Task 3 Write-up

Comparing Python and Haskell for implementing the tuple-space model.

Easy of implementation:
Compared to Haskell, Python is very simple as it has a pseudo-code nature and it is not just simple but also powerful. Python supports object oriented programming and that makes the implementation of the tuple-space more intuitive and reusable. Also, Python is highly extensible and has an enormous amount of external libraries, that provides a lot of mature implementation of some concurrent components like semaphore and monitor. In these aspects, Haskell code is less intuitive and harder to construct. However, Haskell has a feature of lazy evaluation.

Efficiency:
Haskell is a static language while Python is a dynamic language. Dynamic type checking makes Python code runs slower, while static language does type checking at compile time and that saves an amount of time when running the code. Also, an implement of Haskell, GHC is noted for its high performance on concurrency[1], that makes Haskell a great advantage over Python in efficiency.

Portability:
There is no doubt that Python beats Haskell in this aspect. Due to its dynamic typed feature, Python is highly portable and it is embeddable. While Haskell does not have an emphasis on this aspect.

Correctness of implementation:
Haskell is a functional programming language, that makes Haskell's functions have no side effect and side effects in Haskell is expressed in other ways such as I/O. Thus it is easier to do formal verifications of a Haskell program. With pure functions implemented using Haskell, they are thread safe and do not need synchronisation. That means a lot when implementing a tuple-space model which is designed for using concurrently. With Python, an object oriented program, the correctness is highly depends on the developer.

Other Aspects:
Both Haskell and Python do not have the ability of managing memory directly, that leads to a less control of fundamental implementation.

[1] “Haskell GHC programs versus Java”. The Computer Language Benchmark Game [Online]. Access: http://benchmarksgame.alioth.debian.org/u64q/haskell.html Accessed 8 Mar 2016

Word Count: 305