**Sage One Global Accounts Core**

*Initial Programming Exercise Answers*

All of the answers to the questions are in the accompanying Test Project. So this document is used for the Test results and to note some assumptions made while answering the questions.

**Assumptions**

1.

a. I’ve assumed the 1500.0 – 6700.0 range is inclusive but would seek further verification of this.

b. I’ve used double precision binary floating point numbers because of the limitations with single precision in the specified range. Depending on the use of the numbers it may be better to use a decimal floating point number type (i.e. for Currency).

c. I’ve assumed rounding up to 5 decimal places but would also like to verify this.

2.

h. I attempted to keep all of my tests DRY for this by sharing the common ones for both case sensitive and case insensitive in a common base class and just setting the different method on initialisation but the tests wouldn’t run this way. This is why most of the tests are duplicated. I think this is a limitation of the Visual Studio Testing framework.

3.

I initially assumed this was about finding a power of 2 in an unsigned integer but since the question didn’t specify integer I made it less restrictive to include negative exponents (2^-1 = 0.5). I addressed this in my implementation. However, if it is just about unsigned integers there is more efficient way to accomplish this.

**Test Results**

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| Question 1 Tests |
| Test Name: **InRange\_Success\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: 1500, 1500. Output: 2250000. Passed True** |
| Test Name: **Overbounds\_Fail\_Test**  Test Outcome: **Passed**  Result StandardOutput:  System.ArgumentOutOfRangeException: Specified argument was out of the range of valid values.  Parameter name: Arguments to MultiplyLimited must both be within range!  at Tests.TestMethods.MultiplyLimited(Single a, Single b) in d:\Users\adam.graham\Documents\Visual Studio 2012\Projects\Tests\Tests\TestMethods.cs:line 24  at Tests.FloatMultiplicationTesting.Overbounds\_Fail\_Test() in d:\Users\adam.graham\Documents\Visual Studio 2012\Projects\Tests\Tests\FloatMultiplicationTesting.cs:line 58  **Inputs: 6700.1, 6700. Output: . Passed True** |
| Test Name: **DecimalPlaces\_Success\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: 1500.33333333333, 1500.33333333333. Output: 2251000.11111. Passed True** |

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| Question 2 Case Sensitive Tests |
| Test Name: **FindInTarget\_Success\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: steven, stevenbrown. Output: True** |
| Test Name: **FindInTarget\_FailCase\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: Steven, stevenbrown. Output: False** |
| Test Name: **FindInTarget\_Fail\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: steven, st3v3nbrown. Output: False** |
| Test Name: **FindInTarget\_Success2\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: steven, brownsteven. Output: True** |
| Test Name: **FindInTarget\_FailTargetLength\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: steven, st3v3. Output: False** |
| Test Name: **FindInTarget\_FailNullArg\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: , st3v3. Output: False** |

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| Question 2 Case Insensitive Tests |
| Test Name: **FindInTarget\_Success\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: steven, stevenbrown. Output: True** |
| Test Name: **FindInTarget\_SuccessCase\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: Steven, stevenbrown. Output: True** |
| Test Name: **FindInTarget\_Fail\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: steven, st3v3nbrown. Output: False** |
| Test Name: **FindInTarget\_Success2\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: steven, brownsteven. Output: True** |
| Test Name: **FindInTarget\_FailTargetLength\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: steven, st3v3. Output: False** |
| Test Name: **FindInTarget\_FailNullArg\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Inputs: st3v3, . Output: False** |

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| Question 3 Tests |
| Test Name: **Demonstrate\_Fail\_Trys**  Test Outcome: **Passed**  Result StandardOutput:  **Input: 3. Output: False.**  **Input: 6. Output: False.**  **Input: 12. Output: False.**  **Input: 24. Output: False.**  **Input: 48. Output: False.**  **Input: 96. Output: False.**  **Input: 192. Output: False.**  **Input: 384. Output: False.**  **Input: 768. Output: False.**  **Input: 1536. Output: False.** |
| Test Name: **Demonstrate\_Success\_Trys**  Test Outcome: **Passed**  Result StandardOutput:  **Input: 1. Output: True.**  **Input: 2. Output: True.**  **Input: 4. Output: True.**  **Input: 8. Output: True.**  **Input: 16. Output: True.**  **Input: 32. Output: True.**  **Input: 64. Output: True.**  **Input: 128. Output: True.**  **Input: 256. Output: True.**  **Input: 512. Output: True.** |
| Test Name: **Fail\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Input: 3. Output: False.** |
| Test Name: **Fail0\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Input: 0. Output: False.** |
| Test Name: **Success\_Minus\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Input: 0.5. Output: True.** |
| Test Name: **Success\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Input: 4. Output: True.** |
| Test Name: **Fail\_Minus\_Test**  Test Outcome: **Passed**  Result StandardOutput: **Input: 0.7. Output: False.** |