SFU SIMON FRASER UNIVERSITY
THINKING OF THE WORLD

CMPT 110 D100 – Programming in Visual Basic
Spring 2011
MIDTERM EXAM

Instructor: Richard Frank

Teaching Assistant: Ami Li

Time Allowed: 90 minutes

Last Name (PRINT): _____First Name (PRINT)_____

Student ID Number (PRINT):_____

– There are 8 pages and 7 sections in the printout. Please make sure you have the appropriate number of pages before beginning the exam.

– This is a closed book exam, no other aids are allowed.

– All questions are compulsory and will be checked. Leaving the question unanswered or partially answered may result in no or partial credit. Some of the questions need to answer completely showing all steps and derivations used to deduce or calculate the answer in order to receive full credit.

Best Wishes!

S1		**10**
S2		**10**
S3		**15**
S4		**20**
S5		**10**
S6		**10**

Total **75**

Section 1 [10 point—each 1 point]: Multiple choice questions (Select only ONE answer for each question)

(1) Visual Basic is considered to be a
   A) first-generation language.   B) package.   C) high-level language.   D) machine language.

(2) Which type of procedure returns a value?
   A) Sub Procedure   B) Procedure   C) Function   D) ByVal

(3) Which of the following is NOT a valid filename in Windows?
   A) MYFILE*.TXT B) _MYFILE.TXT   C) MYDATA.TXT   D) MY-FILE.TXT

(4) An algorithm is defined as
   A) a mathematical formula that solves a problem.
   B) a tempo for classical music played in a coda.
   C) a logical sequence of a steps that solve a problem.
   D) a tool that designs computer programs and draws the user interface.

(5) Which of the following is the proper order of procedures used in the problem solving process?
   A) analysis, design, coding, testing   B) analysis, testing, design, coding
   C) design, analysis, coding, testing   D) analysis, design, testing, coding
   E) design, testing, analysis, coding   F) design, coding, testing, analysis

(6) Which is not a proper looping structure?
   A) Do While   B) Loop Until C) Do Until   D) For … Next

(7) Which one of the following is NOT one of the three basic types of statement structures?
   A) sequence   B) loop   C) decision   D) input/output

(8) What does the diamond flowchart symbol represent?
   A) input/output   B) terminal   C) decision   D) connector E) process

(9) A graphical depiction of the logical steps to carry out a task and show how the steps relate to each other is called a(n)
   A) flowchart.   B) pseudocode.   C) algorithms.   D) hierarchy chart.

(10) What would be a good name for a text box to hold a person's first name?
   A) FirstName   B) txtFirstName   C) textBoxFirstName D) boxFirstName

Section 2 [10 points]: Multiple-choice questions (Select only ONE answer for each question)

(1) Which of the following is the correct statement for specifying the words to appear in the title bar of Form called `Form1`?

[1 point]

A) `Form1.Text = "My Text"`   B) `Form1.TitleBar = "My Text"`

C) `Me.Text = "My Text"`   D) `Me.Caption = "My Text"`

(2) What will be the content of the variable *x* after the following statement is executed? [1 point]

```
x = Math.Sqrt((9 + 7) / (4 * 2) + 2)
```

A) 1   B) 2   C) 3   D) 4   E) None of the above

(3) What will be displayed when the following lines are executed? [2 points]

```
Dim x As Double = 3, y as Double = 1
Dim z As Double
z = x + (y * x)
x = y
z = x + z
lstBox.Items.Add(x + y + z)
```

A) 4   B) 9   C) 10   D) None of the above

(4) What will be displayed when the following lines are executed? [2 points]

```
Dim a, b, c As String
a = "THE WHOLE"
b = "PART"
c = a.Substring(CInt(Math.Sqrt(4)), b.Length)
txtBox.Text = CStr(c)
```

A) HE W   B) E WH   C) THE W   D) THE WHOLE PART

(5) What is a valid input if a Masked Text Box has the following mask: "(00) 0&LLL"   [1 point]

A)   "(33) 3aaaa"   B)   "(00) ACDEF"   C)   "(00) 0&LLL"   D)   "(83)d9OST"

(6) What is the result of the following code? [1 point]

```
Dim Boy as string = "Jack"
Dim Girl as string = "Jill"
txtBox.Text = Boy & " and " & "Girl" & " went up the hill"
```

A) Nothing, there's an error.   B) "Jack and Jill went up the hill"

C) "Jack and Girl went up the hill"   D) " and went up the hill"

(7) Which one of the following is NOT one of the three main types of errors? [1 point]

A) Syntax error   B) Logic error   C) Declaration error   D) Run-time error

(8) What type of numeric variable type holds the most data? [1 point]

A) Short   B) Long   C) Integer   D) Single   E) Double

Section 3 [15 points]:

(1) Simplify the code.   [3 points]

```
 If (a < b) Then
        If (b < c) Then
              txtOutput.Text = b & " is between " & a & " and  " & c
        End If
 End If
```

```
[                                                                                                    ]
```

(2) What will be the output of the following program when the button is clicked?   [6 points]

```
 Private Sub btnDisplay_Click(...) Handels btnDisplay.Click
      Dim word1, word2, newWord As String
      word1 = "memory"
      word2 = "feather"
      newWord = word1.Substring(2,2) & word2.Substring(3,4)
      If newWord.Length > 3 Then
            txtBox.Text = newWord
      Else
            txtBox.Text = "Sorry, not found."
      End If
 End Sub
```

Output:

(3) What does the following code display?   [6 points]

```
 Private Sub btnDisplay_Click(…) Handles btnDisplay.Click
      Dim amt1 As Integer = 1, amt2 As Integer = 2
      lstOutput.Items.Add(amt1 & " "  & amt2)
      Swap(amt1, amt2)
      lstOutput.Items.Add(amt1 & " "  & amt2)
 End Sub
 Sub Swap(ByRef num1 As Integer, ByVal  num2 As Integer)
      Dim temp As Integer
      temp = num1
      num1 = num2
      num2 = temp
      lstOutput.Items.Add(num1 & " "  & num2)
      num2 = 3
 End Sub
```
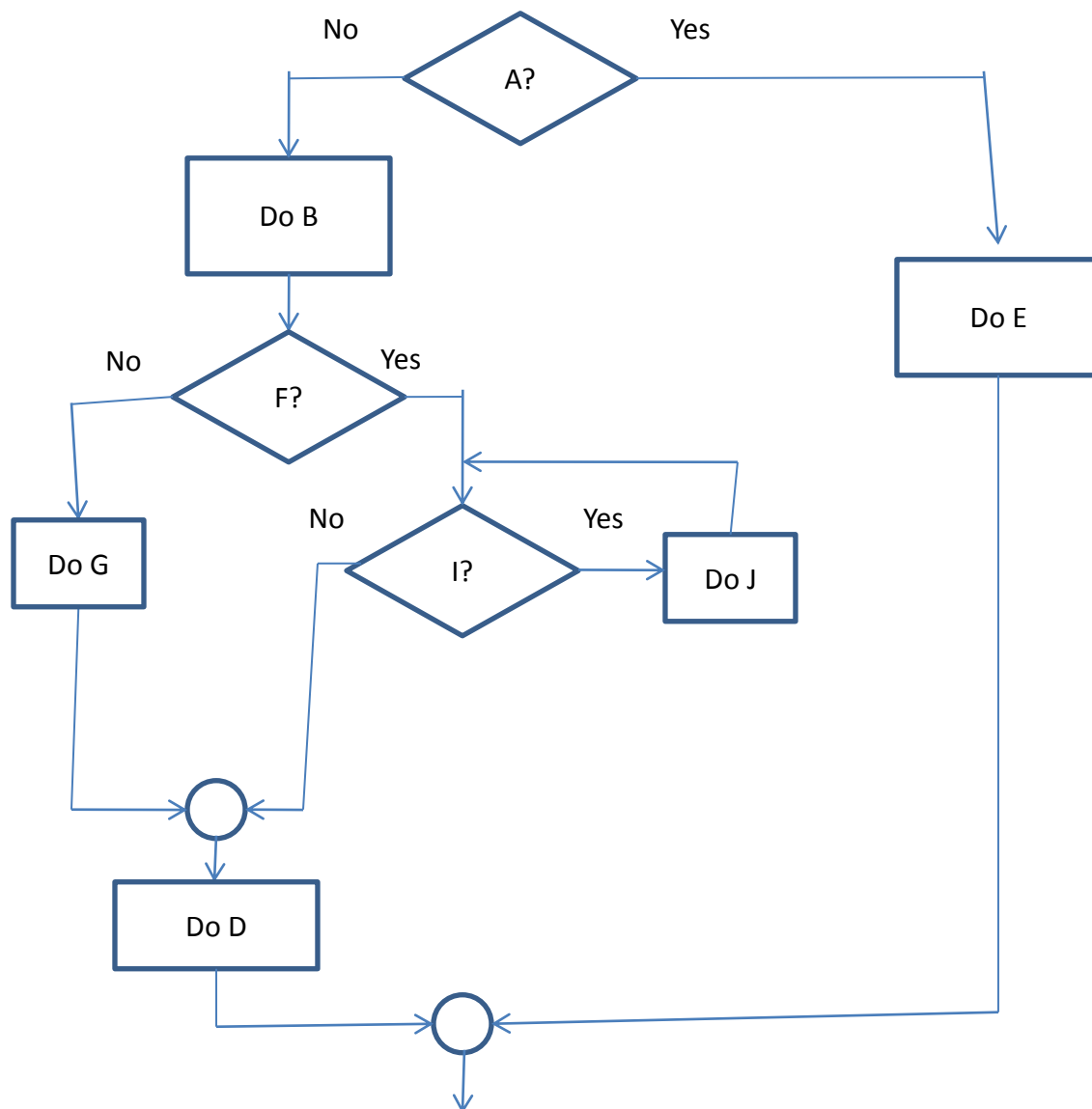
Output:

Section 4 [20 points]

(1) The price of a plane ticket is 1000$ by default, but discounts are applied to it based on different criteria. The following rules determine the discount, and hence the final price:

- Students get 20% discount.
- People who purchase in 30 days in advance get 25% discount.

Discount can aggregate, for example a student purchasing 40 days in advance gets a 40% discount. You have to ask the user for input on whether they are a student. Draw a flowchart of your algorithm that solves the following problem and calculates the final price.   [10 points]

(2) Translate the following flowchart to pseudo code. [10 points]

No

Yes

A?

Do B

Do E

No

Yes

F?

No

Yes

Do G

I?

Do J

Do D

Section 5 [10 points]:

(1) Answer the following questions about the value of Z, if   [5 points]

```
Z = (X AND Y) OR (X AND (NOT Y))
```

☐   a) If X = TRUE and Y = FALSE then Z =

☐   b) If X = TRUE and Y = TRUE then Z =

☐   c) If X = FALSE and Y = FALSE then Z =

☐   d) If X = FALSE and Y = TRUE then Z =

☐   e) Is X = Z?

(2) What will be the output of the following code when it is executed?   [5 points]

```
Dim age As Integer = 42
Select Case age
     Case Is >= 0
            txtBox.Text = "Child"
     Case Is >= 13
            txtBox.Text = "Teenager"
     Case Is >= 21
            txtBox.Text = "Young Adult"
     Case Is >= 40
            txtBox.Text = "Middle Age"
     Case Is >= 65
            txtBox.Text = "Old Person"
     Case Else
            txtBox.Text = "Not Human"
End Select
```

Output: ☐

Section 6 [10 points]

(1) Write a function to return the character which follows the input character according to the ASCII table. For example, if the user specifies 'A', the function has to return 'B'. No error checking necessary. Write a statement which illustrates how to use this function. Please write comments in the code to explain what is going on.

BONUS: [3 points]

Write a funny response by the teacher to Jason's shortcut. Marks assigned according to Amy's discretion.