

# Scripting Languages G22.3033-002 Summer 2008

## Example solutions for hw01

Assigned Th 5/22/2008, due Fr 5/30 at 4pm. 50 points.

<http://www.cs.nyu.edu/courses/summer08/G22.3033-002/>

### Instructions for example solutions

These are example solutions. Please keep in mind that often, there is not just one correct solution to a question. If you come up with different answers, then it may be that both your answers and these answers here are correct. Of course, these answers here may also contain mistakes. If you spot a mistake, please let me know so I can correct it.

### Example solutions for Homework 1

#### solutions-hw01-1 Dynamic typing

a.

```
Sub PrintArray(Arr() As String)
  Debug.Print "PrintArray:"
  For I% = 0 To UBound(Arr)
    Debug.Print " " & I & " " & Arr(I)
  Next I
End Sub
Sub Main()
  Dim fruits(2) As String
  fruits(0) = "apple"
  PrintArray fruits
  fruits(1) = "orange"
  fruits(2) = "banana"
  PrintArray fruits
End Sub
```

b.

- Static error detection.
- Optimization, by using specialized operators.
- Code that is easier to read for other programmers.

c.

- Shorter code, because type annotations are missing.
- Shorter code, because there are fewer wrappers and adapters.
- More flexible code that works in situations not anticipated by the author.

#### solutions-hw01-2 Precedence and associativity

a.  $2 - (2 - 2 - 2 * 2)$

b.

- Hypothesis: "Imp" has a higher precedence than "And".

- Experiment: If "Imp" has a higher precedence than "And", then the expression "False And False Imp True" should yield the same result as the expression "False And (False Imp True)".
- Observation: The two expressions yield different results.
- Conclusion: "Imp" either has the same precedence as "And", or "Imp" has a lower precedence than "And".
- Hypothesis: "Imp" has a lower precedence than "And".
- Experiment: If "Imp" has a lower precedence than "And", then the expression "True Imp True And False" should yield a different result than "True Imp (True And False)".
- Observation: The two expressions yield the same result.
- Conclusion: Inconclusive. "Imp" may or may not have lower precedence than "And".
- Hypothesis: "Imp" has the same precedence as "And".
- Experiment: If "Imp" has the same precedence as "And", then the expression "True Imp True And False" should yield the same result as "(True Imp True) And False".
- Observation: The two expressions yield different results.
- Conclusion: "Imp" has a different precedence than "And". Since we already established that "Imp" also doesn't have higher precedence than "And", it must have lower precedence.

### **solutions-hw01-3 Euclidian distance (VBA)**

```
Function EuclidDistance(A() As Double, B() As Double) As Double
    EuclidDistance = 0
    Dim I As Integer
    For I = LBound(A) To UBound(A)
        EuclidDistance = EuclidDistance + (A(I) - B(I)) ^ 2
    Next I
    EuclidDistance = EuclidDistance ^ 0.5
End Function
```

### **solutions-hw01-4 Average rows (VBA)**

```
Sub AverageRows(Result() As Double, Rows() As Double)
    Dim I As Integer, J As Integer
    For I = LBound(Rows, 1) To UBound(Rows, 1)
        Result(I) = 0
        For J = LBound(Rows, 2) To UBound(Rows, 2)
            Result(I) = Result(I) + Rows(I, J)
        Next J
        Result(I) = Result(I) / (1 + UBound(Rows, 2) - LBound(Rows, 2))
    Next I
End Sub
```