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## **CS4215 Programming Language Implementation**

### **Semester Project Objectives, Scope, Plan**

AY2021/22, Semester 2

## **Objectives**

We aim to implement a subset of F# programming language which is named FLite#. In the final product, we expect that the user can run a FLite# program in the command line. The final product also supports REPL environment for users to run FLite#.

We will implement a parser for this subset of F# based on an existing grammar and write an interpreter in the Java programming language.

## **Scope**

FLite# will be a static typed programming language. The implemented interpreter also provides type checking for the language. The main features covered by the language will be the following:

## Baseline goals

- Parser for FLite#
- REPL environment for FLite#
- Types: number, boolean, string
- Collections: lists, tuples
- Operators: + (polymorphic), -, \*, /, <, >, ==, !=, <=, >=, &&, ||, !
- Loops and conditionals: if, if else, for, while
- Immutable variables
- User I/O
- Unit of measures
- Algebraic data types
- Lambda expressions, closure

## Stretch goals

- Collections: arrays
- Mutable variables
- Pattern matching
- Generic unit of measures
- Pipelining

## Deployment and documentation

The code will be deployed onto a GitHub repository. The syntax and semantics will be documented. There will also be another documentation automatically generated by Javadoc for the interpreter.

## Schedule

Week	Task
5	Set up a working environment and repository Syntax and semantics
6	Syntax and semantics Parser Calculator language interpreter
Recess Week (Milestone 1)	Variable binding Basic control flow (conditional, loops) Lists, tuples User I/O
7	Functions lambda expressions and closure
8	Unit of measures
9	Unit of measures Algebraic data types
10 (Milestone 2)	Algebraic data types
11	Buffer week
12	Stretch goals
13	Stretch goals and finalize documentation