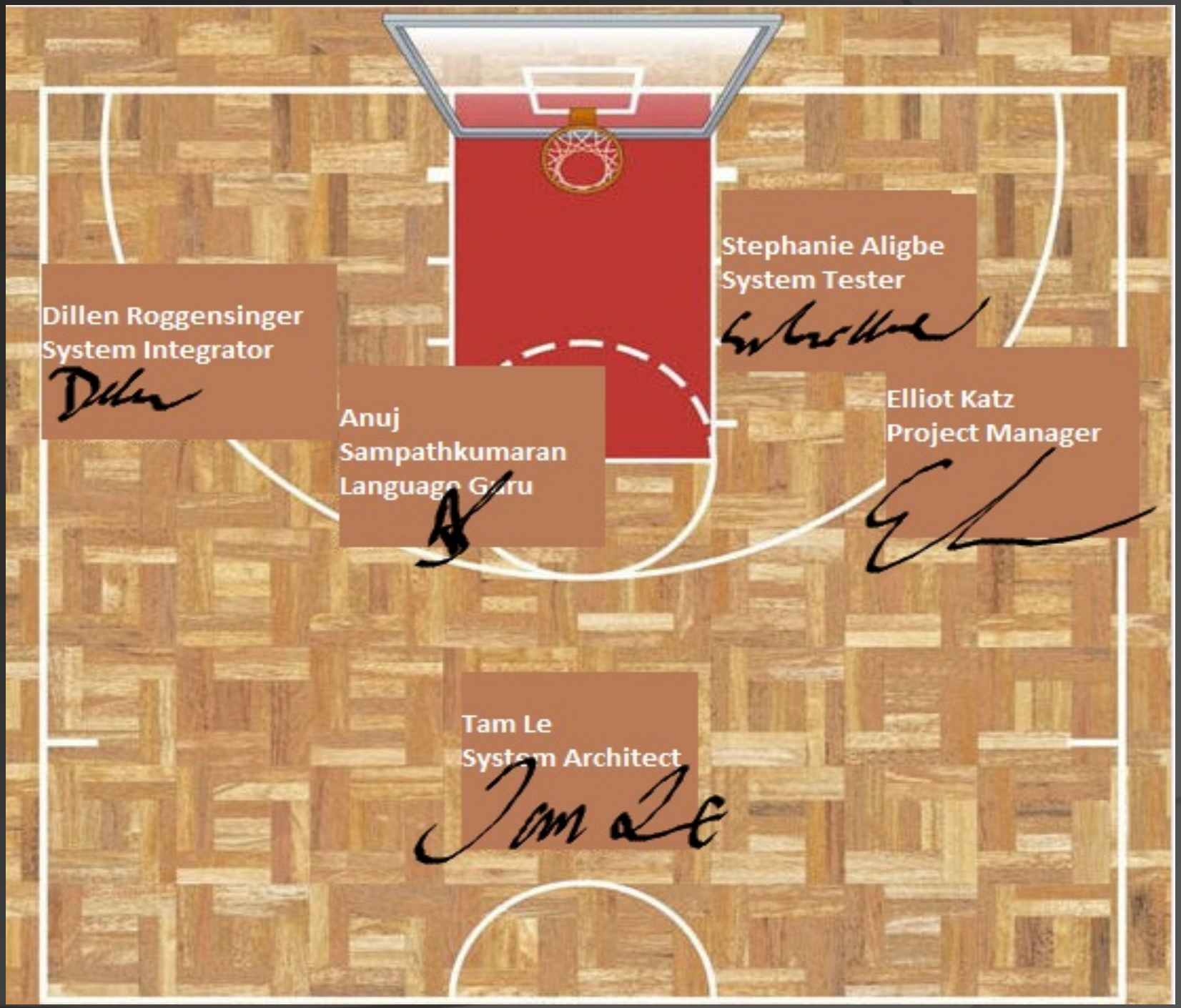
A Fantasy League Language

FLOOD

Team 9:

- Stephanie Aligbe
- Dillen Roggensinger
- Tam Le
- Anuj Sampathkumaran
- Elliot Katz


Stephanie Aligbe
System Tester
Dillen Roggensinger
System Integrator
Anuj
Sampathkumaran
Language Guru
Elliot Katz
Project Manager
Tam Le
System Architect

- Introduction
- Language Basics
- Example
  - Input
  - Intermediate code
  - Application
- Architecture
- Challenges and Lessons Learned

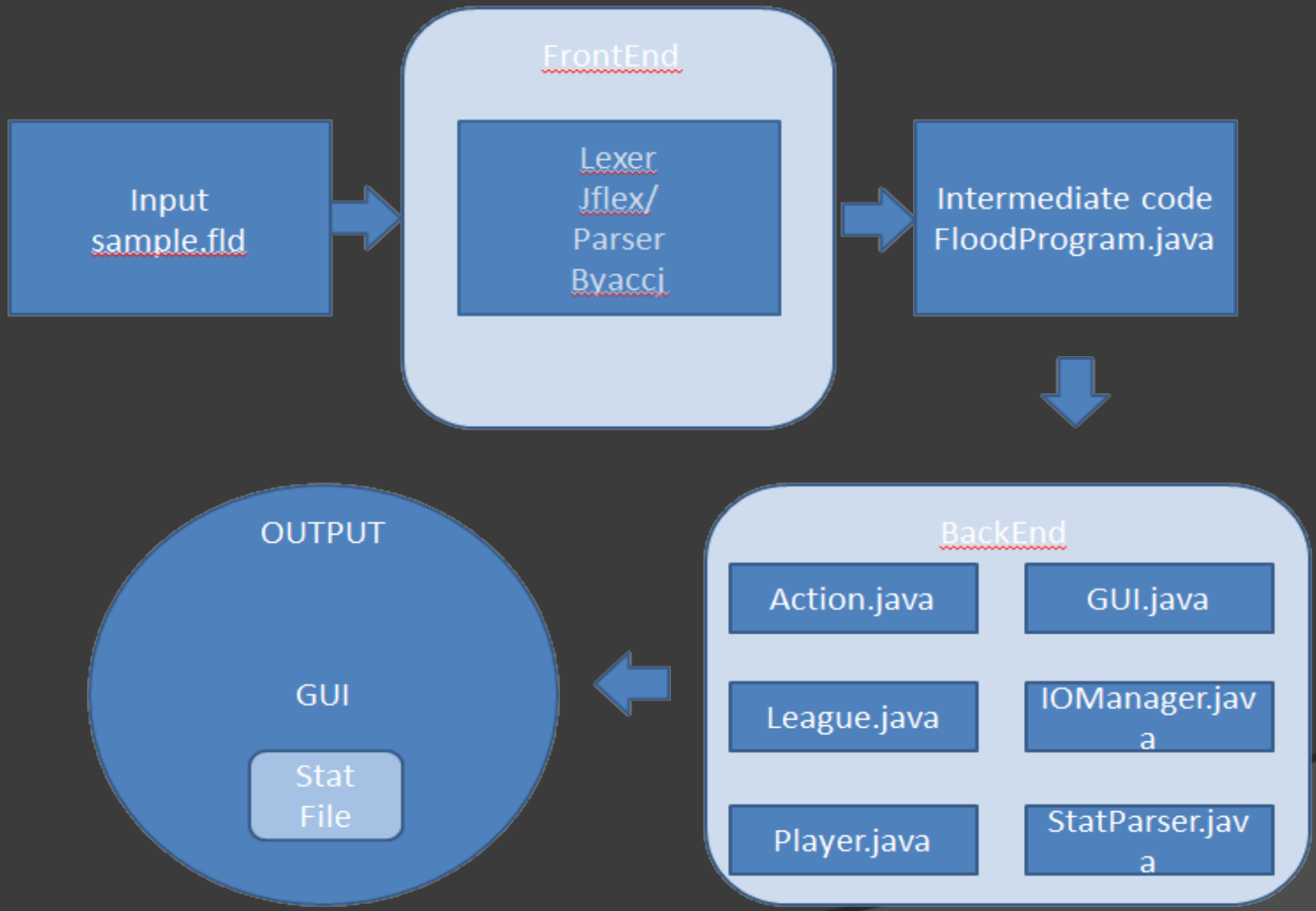
Introduction

- Fantasy gaming has become part of the American lexicon.
- Over 30 million currently play some form of fantasy sports.
- Economic impact estimated to between $3-4 billion annually.
- Untapped application domain.
- Natural candidate for social networking integration.

Why FLOOD?

- Domain specific.
- Easy to learn to program in.
- Quickly create fantasy leagues.
- Comprehensive GUI as output with minimal input.

Architecture



Language Basics

- Simple structure

DefineLeague / League Setup Here */*
. . .
DefineFunctions / Functions Here */*
. . .

- Predefined functions for fast development
  - *draftFunction, draftPlayer, trade, dropPlayer*
- *Types*

Flt	*Str*	*User*
Int	*Bool*	*Player*

Language Basics

Type	***Example***
While	*While (numPlayers < 10){* *footballDraft(); /* User defined draft function*/* *};*
Function (with: *-If statement* *-assignment* *-comments* *)*	*/* */* *Bool isAllStar(Player p){* *Flt points;* *Bool allStar = False;* *points = GetPlayerPoints(p);* *If (points > 100){* *allStar = True;* *};* *Return allStar;* *}*
If Else	*If (totalPoints > 1000){* *Alert("Champion!", "You win!");* *} Else {* *Alert("Game Over", "You Lose");* *};*

```
DefineLeague
Set LeagueName("PLS-Pseudo League Soccer");
Add User("Carlo Ancelotti");
Add User("Alex Ferguson");
Add Action("score goal", 2.0);
Add Action("block shot on goal", 1.0);
Add Player("Petr Cech","goal keeper");
Add Player("Branislav Ivanovic","defender");
Add Player("Ashley Cole","defender");
Add Player("Michael Essien","midfielder");
Add Player("Ramires","midfielder");
Add Player("Frank Lampard","midfielder");

DefineFunctions
        /*Returns a Bool stating if the number of players is greater than the
maximum allowed*/
Bool tooBig(Int players){
Bool flag=False;
If(players > 13){
flag=True;
};
Return flag;
}
        /*The draftPlayer function overwritten by the programmer*/
Bool draftPlayer(User u, Player p){
Bool tooBig;
Bool value=False;
Int i;
i=GetNumPlayers(u);
i=i+1;
tooBig=tooBig(i);
If(!tooBig){
AddPlayer(u,p);
value=True;
};
Return value;
}
```

Example Input

DefineLeague:
This part of the program that builds the league by allowing programmer to add users, players and actions. Users are the teams that will participate in the league, players the athletes on the teams and actions the rules for point distributions.

DefineFunctions:
Any FLOOD program needs four functions to operate which are:

- draftPlayer which adds a given player to a given team. It must return a Bool stating if the draft is successful.
- draftFunction which returns which user's turn it is given a number representing the current draft pick. Users are indexed by the order they are added in DefineLeague which means that in this league, if the draftFunction returns 0, it's saying it's Carlo Ancelotti's turn.
- trade which is responsible for trading two given arrays of players between two given users. It must return a Bool stating if the trade is successful.
- dropPlayer which drops a given player from a given user. It must return a Bool stating if the drop is successful.

Any of these functions that are not defined explicitly will be added to the intermediate code with no rules in them.

```
public class FloodProgram {
public static League myLeague;
public static GUI run;

public static void main(String[] args) {
myLeague = new League("PLS-Pseudo League Soccer");
myLeague.addUser(new User("Carlo Ancelotti"));
myLeague.addUser(new User("Alex Ferguson"));
myLeague.addAction(new Action("score goal", 2.0));
myLeague.addAction(new Action("block shot on goal", 1.0));
myLeague.addPlayer(new Player("Petr Cech", "goal keeper"));
myLeague.addPlayer(new Player("Branislav Ivanovic", "defender"));
myLeague.addPlayer(new Player("Ashley Cole", "defender"));
myLeague.addPlayer(new Player("Michael Essien", "midfielder"));
myLeague.addPlayer(new Player("Ramires", "midfielder"));
myLeague.addPlayer(new Player("Frank Lampard", "midfielder"));
run = new GUI(myLeague);
run.drawBoard();
}

public static boolean tooBig(int players) {
boolean flag = false;
if (players > 13) {
flag = true;
}
return flag;
}

public static boolean draftPlayer(User u, Player p) {
boolean tooBig;
boolean value = false;
int i;
i = u.getNumPlayers();
i = i + 1;
tooBig = tooBig(i);
if (!tooBig) {
u.addPlayer(p);
value = true;
}
return value;
}
```

Intermediate Code

This is the Java code generated by the code on the previous slide, with the default functions omitted because they do not change unless overwritten. All methods are written in the main class and are accessed by the GUI class statically so the methods are translated with the static modifier. The rest is more or less a direct translation.

Application

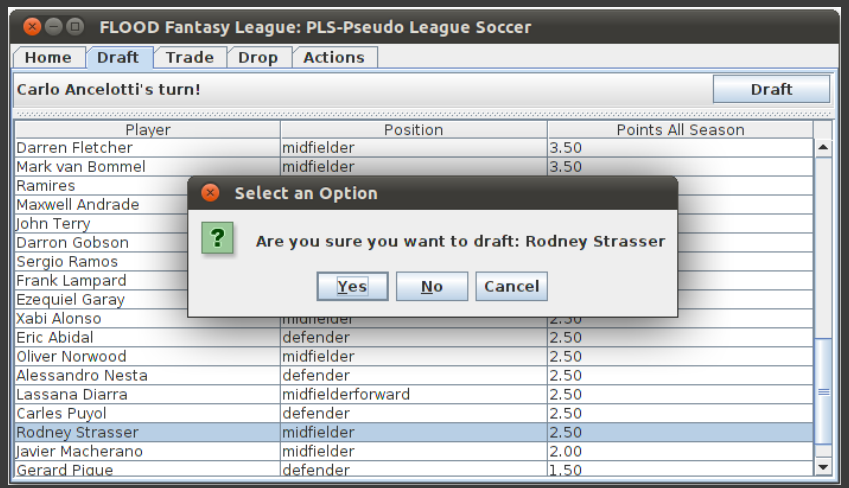
- Features of the Application

Start of the Application

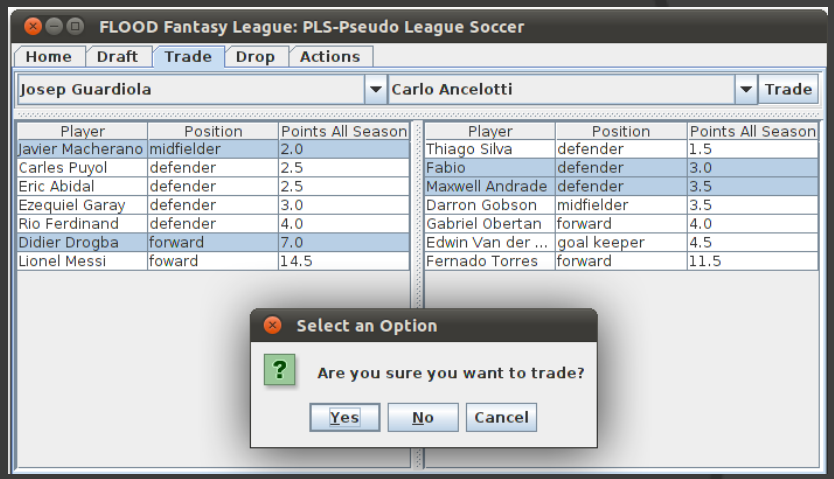
Application in Progress

Application

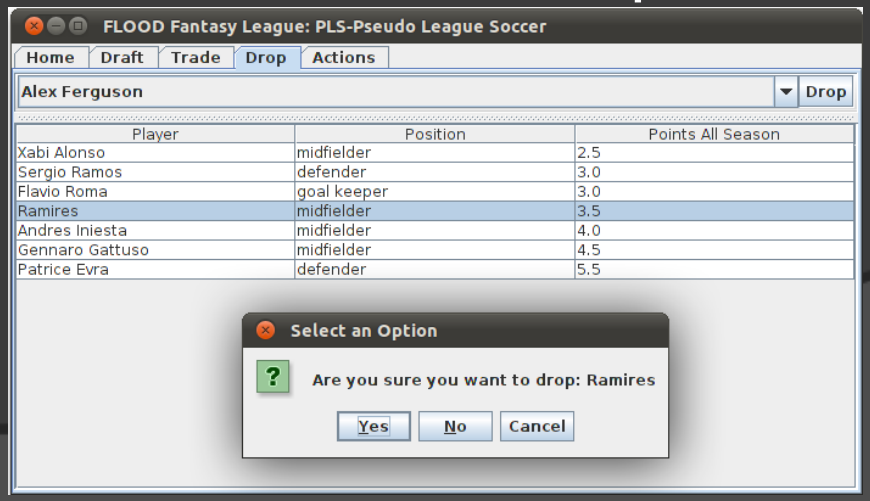
Confirm a Draft



Confirm a Trade

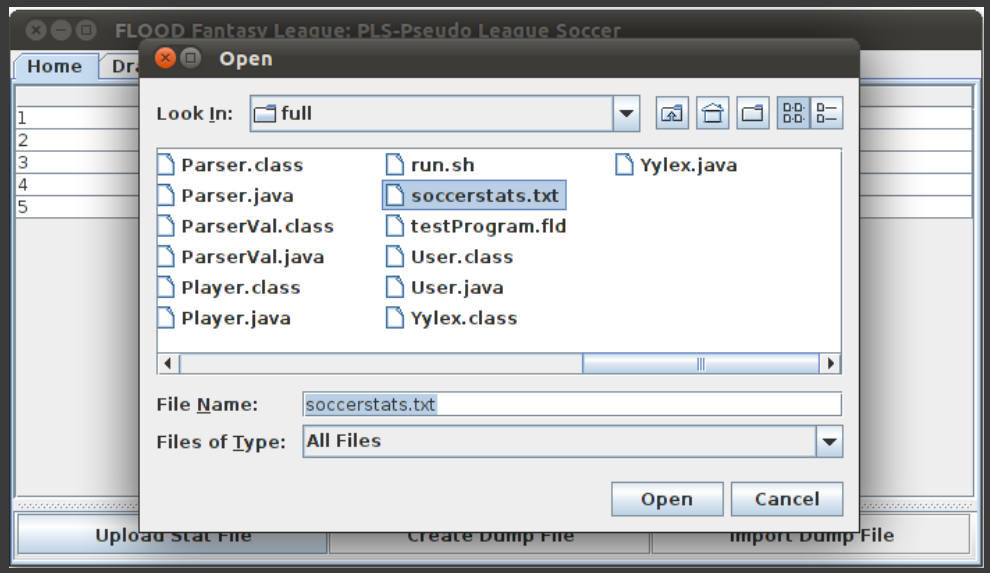


Confirm a Drop



Application

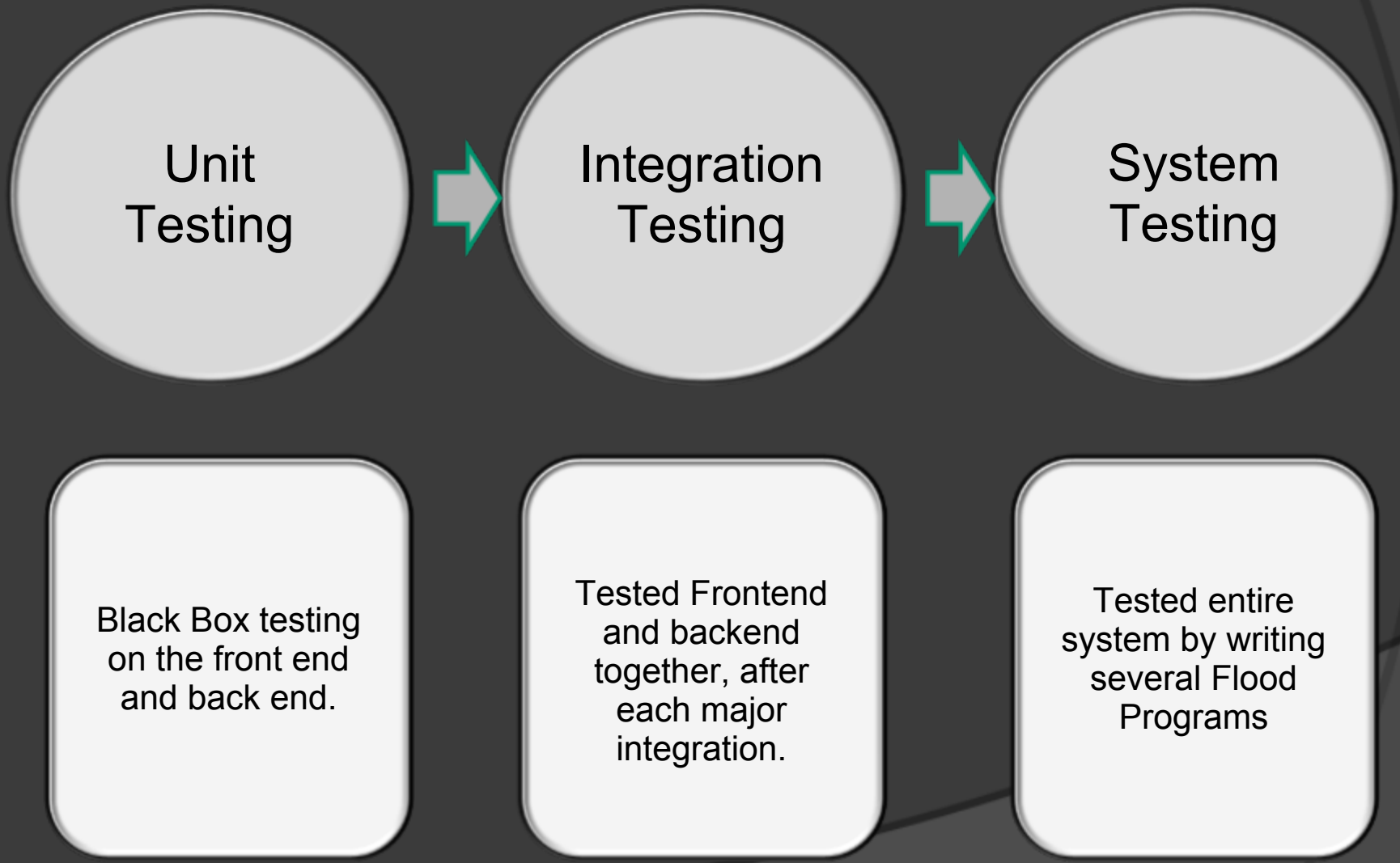
Upload a Statistics File



View All Possible Actions

Action	Point Value
score with a header	1.50
shot	0.50
yellow card	-1.00
tackle	0.50
red card	-2.00
score goal	2.00
score from 30+ yards out	1.50
score penalty kick	0.50
block shot	0.50
block shot on goal	1.00
shot on goal	1.00

Testing methods



Design & Development Tools

Challenges

- Brainstorming and then deciding on an intellectually stimulating/novel subject matter for a programming language.
- Coordinating and managing the logistics involved in getting a group of strong willed individuals to work together towards a common goal. Easier said than done.
- Making tough technical decisions and be accepting of accountability when those choices don't always work out.

Lessons Learned

- Be realistic with project scope early on. Try doing too much too soon bogs down development from the get go.
- Be proactive in formulating/implementing language grammar. Do NOT defer because material not yet presented in class.
- Be open to compromise. Aggressive timelines dictate form follows function.
- Don't take yourself too seriously. In any collaborative undertaking, a good sense of humor goes a long way.

Questions?