

**VANCOUVER ISLAND UNIVERSITY**  
**CSCI 112 — Midterm EXAMINATION**  
**11 October 2018, 10:00 — 11:20**

**Duration:** 80 Minutes

**Instructor:** H. Liu

TO BE ANSWERED IN BOOKLETS

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**Instructions**

- There are 4 pages in this exam.
  - Students must count the number of pages in this examination paper before beginning to write, and report any discrepancy immediately to the invigilator.
  - Remember to state any assumptions and show rough work.
  - Note carefully the weight of each question, and answer appropriately.
  - Attempt all questions. All questions relate to material covered in the lectures, labs and exercises.
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1. (8 Marks) Answer the following questions clearly and briefly.
  - (a) In a VBA program, how do you indicate that a line is a comment line? How would the comment lines in a program be treated when the program is executed?
  - (b) What is the advantage and disadvantage of including "Option Explicit" in a VBA program?
  - (c) Explain the syntactic and semantic differences between a relative cell reference and an absolute cell reference in the context of being used in a formula entered into a cell in an Excel worksheet cell. (You can use examples in your explanation.)
  - (d) What are the (at least two) syntax errors in the following block of VBA statements:

```
Dim subTotal As Double
Dim charge As Double
subTotal = "1.58"
subTotal * 1.12 = charge
```

2. (7 Marks) Given the following syntactically and semantically correct VBA program:

```
Option Explicit
Sub Awards()
    Dim totalParticipants as Integer
    Dim yourPosition as Integer
    totalParticipants = Cells(5, "D")
    yourPosition = Cells(37, "B")
    Select Case yourPosition/totalParticipants ' / gives a real number
        case Is <= 0
            MsgBox "Something is wrong!"
        case 0 to 0.05
            MsgBox "You are at the top 5 percent! Gold Award!"
        case 0.15 to 0.30
            MsgBox "You are at the top 30 percent! Bronze Award!"
        case 0.05 to 0.15
            MsgBox "You are at the top 15 percent! Silver Award!"
        case Else
            MsgBox "Thank you for your participation!"
    End Select
End Sub
```

Re-write the above program to an equivalent one (behaviour wise) without using select-case statement.

3. (10 Marks) When you purchase a bus ticket from Vancouver Translink, the price of the ticket depends on how many zones you are crossing. And if you purchase a day pass, the price would be the same for all zones. On top of this, some people (such as youth and seniors) pay concession rate instead of the regular rate.

In the parameter area of an Excel worksheet, the Vancouver Translink stores the following fare information (Note the first column is the row numbers and the first row is the column names):

	A	B	C	D
1		Zones	Regular	Concession
2	Ticket	1	\$2.95	\$1.90
3	Ticket	2	\$4.20	\$2.90
4	Ticket	3	\$5.70	\$3.90
5	Day Pass	All	\$10.25	\$8.00

Your task is to write a VBA program that does the following:

- First ask whether a customer wants to buy a ticket or a day pass using input box, then ask the customer the number of zones he/she needs to cross if he/she chooses to buy a ticket, finally ask whether the customer pays at the regular rate or the concession rate.
- Second, decide the amount of payment the customer should be charged based on the user input and the fare information from the parameter area.
- Third, display the result using a message box.
- Finally, record the user input (ticket type, zones, payment rate type) and the fare charge into the row where the Active Cell is placed, starting from the Active Cell and moving to the right respectively.

For the purpose of this exam, you can safely assume that the user always enters reasonable data to your program, such as “ticket” and “day pass” for the ticket type, “regular” and “concession” for the rate type, numerical number for the number of zones, etc.

4. A School Photo Store takes kids' school photos and offers its customers the following package choices (each includes a set of photos of different sizes):

- Deluxe package, priced at \$36
- Value package, priced at \$31, and
- Premium package, priced at \$45.

Once the customer selects a package, he/she can order more individual photos with the following price: photos sized 8 by 10 (priced at \$12 each) and photos sized 5 by 7 (priced at \$6 each).

Finally, the customer can choose whether to apply photo retouching (priced at \$8) on the ordered photos.

You are asked to do the following three tasks:

(a) (10 marks) Design a userform to collect the following order information from the customer:

- the type of the package selected by the customer;
- any extra photo orders, including the type and the number of the photos;
- whether the customer wants to apply photo retouching.

And the userform should have two command buttons, captioned "Calculate Charge" and "Clear Choices" respectively.

**Draw a rough picture to show the userform and its controls. For each control, clearly indicate its name, type, and caption.**

(b) (10 marks) Write a VBA subroutine to handle the command button click event of clicking the command button captioned "Calculate Charge".

This subroutine should calculate the final charge for the customer based on the information provided by the customer through the controls and display the result with an appropriate message using message box.

In your subroutine, you should handle the following input errors by displaying appropriate error messages:

- Customer entered a non-numerical data for the number of extra photos if you use textbox to collect this information.
- Customer entered a negative number for the number of extra photos if you use textbox to collect this information.
- Customer forgot to select the type of the package.

(c) (5 marks) Write a VBA subroutine to handle the command button click event of clicking the command button captioned "Clear Choices".

This subroutine should make sure that none of the packages are selected, the numbers of both extra photos selected are zero (0), and the photo retouching is not selected.

===== END OF EXAM QUESTIONS =====