

Problem Based Learning 14

Topic : File Handling

1. A country has a number of banks. There are cash dispensers all over the country. Each bank is responsible for a number of dispensers.

(i)

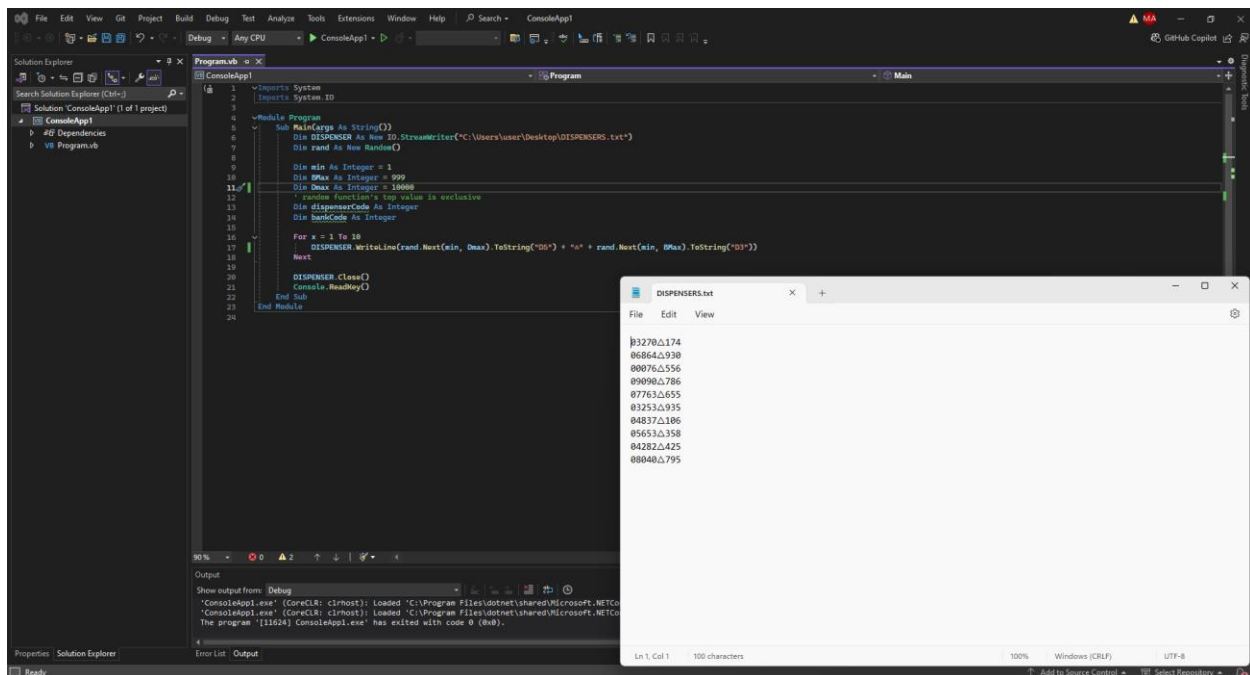
- banks have a three digit code in the range 001 – 999
- each dispenser has a five digit code in the range 00001 – 99999

A text file, DISPENSERS, is to be created.

It has one line of text for each dispenser. For example: 00342▼007.

This line in the file is the data for dispenser 00342 which belongs to bank 007.

Write a program to create the file and store 10 records in the given format as per the question.



The screenshot shows a Visual Studio IDE with a C# console application. The code in Program.cs creates a text file named DISPENSERS.txt on the desktop. It uses a StreamWriter to write 10 lines of data. Each line consists of a bank code (three digits) followed by a separator (▼) and a dispenser code (five digits). The bank codes are generated by rand.Next(1, 1000) and the dispenser codes by rand.Next(1, 100000). The output window shows the following data:

```
03270,174
06064,930
00076,556
09090,786
07763,655
03253,935
04837,106
05653,358
04282,425
08040,795
```

- (ii) Write the program to do the following:

A new program is to be written to search the file.

The program will:

- input a bank code
- output a list of all the dispensers which belong to this bank
- output the total number of dispensers for this bank

An example of a run of the program is shown:

Enter bank code 007

00001

00011

00022

00026

00027

There are 5 dispensers for this bank

00001▼007

00002▼001

00003▼002

00004▼003

00005▼101

00006▼004

00007▼004

⌵

00024▼002

00025▼003

00026▼007

00027▼007

00028▼102

⌵

99867▼013

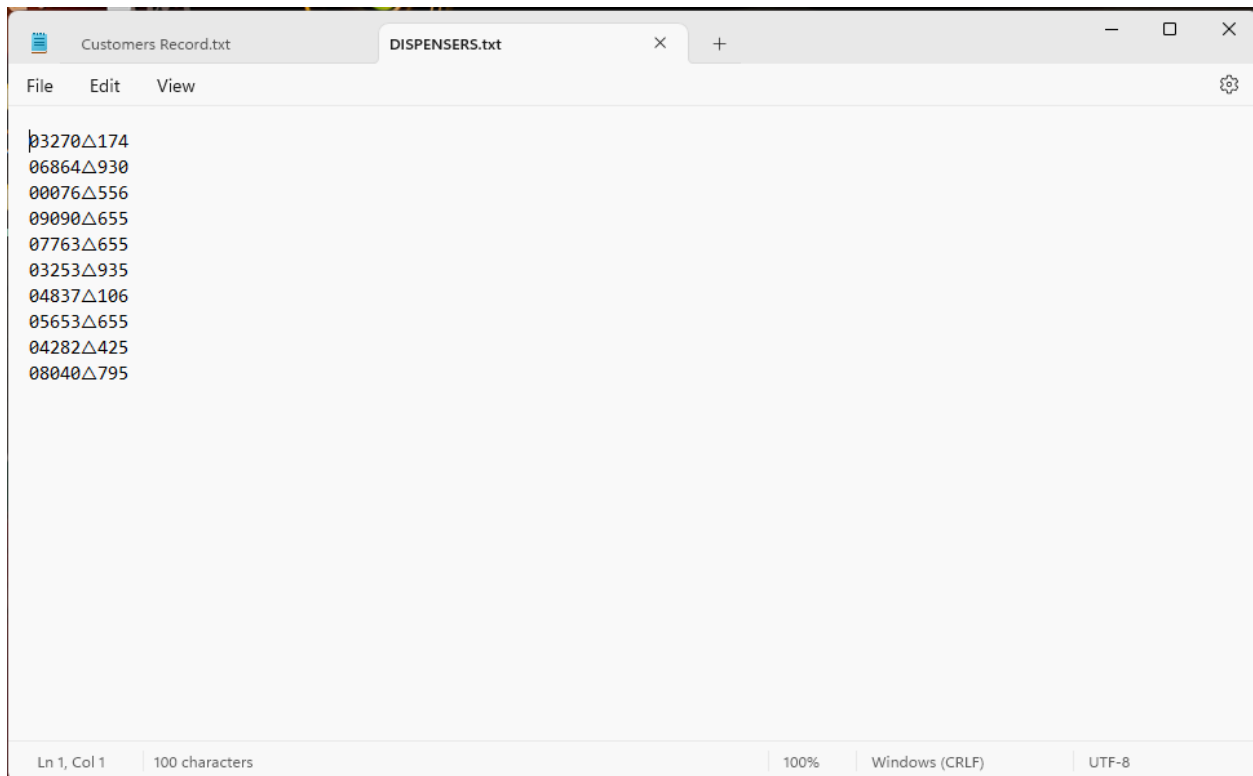
Answer for Question 2:

The screenshot shows a Visual Studio IDE with a C# program in the left pane and its console output in the right pane. The program, named `Program.cs`, is a console application that reads a file `DISPENSERS.txt` and searches for dispensers belonging to a specific bank code entered by the user.

```
1 Imports System
2 Imports System.IO
3
4 Module Program
5     Sub Main(args As String())
6         Dim file As New IO.StreamReader("C:\Users\user\Desktop\DISPENSERS.txt")
7         Dim total As Integer = 0
8         Dim lineData As String
9         Console.WriteLine("Enter your bank number: ")
10        Dim bankNum As String = Console.ReadLine()
11
12        While file.Peek() >= 0
13            lineData = file.ReadLine()
14            Dim bankCode As String = lineData.Substring(lineData.Length - 3)
15            Dim dispenserCode As String = lineData.Substring(0, 4)
16            If (bankCode = bankNum) Then
17                Console.WriteLine(dispenserCode)
18                total += 1
19            End If
20        End While
21
22        Console.WriteLine($"There are a total of {total} dispensers for this bank.")
23        file.Close()
24        Console.ReadKey()
25    End Sub
26 End Module
```

The console output shows the user entering the bank number `655`, followed by the list of dispenser codes: `0909`, `0776`, and `0565`. The program then outputs: "There are a total of 3 dispensers for this bank."

.txt file



2. A car hire company hires cars to customers. Each time a car is hired, this is treated as a transaction.

For each transaction, the following data are stored.

For the customer:

- customer name
- ID number

The customer data are stored in a text file CUST-INFO.

For the hire:

- car registration
- hire start date
- number of days hired

The transaction data are stored in a text file HIRE-TRANS.

Write a program that will store the data for 5 new customers and 5 hire transactions.

```
Program.vb* x
ConsoleApp3
Imports System
Imports System.IO

Module Program
    Sub Main(args As String())
        Dim customerFilePath As String = "C:\Users\user\Desktop\CUST-INFO.txt"

        Dim transactionFilePath As String = "C:\Users\user\Desktop\HIRE-TRANS.txt"

        Dim customerFile As New StreamWriter(customerFilePath)
        Dim transactionFile As New StreamWriter(transactionFilePath)

        Dim customers(4) As Customer
        Dim transactions(4) As Transaction
        ' as classes

        For i As Integer = 0 To 4
            Console.WriteLine($"Enter details for Customer {i + 1}:")
            Console.WriteLine("Name: ")
            Dim name As String = Console.ReadLine()

            Console.WriteLine("ID Number: ")
            Dim idNumber As String = Console.ReadLine()

            customers(i) = New Customer(name, idNumber)
            customerFile.WriteLine($"{name},{idNumber}")
        Next

        For i As Integer = 0 To 4
            Console.WriteLine($"Enter details for Hire Transaction {i + 1}:")
            Console.WriteLine("Car Registration: ")
            Dim carRegistration As String = Console.ReadLine()
            Console.WriteLine("Hire Start Date: ")
            Dim startDate As String = Console.ReadLine()
        Next
    End Sub
End Module
```

3. A theatre company stores customer login details to allow customers to book tickets online.

Each customer's details are stored in a record.

The declaration for CustomerRecord is:

TYPE CustomerRecord

DECLARE UserID : STRING

DECLARE PINNumber : INTEGER

ENDTYPE

A 1D array, CustomerDetails, is used to to store the data.

Write a program to store details of 5 customers.

(Next Page)

```
Debug - Any CPU - Continue - [19548] Main Thread - Stack Frame: Question_3_for_PBL_14.Program.Main
Program.vb - Question 3 for PBL 14 - Program - Main
5 Sub Main(args As String())
6 Dim record As New StreamWriter("C:\Users\user\Desktop\Customers Record.txt")
7 Dim UserId As Integer
8 Dim PIN As Integer
9
10 Dim Cdetails(15) As String
11 Dim CD As Integer = 0
12 Console.WriteLine("Enter the following data")
13 For x = 1 To 5
14
15     Console.WriteLine("Customer name: ")
16     Cdetails(CD) = Console.ReadLine().ToString()
17     record.WriteLine("Customer name: " & Cdetails(CD) & ", ")
18     CD += 1
19
20     Console.WriteLine("Customer ID: ")
21     Cdetails(CD) = Console.ReadLine().ToString()
22     record.WriteLine("Customer ID: " & Cdetails(CD) & ", ")
23     CD += 1
24
25     Console.WriteLine("Customer PIN: ")
26     Cdetails(CD) = Console.ReadLine().ToString()
27     record.WriteLine("Customer PIN: " & Cdetails(CD))
28     CD += 1
29
30     record.WriteLine() ' Move to the next line after each customer's data for visual purposes only
31     Console.WriteLine() ' Formatting
32     If (x < 5) Then
33         Console.WriteLine($"Now processing Customer {x + 1}")
34     End If
35
36 Next
37
38 record.Close()
39 Console.ReadKey()
```

C:\Users\user\Desktop\Progr...
Enter the following data
Customer name: Wen Jun
Customer ID: 0001
Customer PIN: 38503

Now processing Customer 2
Customer name: Max
Customer ID: 0002
Customer PIN: 48204

Now processing Customer 3
Customer name: Arshaq
Customer ID: 0003
Customer PIN: 45911

Now processing Customer 4
Customer name: Shaun
Customer ID: 0004
Customer PIN: 294022

Now processing Customer 5
Customer name: Mathew
Customer ID: 0005
Customer PIN: 12121

.txt file

```
Customers Record.txt - DISPENSERS.txt
File Edit View
Customer name: Wen Jun , Customer ID: 0001, Customer PIN: 38503
Customer name: Max , Customer ID: 0002, Customer PIN: 48204
Customer name: Arshaq, Customer ID: 0003, Customer PIN: 45911
Customer name: Shaun, Customer ID: 0004, Customer PIN: 294022
Customer name: Mathew, Customer ID: 0005, Customer PIN: 12121
Ln 2, Col 10 | 310 characters | 100% | Windows (CRLF) | UTF-8
```

