

finL

Manager Lauren O'Connor, leo2118
System Architect Paddy Quinn, pmq2101
Language Guru Josh Fram, jpf2141
Tester Rob Cornacchia, rlc2160



Background & Goals



Development

Roles and Responsibilities

Paddy
compiler development
(semantics)

Lauren
compiler development
(syntax)

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Josh
java libraries
YQL integration

Rob
test suite

← not so strong

financial knowledge

→ strong

Testing

Unit Testing

Lexical and Syntactic Test

vdecl_test.finl

```
int x_1;
string w__;
print "success";
print "\n";
```

Semantic Test

binop_type_mismatch_test.finl

```
function int main() {
    int x;
    x << 1 + "string";
};
```

Other Platforms Used

```
$ menhir --interpret --interpret-show-cst parser.mly
$ ./finlc -a input.finl #prints ast
$ ./finlc -s input.finl #prints sast
```

Regression Testing

```
define_stock_test passed.
Compiling define_stock_test.finl ...
Running define_stock_test ...
define_stock_test passed.
Compiling div_assign_test.finl ...
Running div_assign_test ...
div_assign_test passed.
Compiling float_test.finl ...
Running float_test ...
float_test passed.
Compiling hello_world.finl ...
Running hello_world ...
hello_world passed.
Compiling if_decl_test.finl ...
Fatal error: exception Semantics.Except("Variable 'x' is already defined!")
Running if_decl_test ...
Error: Could not find or load main class if_decl_test
if_decl_test passed.
Compiling if_test.finl ...
Running if_test ...
if_test passed.
Compiling int_float_op_test.finl ...
Running int_float_op_test ...
int_float_op_test passed.
Compiling main_test.finl ...
Fatal error: exception Semantics.Except("Function 'main' is already defined!")
Running main_test ...
```



Brief Tutorial

Program Structure

Example

```
portfolio "myPortfolio";

function int add(int x, int y){
    return x+y;
};

function int subtract(int x, int y){
    return x-y;
};

int two;
int one;
two << 2;
one << 1;
int result;
result << subtract(two, one);
print result; # prints 1
```

Basic Types & Syntax

Types

int	string
float	stock
	order

```
# Example declarations and assignments
int x;
x << 12;

stock i_love_apple;
i_love_apple << @AAPL;

print @TSLA[epsEstimateCurrentYear];

order apple_order;
apple_order << 100 of apple;
```

Built-in Features

print
buy
sell
portfolio

[]
**
* / %
+ -
< > <= >= =
and or not
<< +<< -<< *<< /<<

```
print 3**2;

sell 50 of @AMZN;
buy my_order;

not(presentation=good)? {
    make_joke();
};

portfolio "my_portfolio_name"; print ;
```

Control Flow

Conditionals

conditionals read as true/false questions
? is equivalent to if
and ! equivalent to else

```
int number;  
number << 0;  
  
number > 0 ?  
  {print 1;}  
! {print 0;};  
# this will print 0
```

Loops

while loops can be used both as a conditional (while) and iterative (for) loop
using a while loop to iterate a set number of times, as a for loop, is shown below

```
int i;  
i<<0;  
while i<5 {  
  print i;  
  i<<1;  
};  
# executes 5 times
```

when loops are a key feature in finl starts a new thread to support being able to place multiple limit orders they check a conditional periodically, and when it is satisfied, the body is executed once

```
when apple[FiftydayMovingAverage] >  
  apple[TwoHundreddayMovingAverage] {  
    buy myOrder;  
  }  
  
# this order will only execute if the fifty day  
# moving average goes over the two hundred day  
# moving average
```

Unique Features

Printing Complex Data Types

ability to print stocks, orders, and portfolios

When Loops

ability to periodically check conditional and work with multiple threads using when loops

YQL Database Calls

abstraction of Yahoo Finance database calls from the user

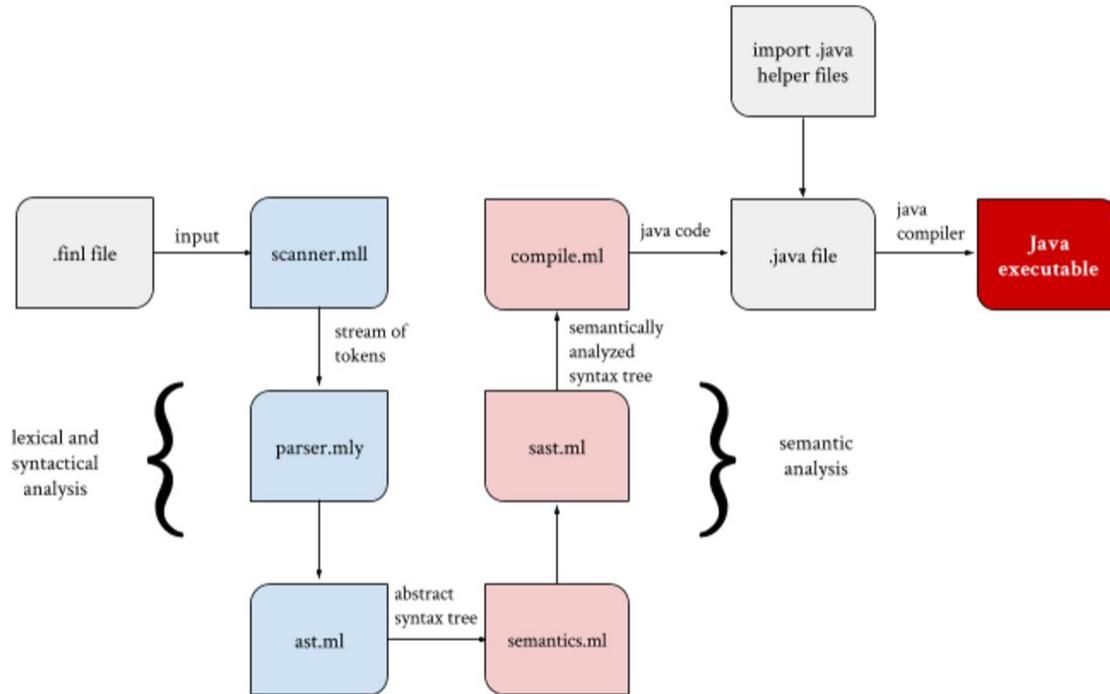
CSV Portfolios

ability to import and export CSV portfolios to work over multiple sessions



Implementation

Diagram



Java Libraries

Stock

quotes subclass
fundamental subclass
dividends subclass
 statistics, variables, etc.

Order

stock	execution date
size	whether it's been executed
share price	order type (buy/sell)

Portfolio

holding subclass
account value
print
CSV import and export

Lib

boolean manipulation
string comparison



Demo & Questions