Milner

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Milner

Over the past three weeks, I've been creating my own programming language, Milner

```
external puts : (Cstring) -> ()

val main : () -> Int32
fun main() =
  puts("Hello, world!");
  0i32
```

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  - Execution is evaluation

A *reference implementation* is a specification for the language

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In practice, interpreters compile to a low-level *bytecode* which is then executed


OCaml

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- Excels at compiler development, symbolic manipulation

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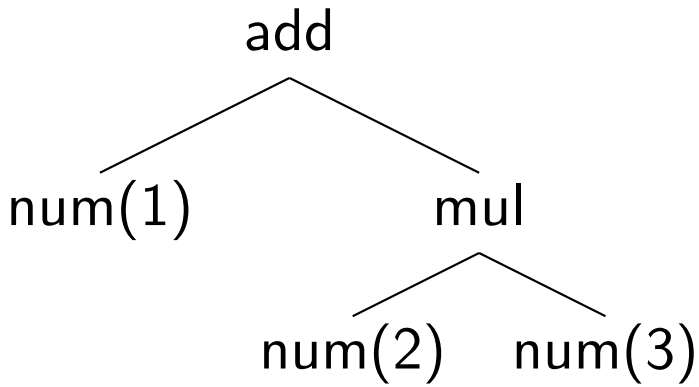
- 

```
type 'a annot = {
    annot_item : 'a;
    annot_begin : Lexing.position;
    annot_end : Lexing.position;
  }
```

Figure: Source location annotation

```
type expr =
  | Apply_expr of expr annot * expr annot list
  | Lit_expr of literal
  | Seq_expr of expr annot * expr annot
  | Var_expr of string
```

Figure: Expression tree definition

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  - $$\frac{e_1 : Int \quad e_2 : Int}{e_1 + e_2 : Int}$$
  - $$\frac{e_1 : A \to B \quad e_2 : A}{e_1(e_2) : B}$$
- Hindley-Milner type system

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- $\mathit{compiler} = \mathit{backend} \circ \mathit{frontend}$

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- Official OCaml API - https://llvm.moe/

Questions?