

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)

- Name three major benefits Pharo provides in comparison to Java.
- How can you export the current image of your Pharo working environment?
- What is a message in Pharo?
- What is a block in Pharo?

Exercise 2 - Pharo object inspection (4 Points)

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

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

- How can you create an abstract method in Pharo?
- 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.

```
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.