Haskell

PENG

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Contents

1 Introduction **1**
1.1 Functional 1
1.2 Pure 1
1.3 Lazy 1
1.4 Statically Typed 1

1 Introduction

`https://www.engineering.upenn.edu/~cis1940/spring13/`

Haskell is a *lazy*, *functional* programming language created in the late 1980s.

1.1 Functional

Definition 1.1 (functional)**.**

- *functions are values*
- *evaluating expressions rather than executing instructions*

1.2 Pure

Definition 1.2 (referentially transparent)**.**

- *everything (var, data structures) is immutable*
- *expressions have no side effects*
- *same function and arguments = same output*

benefits:

- replace equals by equals
- parallelism

1.3 Lazy

Definition 1.3 (lazy)**.** *Haskell expressions are not evaluated until their results are actually needed.*

consequences:

- define a control structure by defining a function
- define infinite data structures
- time and space usage become more complicated

1.4 Statically Typed

Definition 1.4 (statically typed)**.** *Each Haskell expression has a type, and types are all checked at compile-time.*