

Ants for Dinner

Programming an ants strategy

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Approach

Design and implement a DSL, which allows to define a strategy in a natural way.

DSL

Our custom language provides imperative features:

- ▶ Blocks and statements
- ▶ For Loop
- ▶ If - Then - Else
- ▶ Scoped bindings (variables and local functions)
- ▶ Try - Catch
- ▶ Top level declarations
- ▶ Procedures
- ▶ Mutual tail recursion
- ▶ Modules

Example

Parser

- ▶ Matches the input file with the grammar of the language
- ▶ Constructs the abstract syntax tree (AST).
- ▶ Loads and parses recursively any imported module.
- ▶ Uses Parsec library.

Compiler

- ▶ Compiles the syntax tree into the assembly code
- ▶ Inline bindings
- ▶ Handles function calls and recursion
- ▶ Reports errors

Strategy

Essential strategy:

1. Random walk
2. Pick up food
3. Go back home
4. Drop food

Further Work

- ▶ Duplicated code elimination
- ▶ More syntactic sugar (while, else-if, switch statement)
- ▶ Relax recursion constraints (allow parameters)
- ▶ Extend variables