Monash University  
Faculty of Information Technology  
School of Information Management and Systems  

Test 1  2005  
IMS1906 Business Programming Fundamentals  

Reading Time:  5 minutes  
Writing Time:  50 minutes  

Instructions to candidates:  
- Candidates are reminded that they should have no books, notes, papers or other material in their possession unless their use is specifically permitted below.  
- Calculators are NOT allowed  
- ANSWER ALL QUESTIONS IN THE SPACE PROVIDED.  
- This test counts towards 10% of your exam mark.  

<table>
<thead>
<tr>
<th>Student Identification</th>
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<tr>
<td>Student’s Surname</td>
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<td>Student’s First name</td>
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Tutor’s Name  

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<th>Instructors Use Only</th>
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<tr>
<td>Total Marks</td>
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An application is required to **read in** a customer’s name, a purchase amount and a tax code 0, 1, 2 or 3. Given this information the algorithm should then **calculate** the tax payable. The customer’s name, purchase amount and tax payable should be displayed as output.

The tax code is one of the following:

- 0 tax exempt (0%)
- 1 state sales tax only (3%)
- 2 federal and state sales tax (5%)
- 3 special sales tax (7%)

**Answer the questions that follow:**

a) Draw a defining diagram

<table>
<thead>
<tr>
<th>Input</th>
<th>Processing</th>
<th>Output</th>
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b) Write an algorithm in **pseudo code** following the notation from Robertson.

**Compute TaxPayable**

```pseudo_code
   
   End
```
c) Draw a TOE chart

<table>
<thead>
<tr>
<th>Task</th>
<th>Object</th>
<th>Event</th>
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d) Design a user interface following the window’s standards GUI guidelines
e) Convert the algorithm into VB.NET code.

    Sub computeTaxPayable_Click(...) Handles ...

    [3+5+3+3+5 = 19 marks]
2. What is the different between a data type and a variable?

3. In the pseudocode below the word **OK** is to be printed if the dataItem is in the range 10 to 20 inclusive.

   If (dataItem<10 OR dataItem > 20) Then
   Print "OK"
   End If

   a) Identify the logical error(s) in the ‘if’ statement.

   b) Write the corrected if statement below.
4. Given the expression below identify any literal constants, symbolic constants and variables:

\[ Vol = \frac{4}{3} \times Maths.pi \times \text{radius}^3 \times \text{height} \]

**Literal Constants**

**Named or Symbolic Constants**

**Variables**

[5 marks]

5. a) Draw a picture of the dialogue box produced when the following lines of code are executed.

```vbnet
Dim Message As String = "Cancel this operation?"
Dim Caption As String = "No Name Specified"
Dim Result As DialogResult

Result = MessageBox.Show(Message, Caption, MessageBoxButtons.YesNo, MessageBoxIcon.Question, MessageBoxDefaultButton.Button1)
```

[5 marks]

b) What is the purpose of the Result variable?

[2 marks]
6. Use the following Visual Basic.NET code to answer the following questions:

1. \( T = 0 \)
2. \( C = 3 \)
3. Do
4. \( T = T + 2\times C \)
5. \( C = C + 1 \)
6. Loop Until \( C > 5 \)
7. print \( T \)

a) Perform a trace of the code above.

<table>
<thead>
<tr>
<th>Line</th>
<th>( T )</th>
<th>( C )</th>
<th>Loop condition</th>
<th>print</th>
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b) In the above code segment, when the loop terminates, the value of \( T \) will be?
   a. 6  
   b. 14  
   c. 24  
   d. 36  

c) How many times will the loop above execute?
   a. 4  
   b. 3  
   c. 2  
   d. Will not execute  

d) The loop above is an example of:
   a. An infinite loop  
   b. a pre-test loop  
   c. a for loop  
   d. a post-test loop  

[7+1+1+1=10 marks]