SP-19 Design and Develop a Programming Language

SOFTWARE REQUIREMENTS SPECIFICATION (SRS)

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1.0 Introduction

1.1 Overview

This document defines the requirements for the development of the Pint programming language. The purpose of this document is to represent the system requirements in a readable way so that the project owner can understand them and verify them for correctness but with enough detail that developers can design and implement a software system from them.

Pint is a programming language that uses an innovative concept to address issues current programming languages deal with.

1.2 Project Goals

The two major goals the language will deal with are:

1. Allowing the compiler to verify the safety of the code.
2. The compiler will not incur any runtime cost from the safety as to promote efficiency.

1.3 Definitions and Acronyms

JRE - Java Runtime Environment

1.4 Assumptions

It is assumed the JRE will be available to the users of the Pint compiler.

2.0 Design Constraints

2.1 Environment

The compiler itself will be a Java application, and as such will run in the JRE. As Pint will be compiled to machine code, it will run natively on the hardware systems supported by LLVM.

2.2 User Characteristics

The language is designed for programmers such as the developers of the language.

3.0 Requirements

3.1 Must define a formal grammar for the language.

3.2 Must generate a lexer, parser and parse tree.

3.3 Must establish a well-defined resolution for syntactic ambiguity.

3.4 Must have a command-line interface.

3.5 Must compile the code to native binaries.

3.6 Must be able to pass arguments from the command line into LLVM to adjust the output. For example, determining which architecture a binary is compiled for.