RAPID

Rapid API Dialect

The Team

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Motivation

Rapidly prototype and develop an API server, using strong typing to provide some guarantees about API functionality.

Hello World

```
println("Hello world");
```

Hello World via API

```
http () string {
  return "Hello World";
}
```

GCD Calculator

```
func gcd(int p, int q) int {
    while (q != 0) {
        int temp = q;
        q = p % q;
        p = temp;
    }
    return p;
}
```

Let’s Make it a Server!

```
namespace gcd {
  param int a {
    param int b {
      http (int a, int b) int {
        int res = gcd(a, b);
        return res;
      }
    }
  }
}
```

OOP in RAPID

```
class User {
    int age;
    string name = "Stephen";
    optional int height;

    instance my {
        func is_old() boolean {
            return (my.age >= 30);
        }
        func make_older() {
           my.age = my.age + 1;
        }
    }
}
```

```
User stephen = new User(age=29);
println(stephen.age);
stephen.height = 73;
println(stephen.height);

if (stephen.is_old()) {
   println("Stephen is old");
}
else {
    println("Stephen is young");
}
stephen.make_older();
if (stephen.is_old()) {
   println("Stephen is old");
}
```

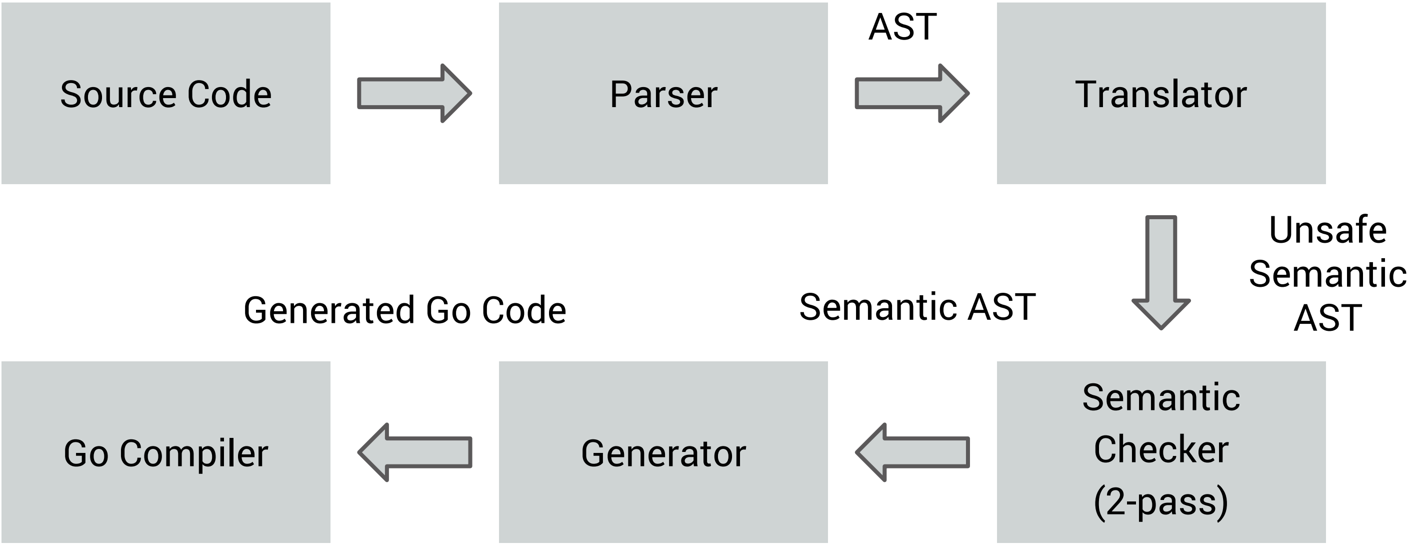
Types

- Ints
- Floats
- Strings
- Booleans
- Classes
- Lists

Functions

- Instance functions
- Standalone functions
- Multiple return types
- Type checked args
- Optional args with default values

Compiler Pipeline


Source Code

Parser

AST

Translator

Unsafe Semantic AST

Semantic Checker (2-pass)

Semantic AST

Generator

Generated Go Code

Go Compiler

Lessons Learned

- Set smaller milestones and stick to them. Meet more regularly to work.
- Programming a sizeable project in a new programming language takes longer than expected.
- Rigorous code review, and testing are important!
- Focus. Our LRM was ambitious

Demos

- GCD Server
- OOP