pixelman

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:)

Motivation

- Create a general purpose programming language catered towards manipulating pixels in images
- Faster, easier vector/matrix manipulation
- More portable than image enhancing software

Basics

Vector:

```
int[5] a;
a = [1, 2, 3, 4, 5];

int[5] b;
b = [1, 2, 3, 4, 5]
```

Operations:

Multiplication:

- :) Dot product
- :) Scalar

Addition

Subtraction

Basics

Matrix:

```
int[2][2] a;
a = [| [1, 2] & [1,2] |];
```

Operations:

Multiplication

- :) Scalar
- :) Cross product

Addition

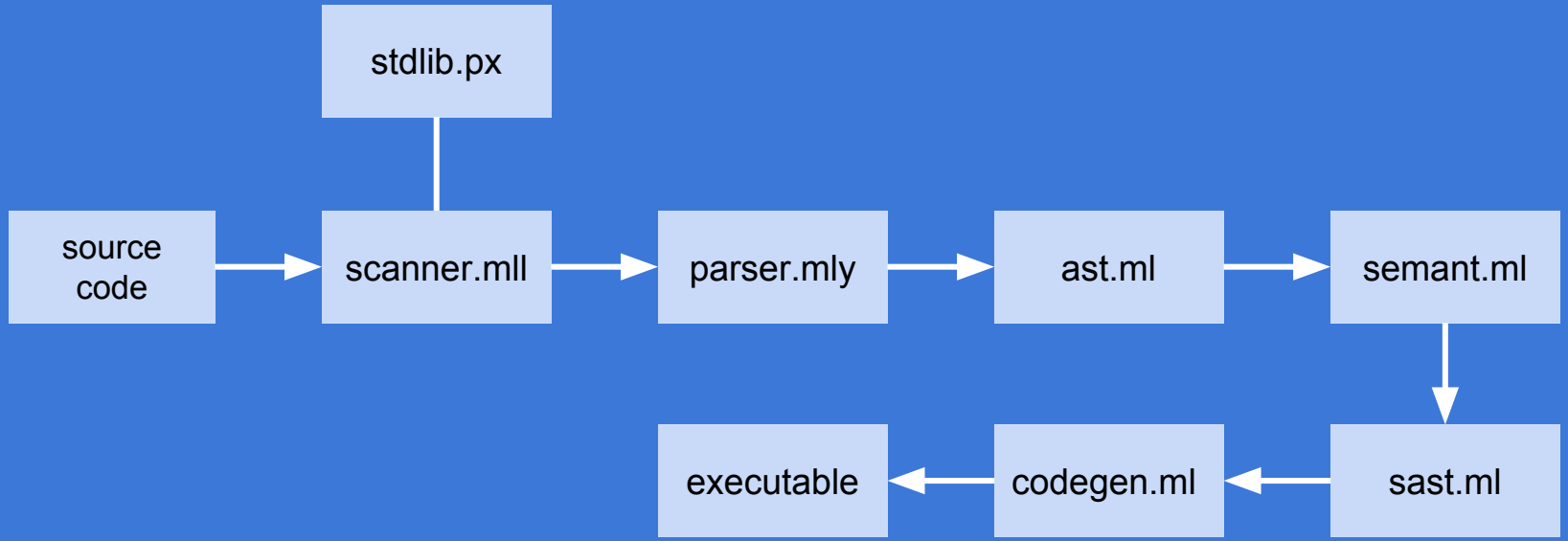
Subtraction

What else did we do?

- Matrix/vector operations
  - Inverse, Transpose
- Built-in Library

- Bitwise Operators
- Implicit Typecasting
- Explicit Typecasting
- Smiley comments! :)

Architecture



Testing

- .px file extension
- Unit tests
- Test Cases for Pass/Fail

Lessons learned & contributions

Anthony: Scanner, Parser, AST, SAST, Semant, Codegen, Stdlib debug, compiler frontend

Start early and chunk the work so it's more manageable

Teresa: Scanner, parser, AST, bitwise/float/ Matrix literals in codegen, basic Matrix opsin stdlib

Have goals during your meetings

Gabriel - Hello World, Test Suite, semant, codegen, stdlib linking

Don't just start early, do the bulk of the project early so you can add cool features later.

Brian: Scanner, parser, ast, sast, semant, codegen, stdlib

Put in consistent work; you're gonna have to change the structure of your compiler a lot!

Milestones

October 2017

Finished grammar

December 2017

Matrix manipulation

November 2017

Hello World! Printed

Demo Day

What people are saying

I can automate my linear algebra homework now!

Gabriel Kramer-Garcia, NY

This is bad for my students!

Linear Algebra Prof, NYC

Demo