

Trent University
COIS1020H
Winter 2022
Assignment 3
Due: March 4, 2022

Write a C# program to do help manage your credit card debt. The `Main` method is to repeatedly prompt the user to enter a transaction code (*char*) which could be 'B' or 'b' to buy an item using the credit card, 'c' or 'C' to make a cash withdrawal from the credit card, 'p' or 'P' to make a payment on the credit card, 'D' or 'd' to display the balance of the credit card, and 'q' or 'Q' to quit. You can assume that the initial balance on the credit card is \$0.00.

Using a *switch* statement in the *do-while* loop on `Main`, select the appropriate action and call (invoke) the appropriate user-defined method. The `Main` method should continue accepting transactions until the user enters a 'Q' or 'q'.

Your C# program is to have the following user-defined methods:

- (i) A method call `ReadAmount` which takes no formal parameters but returns a non-negative value of type *double* representing the cost of an item, the amount of cash withdrawn, or the amount of a payment. `ReadAmount` is to be invoked by `Main()` when the user chooses to buy an item ('B' or 'b'), make a cash withdrawal ('c' or 'C'), or make a payment ('p' or 'P'). The `ReadAmount` method is to prompt the user to enter an amount, 0validate that it is non-negative with a loop, and then return the non-negative value. The method header should look like:

```
public static double ReadAmount()
```

- (ii) A *void* method called `BuyAnItem` which accepts one *call by value* formal parameter of type *double* (the amount of the item) and one *call by reference* formal parameter of type *double* (the balance on the credit card). `BuyAnItem` first applies the HST (13%) to the amount of the item and then determines if there is enough credit remaining on the card to allow the purchase to complete. If there is, add the amount of the purchase (plus HST) to update the balance of the credit card. If not, it will print an error message indicating that the purchase could not complete as it would put the credit card over its limit. Assume that the limit on the credit card is \$2000 (a constant). The method header should look like:

```
public static void BuyAnItem(double itemAmt, ref double ccBalance)
```

- (iii) A *void* function called `CashWithdrawal` which accepts one *call by value* formal parameter of type *double* (the amount of the cash withdrawal) and one *call by reference* formal parameter of type *double* (the credit card balance). `CashWithdrawal` adds the amount of the cash withdrawal plus a \$3.50 service charge (use a constant) to the credit card balance if this amount (including service charge) does not exceed the credit card limit (\$2000). If the amount of the cash withdrawal plus the service charge does exceed the credit limit, print an error message that the cash withdrawal transaction could not be completed as the limit on the credit card would be reached. The method header should look like:

```
public static void CashWithdrawal(double cashAmt, ref double ccBalance)
```

- (iv) A *void* function called `MakePayment` which accepts one *call by value* formal parameter of type *double* (the amount of the payment) and one *call by reference* formal parameter of type *double* (the credit card balance). `MakePayment` simply subtracts the amount of the payment from the credit card balance (it is fine to have a negative credit card balance). The method header should look like:

```
public static void MakePayment(double payAmt, ref double ccBalance)
```

- (iv) A *void* function called `Display` which takes one *call by value* formal parameter of type *double* which contains the credit card balance and then prints it out in a nice fashion. The method header should look like:

```
public static void Display(double ccBalance)
```

For this assignment, you are to submit a properly documented source code file (i.e. .cs file). This source code file is to include comments at the top containing your name, student number, a description of the program, data dictionary, and comments within the body of your program (inline comments). You are also required to have comments at the top of each user-defined method stating what the method does and a data dictionary that includes formal parameters, local identifiers, and return values (if any). You are required to submit a PDF of your testing documentation using the template that is provided on BlackBoard. Failure to use the testing template or submit as a PDF could result in a 0 for the testing component of the assignment.

These 2 files are to be attached to the Assignment 3 DropBox by the due date.