Lab Document and Questions
Name: Key

Lab #4, 09/19/2013
WFU Username: Key

## CSC 111E: Lab #4 – If...Then Statements/Instructions

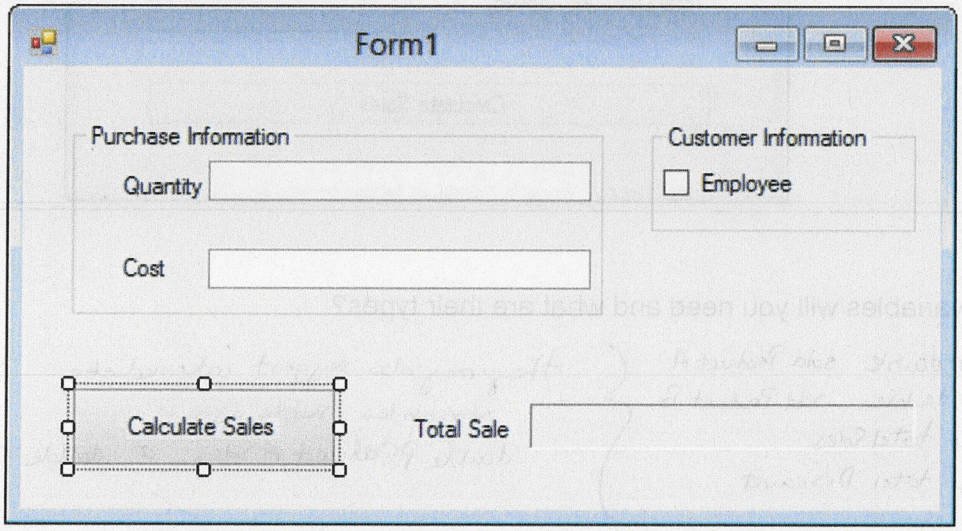
Lab Date: Thursday, 09/19/2013 Due Date: Friday, 09/20/2013 @ 5:00pm

*Purpose:* The purpose of this lab is to have you gain experience using Boolean expressions, if-then, and if-then-else statements, as well as to introduce the CheckBox control. You will write three small programs – I have already designed the interfaces; you will write the instructions as event handlers to read input data from the GUI, process the data, and write output to the GUI.

*Program 1: Using the CheckBox Control*

The CheckBox control allows one to include within a Visual Basic program a control that can be *checked* or *unchecked*, which we can consider as effectively a source of a Boolean value. To test the state of a CheckBox, you can query its *Checked* property which will either have the value *True* or the value *False*.

Your job is to complete the program (the screen design is shown below) which allows one to enter the cost and quantity of an item purchased and to conditionally apply an Employee discount of 20% if the Employee CheckBox has been set to the Checked True state. The design window of the application can be downloaded from Sakai as project Lab4Part1.zip.




**Question 1:**

A. What variables will you need and what are their types?

double quantity
double cost
Boolean checked(?) ← this would be ok, but in reality they can just check the control's property w/o a seperate variable

double total Sale

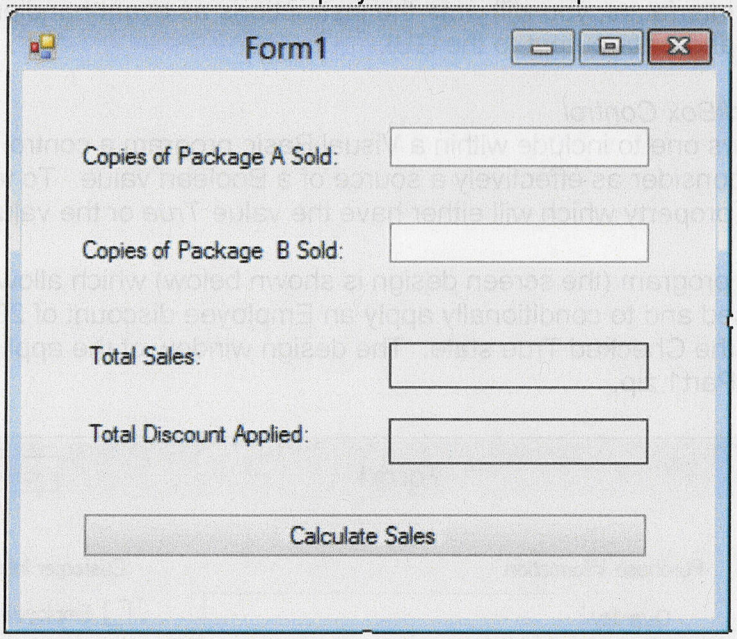
} most students should answer these variables representing data from GUI need to manipulate

B. To test your program, you should try at least two data sets – one with Employee checked and one without. Write down two test data sets (values for quantity, cost, and employee) you chose, the expected output, and the actual output. If you find an error, fix it!

just make sure two reasonable sets

*Program 2: Software Sales*

A software company sells two packages (Package A and Package B) for $100.00 and $200.00 respectively. If more than 20 copies of a particular package are purchased, the customer receives a 30% discount for that package. Discounts are applied per package – that is, if a customer buys 25 copies of Package A and 10 of Package B, that customer receives a 30% discount only on the Package A costs but pays full price for Package B. Your job is to complete the application whose design is shown below, which allows the user to enter the number of units sold for each package and outputs the total cost (for all packages, with appropriate discounts included). Before you develop your solution, answer the questions on this page. The design window of the application can be downloaded from Sakai as project Lab4Part2.zip




**Question 2:**

A. What variables will you need and what are their types?

int or double soldProductA
int or double soldProductB
double totalSales
double totalDiscount

} they may also suggest intermediate variables such as double productASales or double productBDiscount

B. Provide two example test data, the associated expected output, and the actual output you see. Make sure your choices have you visit two different execution paths. Fix any errors you find.

any reasonable set w/ two different execution paths
(ie one w/ no discount applied, one w/ both discounts applied)

C. Suggest a minimum number of execution paths we should be checking to have a sense we are covering the range of possible paths. Provide a rationale behind your answer.

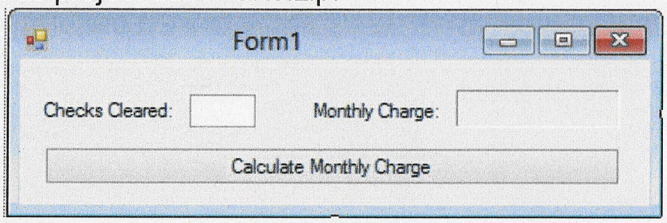
at least 4: no discounts
product A discount only
product B discount only
both discounts

*Program 3: Bank Charges*

A bank charges $10.00 per month to have a commercial checking account, plus a cost per check processed, with the cost per check set depending on the total number of checks used in a given month. The cost per check is provided in the table below:

| Number of checks | Cost per check |
|---|---|
| Fewer than 20 checks | $0.10 |
| 20 through 39 checks | $0.08 |
| 40 through 59 checks | $0.06 |
| More than 60 checks | $0.04 |

The program you should complete appears as follows. The design window of the application can be downloaded from Sakai as project Lab4Part3.zip.




**Question 3:**

A. What variables will you need and what are their types?

numberOfChecksCleared as integer
monthlyCharge as double

} they may suggest intermediate variables too, such as baseCharge as double

Consider this

B. ~~The book provides the following~~ test data and expected output:

| Number of checks | Total Fees |
|---|---|
| 15 | 11.50 |
| 25 | 12.00 |
| 35 | 12.80 |
| 75 | 13.00 |

Argue for whether or not this test set encompasses an example for each possible execution path for the program.

No it doesn't - does not test the 40→59 code

*Submission*

To submit this lab for grading, you need to do TWO things by Friday, 9/20 at 5pm:

- Submit the answers to the questions on this lab document to Prof. Turkett
- Zip each of the three projects separately and upload the projects into Sakai under the Assignments, Lab4 link.

Your grade will be based 49 points on the questions (7points each) in this lab document and 51 points on the code you submit (15 points for the first problem, 18 for problems two and three).