Lab03

Objectives

- to use Visual Studio and Visual Basic 2013 to create and run a simple program

Topics

- String and number variables
- User input: strings and numbers — function int()
- Assignment statements
- Evaluating expressions
- Creating output strings by parsing variables and literals: functions str()
- New material for students to learn via online resources: Using format Strings in Python
- New material for students to learn via online resources: function random()

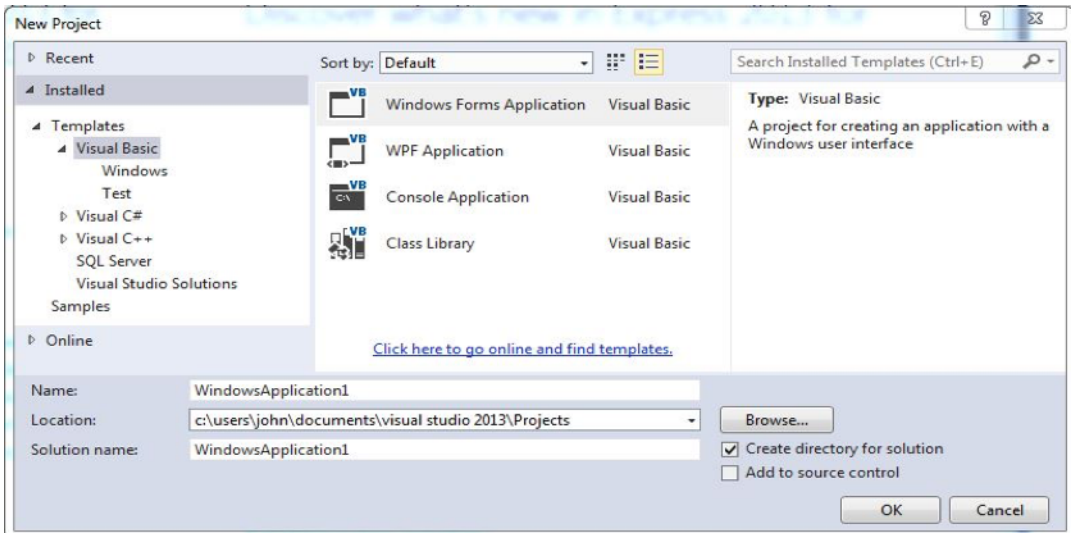
Preliminaries

1. Get a copy of this lab folder from the N: network drive
2. Go to folder `N:\Classes\CS130\labs` and copy and paste the folder for today's lab (i.e., Lab03) to `M:\CS130\labs`
3. You may now work locally by opening the write-up from within the copied folder. (The write-up is the current document you are reading.)
4. For future labs, you may start by copying the proper lab folder right away.

Part 1

1. Launch Visual Basic 2013 by clicking on the start button. Select All Apps > Visual Studio 2013 > VS Express 2013 for Desktop. Visual Studio is a platform that can be used with many different programming languages. In this course we will be programming in Visual Basic 2013.
2. If you start VS Express 2013 and are asked to sign in, you can sign in using your CSBSJU email address as your username and your CSBSJU Windows account password.

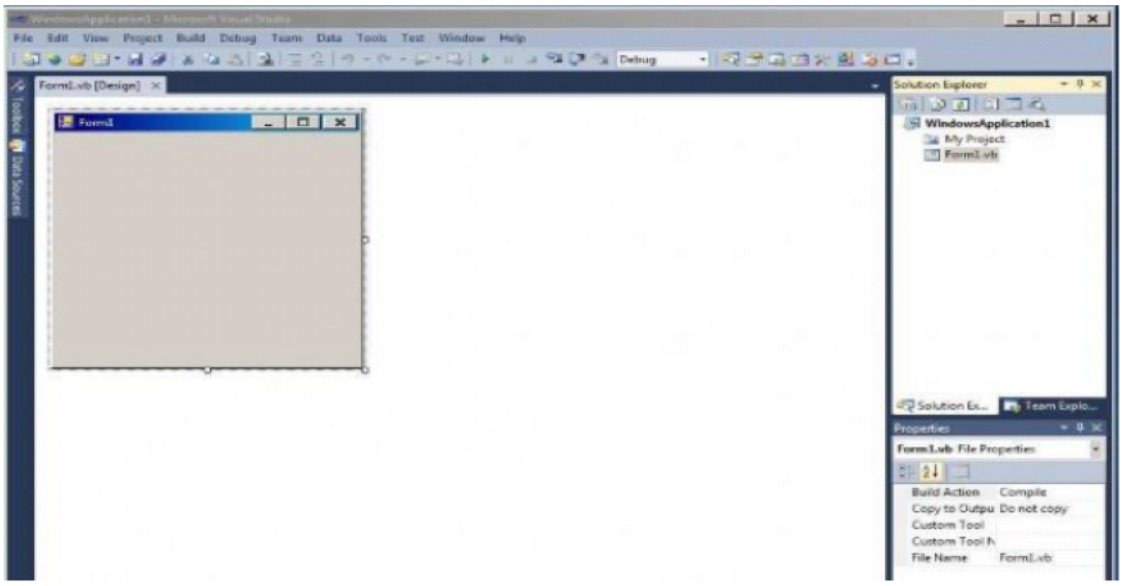
   Make sure that you select work or school account and not personal account.
3. To create a new VB project, choose "New Project" from the menu. You will see a screen like the one below.



Make sure that Visual Basic has been highlighted under the Templates tab to indicate the language you will use and Windows Forms Application is chosen as the type of project. Those choices may be the default, but it they are not, you can choose the language and type of project to create. Once you have made your initial choice to work in Visual Basic (VB), the next time you start Visual Studio, it will launch right into the VB environment.

Give your project a name right away in the **Name:** pane at the bottom of the window. For this project, type in Lab03 for the name. Now, use the **Browse** button to select the desired **Location:** (folder), you wish to save your project in. You will always save your projects on your **M:** drive. Do not edit the "Solution name:" pane as it will be automatically filled in with the name of the project. *Uncheck* the **Create directory for solution** box in the lower right. Click **OK** to begin your new project. This will bring up a window with a new, blank form and several other panels with information about the project as you can see in the next figure.

At the top of the window is the menu bar and just below it is the toolbar. Using choices from either the menu or the toolbar will allow you to do a variety of things to your project or form. The tool bar below has icons for the most common functions, such as beginning a new project, adding a new item to your project such as a form, saving your project, and running your project. The icon you will probably use the most is the small green triangle near the middle of the toolbar which you click on to debug and run your programs.



If the toolbox tab, the properties window, or the Solution Explorer panes are not visible, you can use the "View" menu to activate any or all of those to be visible. Refer to chapter 3, pages 3-5 of your text if you have questions.

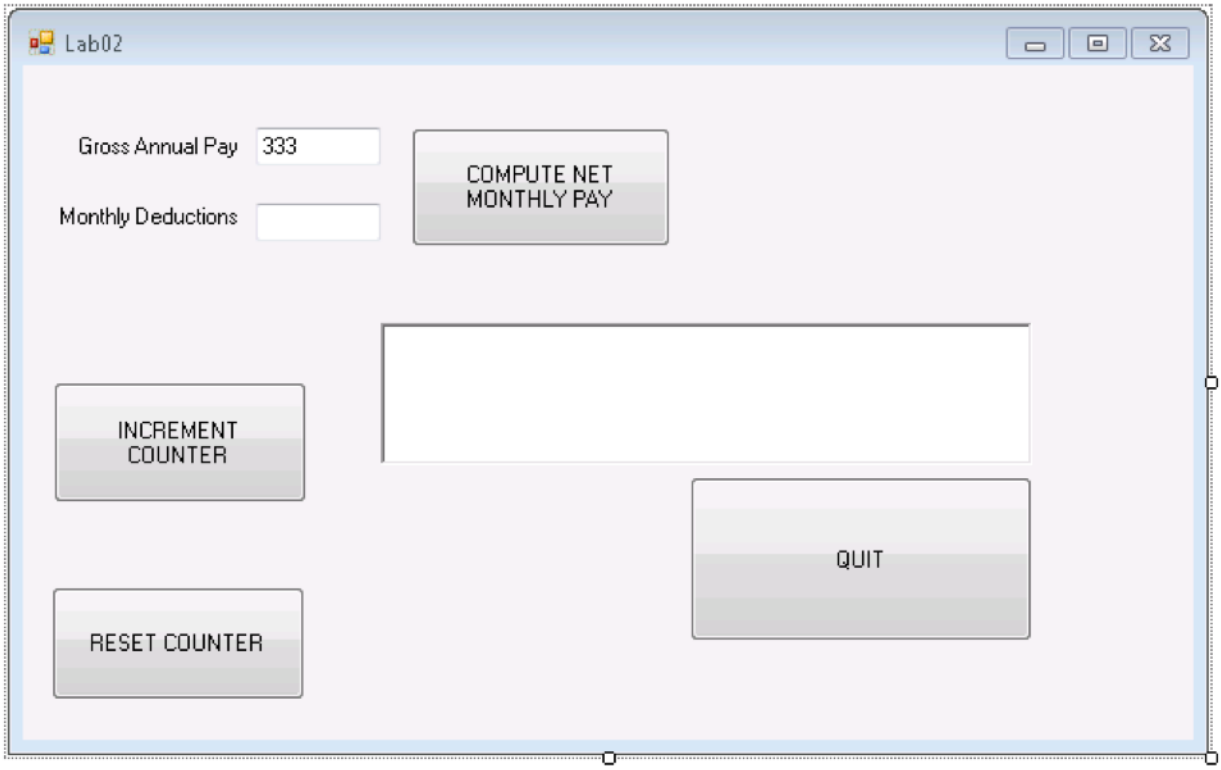
Your created project will contain a single empty Form object by default. In the Form properties window (if it is not completely visible, click on the *Properties* tab on the right side of the screen), change the Name property to **frmLab03** and Text property to **Lab03**. (PS: the Name property of an object CANNOT contain spaces).

4. Your task at this point is to start building the graphical user interface for your project. All of the projects for this class require a Quit button on the form, so we will start with that.

   Using the Toolbox (if it is not completely visible, click on the *Toolbox* tab on the left side of the screen), drag and drop a single button object onto the blank form. This will be your *Quit* button. For every object we add to the form, we need to set some of the properties. To do this, put the mouse focus on the desired object, in this case the button you just added to the form, (i.e., single-click on the button.) When you clicked on the button at this point, the Properties window for the button should have appeared on the right side of the screen. (If the Properties window is not already completely visible, click on the *Properties* tab on the right side of the screen). Now you can change two of the properties for the button. Change the Name property to **btnQuit** and the Text property to **QUIT**.

   At this point, please save all your work by selecting **File>Save All**, close Visual Studio altogether, go to where you saved your project folder and double click on the file whose type is **Visual Basic Project File**. If nothing shows up please double click on the form in the menu on the right.

Part 2



Use Raptor to write a simple program that reads a first name and last name and displays input with a space in between

1. Convert to Python
2. Change to display: Hello#Last,#First where # represents a single space
3. Change to match the following input and output

   Program input:

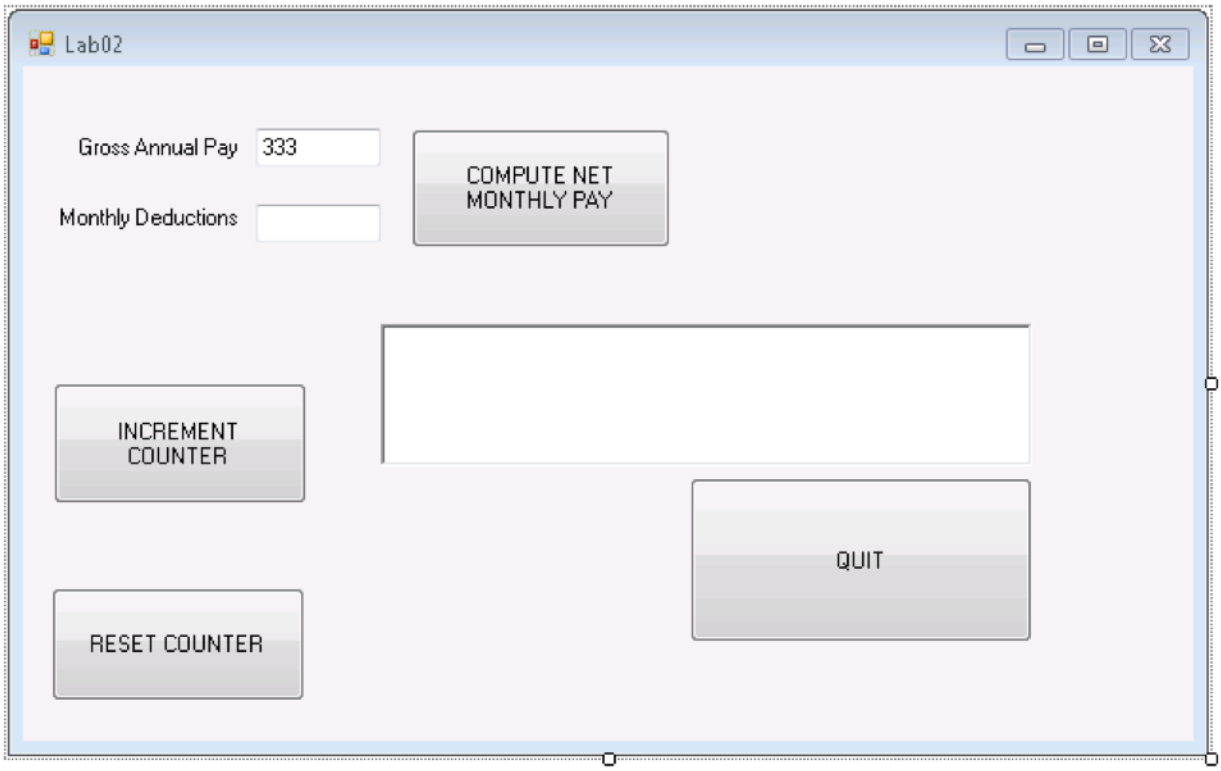
   ```
   Enter your first name: Chuck
   Enter your last name: Norris
   Enter your month of birth: March
   Enter your day of birth: 10
   Enter your year of birth: 1940
   Enter your college: CSBSJU
   Enter your major: Chemistry
   Enter something interesting about yourself: I was born in China. I like
   swimming and dancing
   ```

   Program output:

   ```
   Chuck Norris was born on March 10, 1940. They are a Chemistry major at
   CSBSJU. Here is something interesting about them: I was born in China. I
   like swimming and dancing.
   ```

D level — basic I/O using Strings

Part 3



Use Raptor to write a program that reads a customer's full name and number of videos rented; computes the total charge assuming videos rented out for one day @ $2.50 per day; and displays customer name and total charge

1. Convert to Python formatted like (for 5 videos): Total charge for Mary Smith is $12.50
2. Change to make number of days a variable input by the user and display updated info (for 5 videos rented out for 3 days): Total charge for Mary Smith is $37.50
3. Change to allow customer to rent out premium videos @ $5.25 per day in addition to regular videos @ $2.50 per day. The input duration will apply to both types of videos. (for 5 regular videos and 3 premium videos rented out for 3 days): Total charge for Mary Smith is $84.75
4. Change to display a meaningful message with pretax total and after applying a 7% sales tax like the following.

   Program input:

   ```
   Enter customer name: XX YY
   Enter number of regular videos (@ $2.50 per day): 5
   Enter number of premium videos (@ $5.25 per day): 3
   Enter number of days: 5
   ```

   Program output:

   ```
   Hello XX YY, your pretax total for 5 regular videos and 3 premium videos for
   5 days is $141.25, or $151.1375 after tax.
   ```

5. Test your program for additional inputs below:

regular videos	premium videos	days	expected after tax total: compute by hand	actual after tax total: show what your program displays
3	2	5	96.3	
1	1	1	8.2925	
0	5	1	28.0875	
1	0	1	2.675	
0	0	1	0.0	
1	5	0	0.0	

6. Redo last step using format strings in Python. $ values MUST be round off to EXACTLY two decimal places.

C level — I/O using Strings and numbers. Includes evaluating expressions, python format strings and testing

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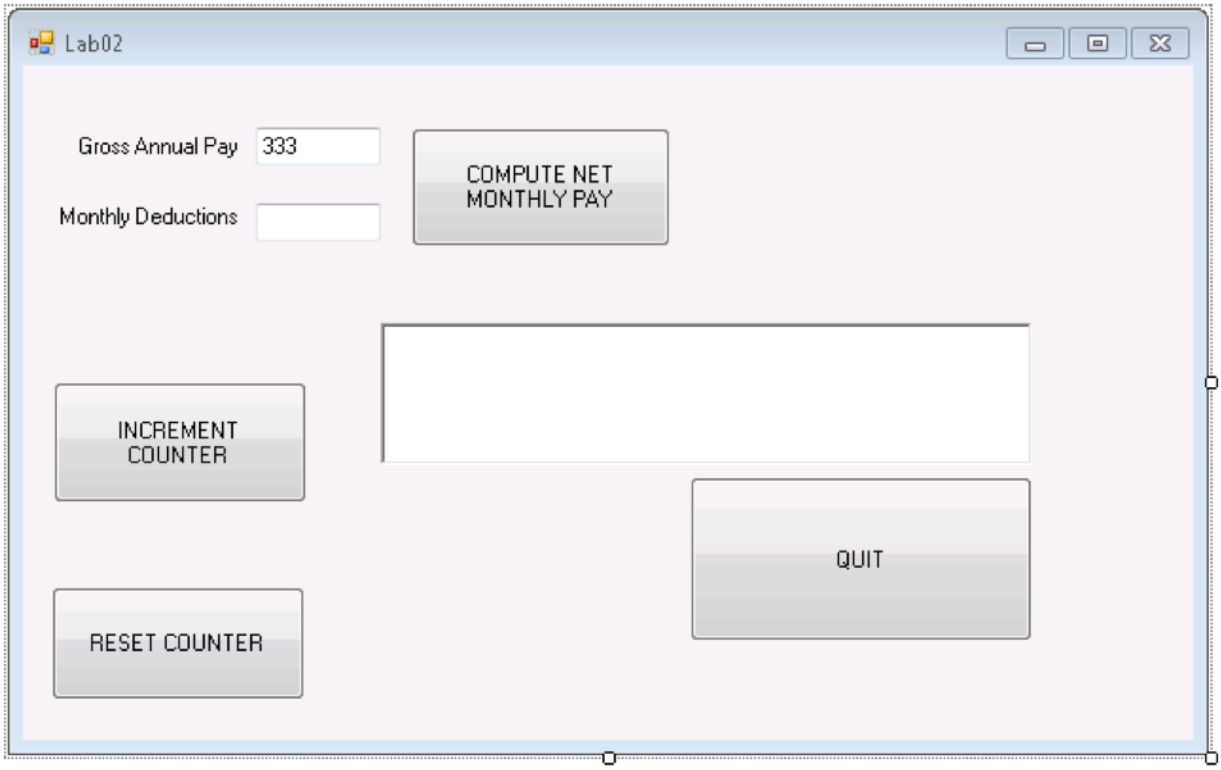
Part 4



1. Extend program to allow user to purchase the following additional items during checkout: candy @ $1.50, popcorn @ $5.00 a bag, and soda @ $2.25. Program should now request number purchased for each item and display an itemized receipt as below. All $ values MUST be round off to EXACTLY two decimal places.

   Example:

```
3 x regular videos for 5 days @ $2.50 per day: $37.50
2 x premium videos for 5 days @ $5.25 per day: $52.50
0 x candy @ $1.50 each:  $0.00
2 x popcorn @ $5.00 each: $10.00
3 x soda @ $2.25 each: $6.75
--------------------------------------------------
Pretax Total: $ 106.75
Total after tax: $ 114.22
```

B level — More complex version of C level. Studying & applying online resources

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