Assignment 02 — 26.09.2018 – v1.0e
Smalltalk: A Reflective Language

Please submit this exercise by mail to sma@list.inf.unibe.ch before 03 October 2018, 10:15am.

Exercise 1 - Nature of Smalltalk and Pharo (3 Points)

a) Name three major benefits Pharo provides in comparison to Java.

b) How can you export the current image of your Pharo working environment?

c) What is a message in Pharo?

d) What is a block in Pharo?

Exercise 2 - Pharo object inspection (4 Points)

a) Which message is being sent to a superclass to find all its subclasses?

b) What is the difference between a String and a Symbol object in Pharo? Why is this differentiation important?  
   Hint: The execution of the code below will reveal some of the differences.

   ```smalltalk
   ('HeySmalltalker') == 'HeySmalltalker'.  
   ('HeySmalltalker') asSymbol == #HeySmalltalker.  
   ('Hey','Smalltalker') == 'HeySmalltalker'.  
   ('Hey','Smalltalker') asSymbol == #HeySmalltalker.
   ```

c) How can you create an abstract method in Pharo?

d) Write the equivalent of the following piece of code in Smalltalk as a block, and execute it with the values <38, 44>, <65, 48>, and <48, 48>. Please use the Transcript tool available in Pharo to retrieve the output.

   ```smalltalk
   int scoreOfPlayerA, scoreOfPlayerB;  
   if(scoreOfPlayerA > scoreOfPlayerB)  
     print "Player A Won"  
   else if(scoreOfPlayerA < scoreOfPlayerB)  
     print "Player B Won";  
   else  
     print "Match is declared as draw";
   ```

Please continue reading on next page.
Exercise 3 - Even more Pharo coding (3 Points)

Execute Smalltalk code to answer the questions below about the demo application you can download here.

*Hint: You need to extend the CallGraph.st class with some additional accessors.*

Don’t forget to submit your code *and* your results.

a) Find the top 10 most frequently invoked methods.

b) Find the top 10 methods invoked on the largest number of different classes (dynamic types).

c) Find all static methods.