# The Egel Language

M.C.A. (Marco) Devillers

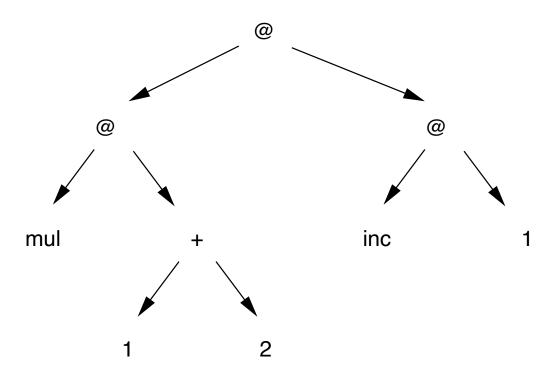
### The Egel Language

- untyped concurrent functional scripting language
- based on eager combinator rewriting
- concise but remarkably powerful syntax
- aimed at taking over the world

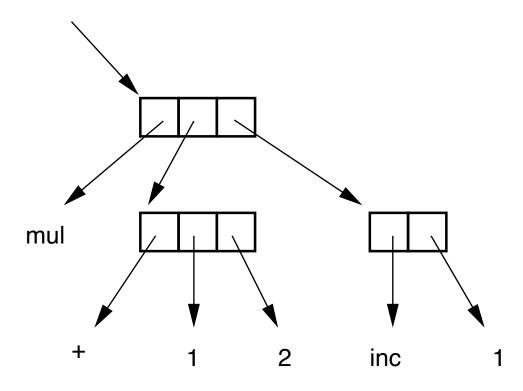
### The operational model

- everything is a directed acyclic grap (DAG), or tree for short
- no abstract machine, nothing, nada
- KISS (keep it simple since -you- are stupid) technology

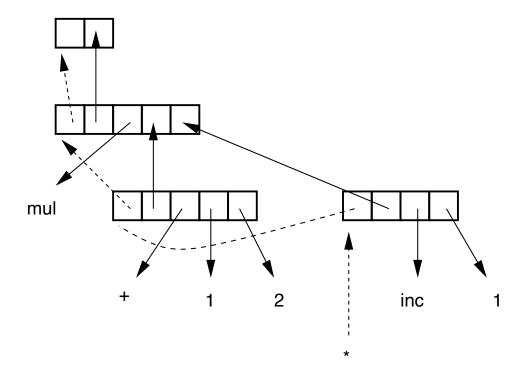
# From expression to tree



# **Computer representation**

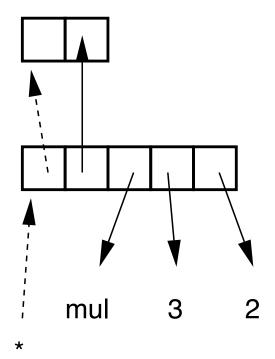


# **Twisted representation**

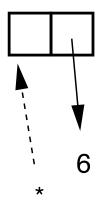


• It's still a DAG, or tree!

# **Evaluation (1)**



# Evaluation (2)



## **Goal of Egel**

Fully exploit this computational model

- translate to automatically garbage collected C++ objects
- extend to support exceptions
- allow for 'cheap' concurrency
- allow migrating combinators

### Front-end Language

```
# A parallel fibonnaci implementation.
import "prelude.eg"
namespace Fibonnaci (
    using System
    def fib =
         [ 0 -> 0
          1 -> 1
          N \rightarrow fib (N-2) + fib (N-1)
    def pfib =
         [ 0 -> 0 ]
           1 -> 1
          X \rightarrow [ (F0, F1) \rightarrow F0 + F1 ]
              (par [Y \rightarrow pfib (X - 1)] [Z \rightarrow pfib (X - 2)])]
using System
def main = Fibonnaci::pfib (3+2)
```

#### Front-end Language

- reminiscent of a lambda calculus with constants
- scripts are collections of terms
- untyped to fully explore the model
- modules and namespaces
- focus on utility, not guarantees; terms, not types

### Interpreter

```
egel [-|--interact] [-I path|--include path] [file]

egel [-I path|--include path] -e command

egel [-h|--help|-v|--version]
```

Support batch, interactive, and read-eval-print (REPL) modes.

### 0.1 (beta) version

- stand-alone interpreter for Linux/BSD/MacOS systems
- capable of automating simple tasks
- tardy but robust
- relatively light-weight (1 MiB) but needs Unicode (libicu)
- can be extended with C++ written modules
- can be integrated into C++ applications
- now working on serialization, transport, and node protocol

### Aimed at Taking over The World

- see a data center as just a large computer
- start any calculation anywhere
- https://egel-lang.github.io/