HULK Interpreter documentation

Eduardo Brito Labrada

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Abstract

In computer science, an **interpreter** is a computer program that directly executes intructions written in a programming or scripting language, without requiring them previously to have been compiled into a machine language program. An interpreter generally uses one of the following strategies for program execution:

1. Parse the source code and perform behavior directly;
2. Translate source code into some efficient intermediate representation or object code and inmediately execute that;
3. Explicitly execute stored precompiled bytecode made by a compiler and matched with the interpreter Virtual Machine.

In this project we will focus on the first strategies of those to create a interpreter for *Havana University Language for Kompilers (HULK)*. First we will define the basic syntax of the language and then we will show how the interpreter works in its entirety.

Contents

Introduction

HULK is a didactic, type-safe, object-oriented and incremental programming language. This is a simplified version of HULK where we will be implementing a subset of this programming language. In particular, this subset consists only of expressions that can be written on one line.

Expressions

HULK is a ultimately an expression-based language. Most of the syntactic constructions in HULK are expressions, including the body of all functions, loops and other block of code.

The body of a program in HULK always end with a single global expression (and, if necessary, a final semicolon[1]) that serves as the entrypoint of the program.

Arithmetic expressions

HULK defines three types of literal values: **numbers**, **strings** and **booleans**. Numbers are 32-bit floating-point and support all basic arithmetic operations with the usual semantic: `+` (addition), `-` (subtraction), `*` (multiplication), `/` (floating-point division), `^` (power), and parenthesized sub-expressions.

Strings

Strings literals in HULK are defined within enclosed double-quotes (`"`). A double-quote can be included literally by escaping it (`\"`), and other escaped characters are `\n` for line endings and `\t` for tabs. Also, strings can be concatenated with other strings (or the string representation of numbers) using the `@` operator.

[1] In this version of HULK all expressions end with a single semicolon