Team Members

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eGrapher: A Programming Language for Art
Now we are c like language
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1. Introduction

Let’s go over what eGrapher is all about.
Let's **review** some concepts

**LLVM:** Backend is able to be compiled into LL IR code, which allows for cross-platform code.

**Standard Library:** Print, and standard methods of a List including add, get etc.

**Struct:** Simplified version of an object, which can be customized to include standard types from the library.

**List:** a mutable list implemented by c linked list
>2,000 lines of code
Efficient code

hundreds errors
Shift/reduces/syntax...

100%
Total success of test cases!
2. Implementation
Implementation

Input

Tokens
    Scanner

AST
    Parser

SAST
    Semantic Checking

Out.ll
    Codegen
2. Syntax
Syntax

Comments
/* multiple lines */

Operators
+, -, *, /, %
==, !=, <, >, <=, >=
+, =

List
List int x,
Add, Get

Loops
while, for
If-else/else-if

```
if(false){
    print(123);
}else{
    print(321);
}
Return 0;
```

Struct

```
Struct person[  
    String name;
    Int age;
]

Int get(struct person a){
    print(a.age);
    Return a.age;
}

Int main(){
    Struct person a;
    A.age = 100;
    print (get(a));
}
```
4. Challenges
This project was HARD

Programming Knowledge Experience
We knew very little about compilers and how to program languages

How much we didn’t know...
We spent countless midnights frustrated... but we made it and are happy with how far we have come.

Design of Language
LLVM
Parser
Scanner
Global Variables
Implementation of Design Detail
Implementation of List
Design of Struct
5. Demo
Bubble Sort

Input: 9 2 8 7 5 1 8
Output: 1 2 5 7 8 8 9

/* Bubble sort code */
int main(){
    list int l;
    l.add(3);
    l.add(5);
    l.add(2);
    l.add(1);
    l.add(4);
    int c, d, swap;
    int n = l.length();
    for (c = 0 ; c < (n - 1) ; c=c+1){
        for (d = 0 ; d < n - c - 1 ; d=d+1){
            if (l.get(d) > l.get(d+1)){
                swap = l.get(d);
                l[d] = l.get(d+1);
                l[d+1] = swap;
            }
        }
    }
    printf("Sorted list in ascending order:\n");
    for (c = 0 ; c < n ; c=c+1 ){
        printf(l.get(c));
        printf(" ");
    }
}
Plotting

Link to OpenGL
THANKS!

Any questions?