Haskell interpreters: Definitional Interpreters in Haskell
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COMS E6998 Types, Languages & Compilers
Final Project Proposal

Interpreters
The goal of this project is to study interpreters following Josh Reynolds’s Definitional interpreters for higher-order programming languages, in which the study of the interpreters is divided upon two basic characteristics, the use of high order functions and the order-of-application dependence, both of which can be combined to achieve four different kinds of interpreters, as shown in the image below taken from the paper itself.

<table>
<thead>
<tr>
<th>Order-of-application dependence:</th>
<th>Use of higher-order functions:</th>
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<tbody>
<tr>
<td>yes</td>
<td>yes</td>
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<tr>
<td>direct interpreter for GEDANKEN</td>
<td>McCarthy’s definition of LISP</td>
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<tr>
<td>Morris-Wadsworth method</td>
<td>SECD machine, Vienna definition</td>
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Implementation
My hope is to implement the four interpreters separately in Haskell and study the differences between them and how they derive into each other. Another goal is to compare my own implementations with Eric Campbell’s implementation of the interpreters derived from the same paper.

Continuation
The paper was written in 1972 and discusses the limitations the approach suggested carries in the implementation of functional languages. Another goal of the project is to study if the implementation of functional languages has evolved beyond the approach presented and if said limitations, relating to important issues such as type checking, are still present with more modern approaches.

References
2. [https://github.com/ericthewry/interpreters](https://github.com/ericthewry/interpreters)