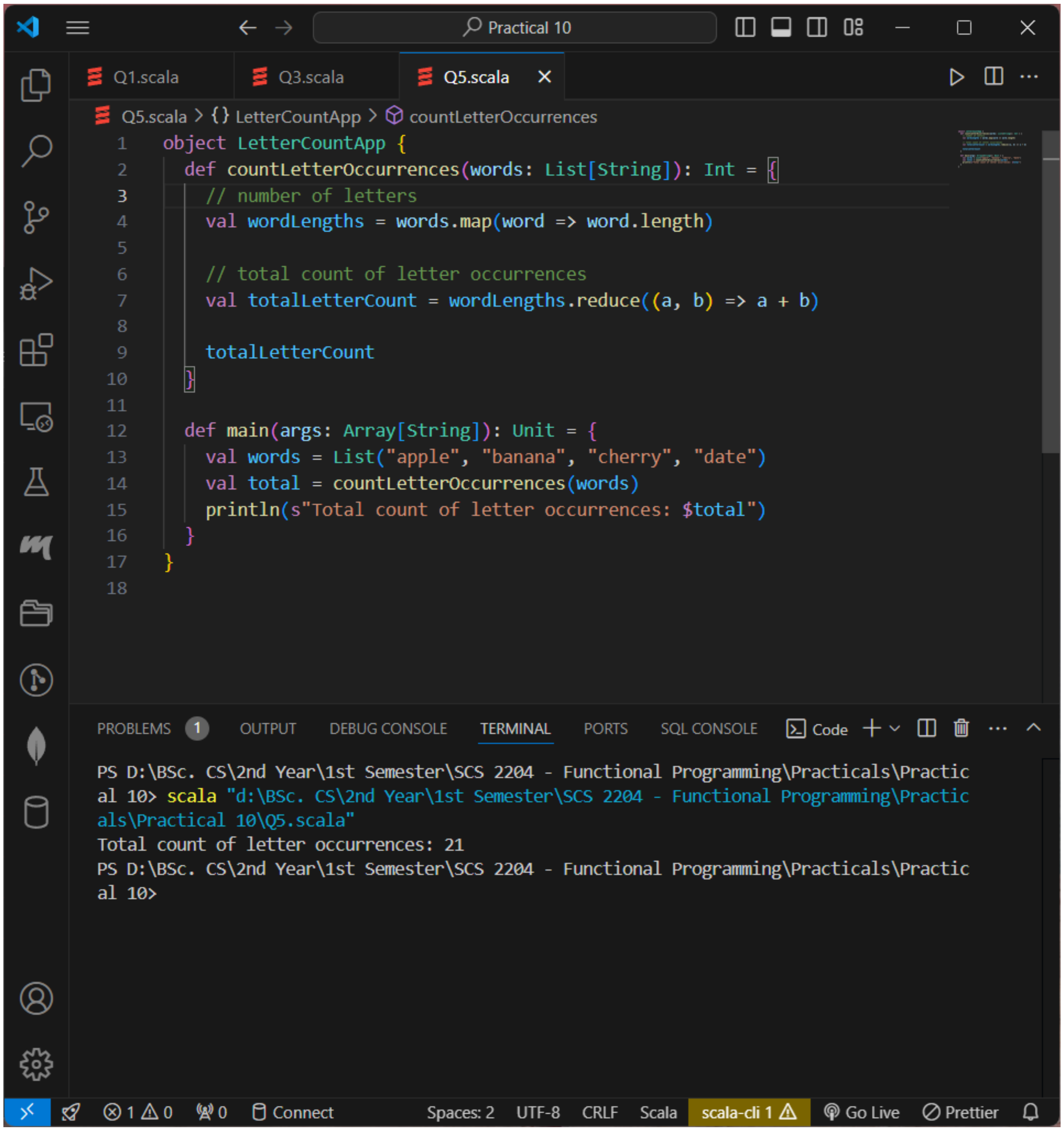
Q4[2].scala

AppData > Local > Microsoft > Windows > INetCache > IE > SL67UXCZ > Q4[2].scala > {} Q4 > main > account1

```scala
object Q4{
  class Bank(val accounts: List[Account]) {

    def printAllBalances(): Unit = {
      accounts.foreach(_.checkBalance())
    }
  }

```

```
al Programming\Practicals\Practical 10> scala "c:\Users\Nalan Tishantha\AppData\Local\Microsoft
\Windows\INetCache\IE\SL67UXCZ\Q4[2].scala"
Accounts with negative balances:
Account holder: ,2, Balance: R.s : -5000.0
Account holder: ,4, Balance: R.s : -20000.0

Total sum of all account balances: 5000.0

Balances after applying interest:
Account holder: ,1, Balance: R.s : 10500.0
Account holder: ,2, Balance: R.s : -5500.0
Account holder: ,3, Balance: R.s : 21000.0
Account holder: ,4, Balance: R.s : -22000.0
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practical 10>
```

Question 05:



```scala
object LetterCountApp {
  def countLetterOccurrences(words: List[String]): Int = {
    // number of letters
    val wordLengths = words.map(word => word.length)

    // total count of letter occurrences
    val totalLetterCount = wordLengths.reduce((a, b) => a + b)

    totalLetterCount
  }

  def main(args: Array[String]): Unit = {
    val words = List("apple", "banana", "cherry", "date")
    val total = countLetterOccurrences(words)
    println(s"Total count of letter occurrences: $total")
  }
}
```

```
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10> scala "d:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practic
als\Practical 10\Q5.scala"
Total count of letter occurrences: 21
PS D:\BSc. CS\2nd Year\1st Semester\SCS 2204 - Functional Programming\Practicals\Practic
al 10>
```