AHOD - 

Caitlyn Chen, Tiffeny Chen, Jang Hun Choi, Mara Dimofte, Christi Kim
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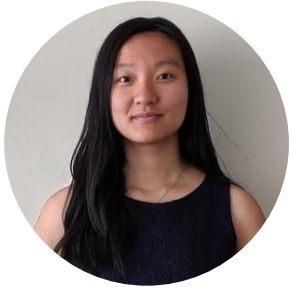
Team

Caitlyn Chen
Language Guru



Tiffeny Chen
System Architect

Jang Hun Choi
System Architect

Mara Dimofte
Manager

Christi Kim
Tester

TA: Xijao Li

Motivation

- Card games come in many different forms -- standard 52-card deck to UNO, Apples, and Pokemon relying on unique decks.

- Existing card languages fail to generalize the full breadth of card games

- Allows users to easily code the gameplay and the functionality of a turn-based card game

Language Tutorial - Basic

global var

required main declaration

local var

assignment

control structure: for, while, if-else

end of scope for main

```
1   int a
2   main:
3   {
4       float b
5       b = 5.0
6       if 3<5:
7       {
8           for (a = 0 ; a < 5; a = a + 1):
9           {
10              b = b + 1.0
11              do PRINT(b)
12          }
13      }
14  }
15
```

*strongly typed language
- *types*: int, float, bool, string, void, series, player, card

*newline instead of semi colon

Language Tutorial - Advanced

action (func) CREATEPILE

```
1   when do series<Card> CREATEPILE():
2   {
3       Card card1
4       card1 = Card("R5", true)
5       return [card1]
6   }
7   main:
8   {
9       series<Card> cards
10      Card card
11      cards = do CREATEPILE()
12      card = cards[0]
13      do PRINT(card.type)
14      do PRINT(card.faceup)
15  }
16
```

created card object

returned series literal

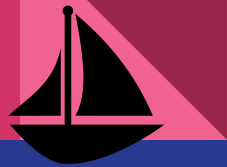
called action

accessed 0th element of series cards

card attributes: R5, true (respectively)

Features Summary

Feature	Associated Methods
Control Flow	if, else, while, for
Built in Objects	Player, Card
Series Literals	push, pop, get, size
Action Declarations	accessing params, return



Built-in Objects

Player

```
1   Player player
2   main:
3   {
4     player = Player("bob", 0)
5     do PRINT(player.name)
6     do PRINT(player.score)
7   }
8
```

Card

```
1   Card card
2   main:
3   {
4     card = Card("R5", true, 5)
5     do PRINT(card.type)
6     do PRINT(card.faceup)
7     do PRINT(card.value)
8   }
```

Series Literal

```
series<int> a
series<string> b
int i
main:
  {
    a = [2]

    a.push(1)
    do PRINT(a[1])

    a.push(3)
    do PRINT(a[2])

    a.pop()

    for  (i = 0; i < a.size(); i = i + 1):
    {
    do PRINT(a[i])
    }

    b = ["stmt1", "stmt2"]

    b.push("stmt3")
    b.push("stmt4")

    do PRINT(b[3])

  }
```

Action Declarations

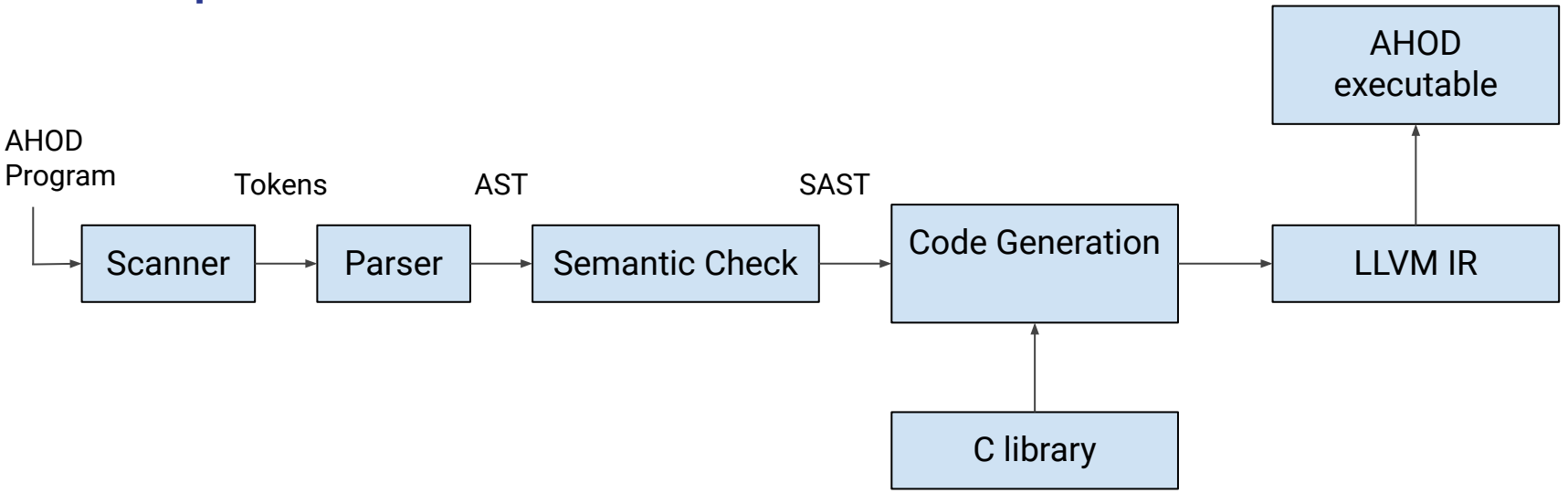
Program

```
1   when do string A(string x):
2   {
3       string z
4       z = x
5       return z
6   }
7   main:
8   {
9       string w
10      w = do A("Ahoy Matey, to AHOD")
11      do PRINT(w)
12  }
```

Output

```
1   Ahoy Matey, to AHOD
```

Compiler Architecture



Demo

Next Steps

- Create more built-in-methods:
  - string-to-int, int-to-string, user input, etc.
- Make code more concise and flexible
  - use whitespace as delimiters (indentation, newline, etc.)
- Allow users to define classes and class attributes
- More list implementations
  - slicing, remove and find certain element
- Type inferencing
- Optimizations of register allocations
- Garbage collection

Thank you for all the guidance this semester!