Meeting 18: Lab 4 and Type Equality

Today

Your Questions

Type Equality (if time)

Questions

Error propagation - type error
Call Case

Objects - typing + step - search

FYI

My implementation

challenge
Beat this!

Type Error

77 lines
( w/ 17 close 3
and 4 space + comments)

Substitute

19 lines
( w/ 4 close 3
+ 2 space )

Step

57 lines
( w/ 7 lines of 3
7 space + comments)

Type Equality

When are two types considered equal?

→ Structural equality
→ Name equality
Structural: "When their expanded definition describe the same thing,"

Name: "same 'name'"

Word: But all your favorite language

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Introduce names for types

\[
\text{type } I = \text{Int}^+ \quad \text{(Scala)}
\]

\[
\text{typedef } i \text{ : Int}^+ \quad \text{(C)}
\]

\[
\text{type } P = (\text{Int}, \text{Int}^+)
\]

\[
\text{TYPE } I = \text{INTEGER} \quad \text{(MYSTERY)}
\]
Construct Types

\[ z = (x : 2) \cdot z \]

\[ \exists f : z \cdot 3 \]

1 number
1 string

MYSTERY ARRAY, PROCEDURE, SUBRANGE

Name vs. Structural
only matters for constructed types!

\( \{ f : \text{number} \mapsto 3 \} \)

Yes - structural equality
No - name equality
type A = { f: number }  

type B = { f: number }  

A \n\equiv B

Java

```java
final class A {
    int f;
}

final class B {
    int f;
}
```

```java
3
```

```java
3

int f(A a) {
    return a.f;
}
```

```java
7

Bb = ... ; f(b);
```