Tabulate
Language Specification

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***Abstract*—This document provides the language specification for *Tabulate*, a domain specific language (DSL) that provides programming constructs to automate spreadsheet processing efficiently.**

1. Introduction

1.1. Motivation

Spreadsheets are an integral part of our lives. Whether it comes to creating timetables, bookkeeping possessions or tabulating marks, it is difficult to imagine life without spreadsheets. Unfortunately, most spreadsheet softwares like Microsoft Excel and Google Sheets are *What You See Is What You Get* (WYSIWYG) editors. These softwares do not offer a very good programming interface, which in most cases can automate jobs much faster.

That's where Tabulate comes in. With high level programming constructs to abstract the implementation of seemingly complex operations, Tabulate makes it possible to *program* your spreadsheet.

1.2. Goals

Tabulate aims to be the go-to DSL for those who manage many spreadsheets in their everyday life. It aims to automate the tedious process of repetitive entries, updates, and formulae with high performance and efficiency. Built on top of C++, Tabulate aims to provide the programmer with more control over their spreadsheet.

2. Lexical Conventions

2.1. Comments

Tabulate has only one kind of comments; these are of the form `#...#`. Notice that this style of comments can be either single line or multiline.

2.2. Whitespaces

Whitespaces in Tabulate are useful only in separating tokens. Excess whitespaces are ignored.

2.3. Reserved Keywords

2.4. Identifiers

Identifiers in Tabulate can contain characters and digits. However, they must start with characters only.

2.5. Punctuators

3. Data Types

4. Operators and Expressions

5. Statements

5.1. Expression Statements

In Tabulate, the simplest type of statements are *expression statements*. These statements are delimited with a semicolon.

5.2. Compound Statements

In their simplest form, compound statements in Tabulate contain one or more expression statements nested within scope braces. However, compound statements can be nested in other compound statements.

5.3. Selection Statements

Tabulate also offers a construct for selecting statements to be executed based on one or more conditions. The

5.4. Iteration Statements