

COMS 4115: DESCARTES



THURSDAY, DECEMBER 22ND

Eric Chao | Susan Fung | Jim Huang | Xiaocheng Shi

Overview: Motivation

- Design a simple card game language relying on a 52-card deck.
- Focus on younger/beginner programmers.
- High Low Program
 - ▣ Java Implementation – 185 lines
 - ▣ Descartes Implementation – 80 lines

Overview: Descartes

- Language is structured to allow developer to focus on algorithms behind game.
- Structure of language includes several types:
 - Int – 0,1,2,3,4,5,6,7,8,9
 - Bool – true | false
 - String – “string”
 - Card – S1, H2, DA, CQ, etc.
- Static Typed Language
 - Error handling is done during compilation process.

Overview: Some Built-in Functions

- `printDeck()`
 - ▣ Prints out the entire default deck.
- `shuffleDeck()`
 - ▣ Shuffles the entire deck.
- `draw()`
 - ▣ Draws one card from the top of the deck.

Language Tutorial

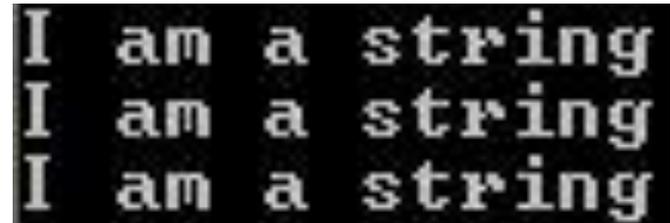
Basics 1: Ints, Booleans

```
int main(){
    int i;
    i = 5;
    while (i > 0) {
        print(i);
        i--;}
    return i;}
```

Prints: 543210

Basic 2: Strings, Functions

```
string main() {
    string s1;
    s1 = "I am a string";
    return
    printString(printString(s1));}
string printString(string x){
    string s;
    s = readStr();
    println(s);
    return s;}
```



```
I am a string
I am a string
I am a string
```

Language Tutorial

Basics 3:

```
string main() {
```

```
string c;
```

```
printDeck();
```

```
shuffleDeck();
```

```
printDeck();
```

```
c = draw();
```

```
printDeck();
```

```
return c;}
```

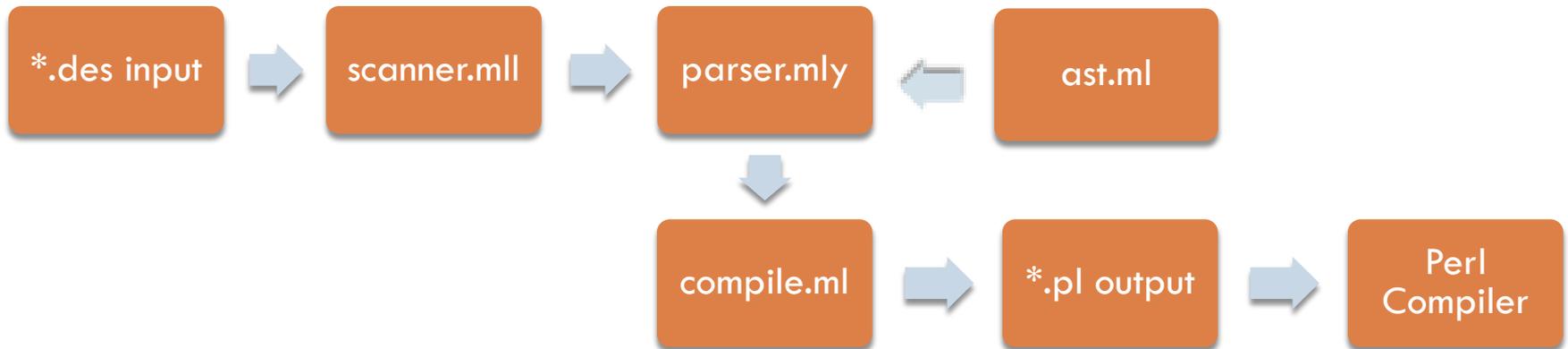
(removed printing of comments,
spacing)

```
C:\Users\Jack\workspace\descartes>perl test-basics3.out
This is a default deck:
C9HQC5S10H4D3H6SJDJCHJH9SKH7D2S8D5S7D7SAH8C10D4D6C7H10H
S5H5C6CQHKCAD8HAS9C2C4DACKDK
This is the same deck shuffled:
H2S3HAD5CKSQSKCJC5HJC10H10C9D3DKD8S10C2H5S2S6DQC6S9S4S7H
6H7DAH8CAD10SJD7C8C4D2HKC3D4

This is the rest of the deck:
S3HAD5CKSQSKCJC5HJC10H10C9D3DKD8S10C2H5S2S6DQC6S9S4S7H4H
7DAH8CAD10SJD7C8C4D2HKC3D4
This was the first card drawn from the deck:
H2
C:\Users\Jack\workspace\descartes>
```

Architecture

□ Descartes Flow Diagram



Roles & Responsibilities

- Eric Chao
 - ▣ scanner.mll, parser.mly, ast.ml, test automation
- Susan Fung
 - ▣ compile.ml, documentation
- Jim Huang
 - ▣ stdlibs, blackjack/highlow.des
- Xiaocheng Shi
 - ▣ compile.ml, stdlibs, highlow.des
- Test cases & documentation were a group effort.

Lessons Learned

- Follow up in person with professor/TA to receive feedback for LRM to ensure our design is correct.
- Have a good plan but also be flexible and willing to change it. Have a good fit for each group member within the group.
- It is better to split the project up with as few dependencies as possible.
- Start early!

Demo

- Descartes “Hello World”
 - ▣ Prints out the default.
 - ▣ Demonstrates deck functions – shuffle/draw
- High Low
 - ▣ User guesses next card.
- Blackjack
 - ▣ User plays against computer dealer