

VANCOUVER ISLAND UNIVERSITY
CSCI 112 — Midterm EXAMINATION
29 October 2015, 10:00 — 11:20

Duration: 80 Minutes

Instructor: H. Liu

TO BE ANSWERED IN BOOKLETS

Instructions

- There are 3 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. (10 marks) The following table gives the terms used by the National Weather Service to describe the degree of cloudiness.

Percentage of Cloud Cover	Descriptor
0 - 30	clear
31 - 70	partly cloudy
71 - 99	cloudy
100	overcast

Write a VBA program that requests the percentage of cloud cover as input and then displays the appropriate descriptor.

You can use the function `InputBox` to read in user's input. If you feel more comfortable to use a userform, describe the name and type of the control(s) first, then develop your VBA program.

For this program, you are allowed to use literal values and you can safely assume that the input (the percentage of cloud cover) entered by the user would be a number between 0 to 100.

2. (4 marks) Explain why $(27 > 9)$ is true, whereas $(\text{"27"} > \text{"9"})$ is false.
3. (4 marks) Write a Boolean expression to express the condition that “the sum of a and b falls within the range of 0 and 100, inclusive”.
4. (4 marks) What is the difference between a set of option buttons in a frame and a set of check boxes in a frame?

5. (8 marks) The following table shows the raw data stored in an Excel worksheet (with row numbers and column names).

	A	B	C	D	E	F
1	Book Unit Price	15.25		GST Rate	0.05	
2						
3	Buyer	Mary	Justin	Jane	Austin	
4	Book Copies	15	44	25	31	
5	Pre-tax Charge					
6	Tax					
7	Total Charge					

- (a) The following three formula (entered into column B) calculate the pre-tax charge, tax and total charge for Buyer Mary. Make sure that your formula can be copied and pasted into column C, D and E for Buyer Justin, Jane and Austin respectively without the need to manually modify the formula.
- i. In the cell B5, enter a formula to calculate the pre-tax charge (as Book Price times Book Copies) for May.
 - ii. In the cell B6, calculate the tax amount (as Pre-tax Charge times GST Rate) for May.
 - iii. In the cell B7, calculate the total charge (as Pre-tax Charge plus Tax) for May.
- (b) In the cell F4, enter a formula that displays the total number of copies sold to all four buyers. Make sure that your formula can be copied and pasted into row 5, 6 and 7 respectively for pre-tax charge, tax and total charge without the need to manually modify the formula.
6. (10 marks) In Canada, some antique cars' speedometers still work in miles per hour. The formula for converting miles per hour to kilometers per hour is:

$$\text{KPH} = \text{MPH} * 1.6$$

In the formula, KPH is the speed in kilometers per hour and MPH is the speed in miles per hour. You are asked to write a VBA program that displays a list of speeds in miles per hour with their values converted to kilometers per hour. The list should display the speeds from 10 miles per hour through 100 miles per hour, in increments of 5 miles per hour. The list should be displayed in an Excel worksheet. The speed in miles per hour should be shown in column A and the speed in kilometers per hour should be shown in column B. Row 1 should be the title row and the data should be shown starting from row 2.

7. (10 marks) A package delivery company charge for the delivery according to the package destination types and weight of the package. There are two types of packages, domestic and international. The unit price per kilogram is listed in an Excel worksheet from cell A1 to C3, as shown in the following table.

	A	B	C
1		0 to 5 kilogram	> 5 kilogram
2	Domestic	1.2	1.5
3	International	2.5	3.0

A userform has been designed and created to include the following controls:

- a text box, named as packageWeightBox, for the user to enter the weight of a package;
- two option buttons in a frame captioned as “Package Type”. One option button is named as domesticBtn and captioned as “Domestic package”; the other option button is named as internationalBtn and captioned as “International package”.
- a command button named as calculationCmd and captioned as “Calculate Charge”.

Write a VBA program to handle the command button click event. The calculated result should be displayed using a message box. There is **no** need to save any data. Your program should handle the following user input errors by displaying appropriate error messages:

- User enters a non-numerical data into the packageWeightBox;
- User enters a negative number or 0 into the packageWeightBox;
- User forgets to select the package type.

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