

Syntax Semantics Idioms Libraries Tools

At the top, a compilation unit is a sequence of expressions & definitions.

↓
3+4

↓
let x=3+4

Expressions:

Literals

(Integers | Floating points | Booleans
Lists | Strings | Arrays | Tuples | Records)

| Variables |

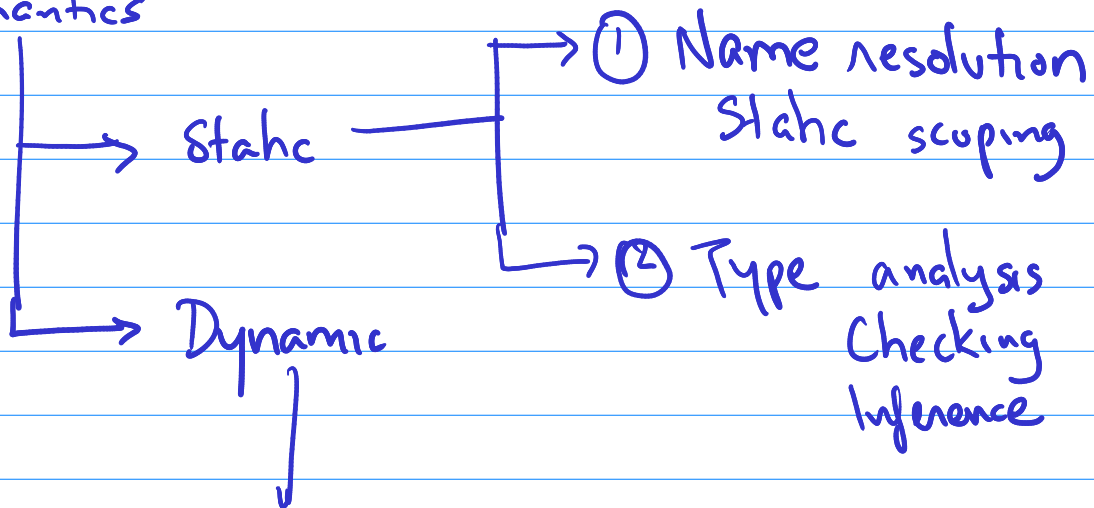
| if then else expressions (conditionals)

| Boolean connectives (& ||)

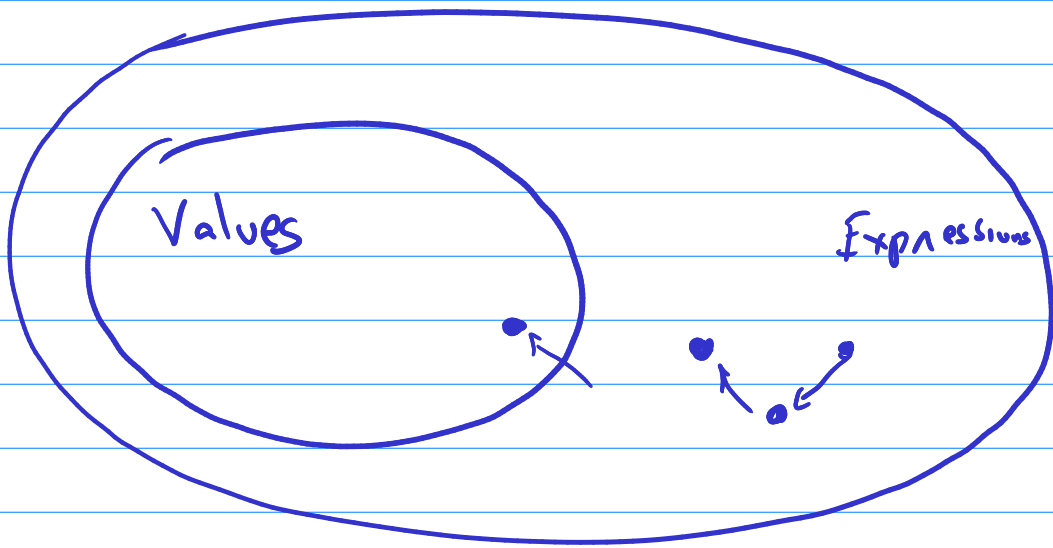
Function applications | Function definition
(lambda expressions)
(abstraction)

let expressions
Assertions | ...

Semantics



"How do we execute a program?"

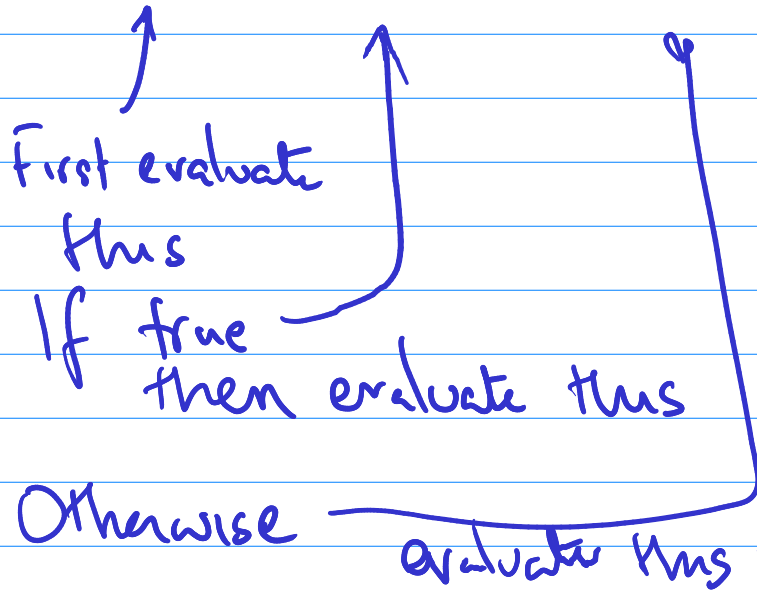


Model ① When you see a function application, $f e$

then first execute e completely (✓)
(until it reduces to a value)

Then substitute v into the body of f
Execute until that produces a value.

To evaluate e_1 then e_2 else e_3



Compound Types

Lists | Strings | Pairs, Tuples | Records

Variants \rightsquigarrow Algebraic Data Types (ADTs)

Pattern matching

