pubCrawl

for when one just won’t do

The Team

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The Overview

- Easy sharing of computation load across any number of machines
- Focus on list manipulation
- Type inferred for elegance and ease of use
- Essentially a distributed scripting language

The Origin

“a tour taking in several pubs or bars, with one or more drinks at each.”

The Hello World

print(“hello world!”);

The (cooler) Hello World

```
numsToLetters = a -> {
    myLetters = "abcdefghijklmnopqrstuvwxyz ";
    return myLetters[a];
};
mynums = [7, 4, 11, 11, 14, 26, 22, 14, 17, 11, 3];
print(List.map(mynums, numsToLetters) ^ "!");
```

The (distributed) Hello World

```
numsToLetters = a -> {
    myLetters = "abcdefghijklmnopqrstuvwxyz ";
    return myLetters[a];
};
mynums = [7, 4, 11, 11, 14, 26, 22, 14, 17, 11, 3];
result = distribute(mynums, numsToLetters);
print(List.map(result, x -> { return x[0]; }) ^ “!”);
```

The Types

- Numbers
- Booleans
- Characters
- Collections
- Functions
- Objects

The Type Inference

```
myFunc = (f,a) -> { return f(a); };

aNumber = myFunc(x -> { return x+1; }, 5);
aString = myFunc(x -> { return x ^ " second"; }, "first");

print(aNumber); // 6
print(aString);    // “first second”
```

The Type Inference

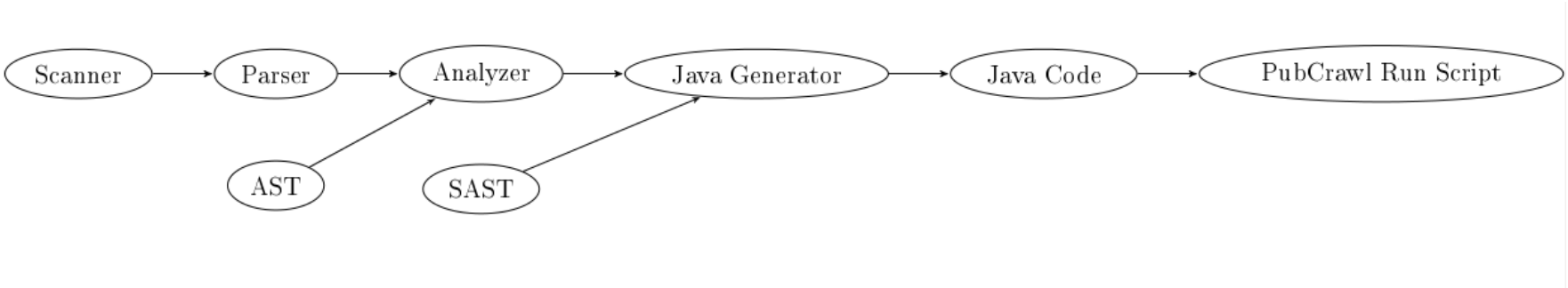
```
unwrap = (o) -> { return List.map("hey", o.a.b[0]); };

TFunc(
    TObjAccess(
        a:TObjAccess(
            b:TList(
                TFunc(TChar -> 'Ck)
            )
        )
    ) -> TList('Ck)
)
```

The Hindley-Milner Type System

Algorithm 1 Type Inference

```
1: procedure InferTypes(ast)
2:     sast ← AnnotateAst(ast)
3:     constraints ← CollectConstraints(sast)
4:     substitutions ← Unify(constraints)
5:     sast ← ApplySubstitutions(sast, substitutions)
6:     return sast
7: end procedure
```

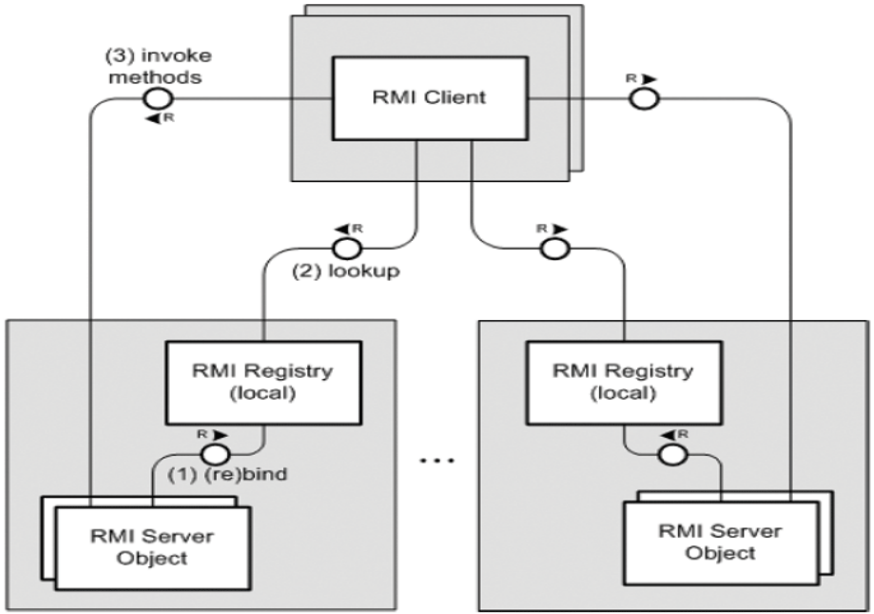
The Structure



The Implementation in Java

- Everything is an “X”
- PCObjects and PCLists
- IPCFunctions
- Java RMI

Java RMI (Remote Method Invocation)



The Lessons Learned

- Respect the work
- Stay in the loop
- Communicate
- Distribute

The Demos