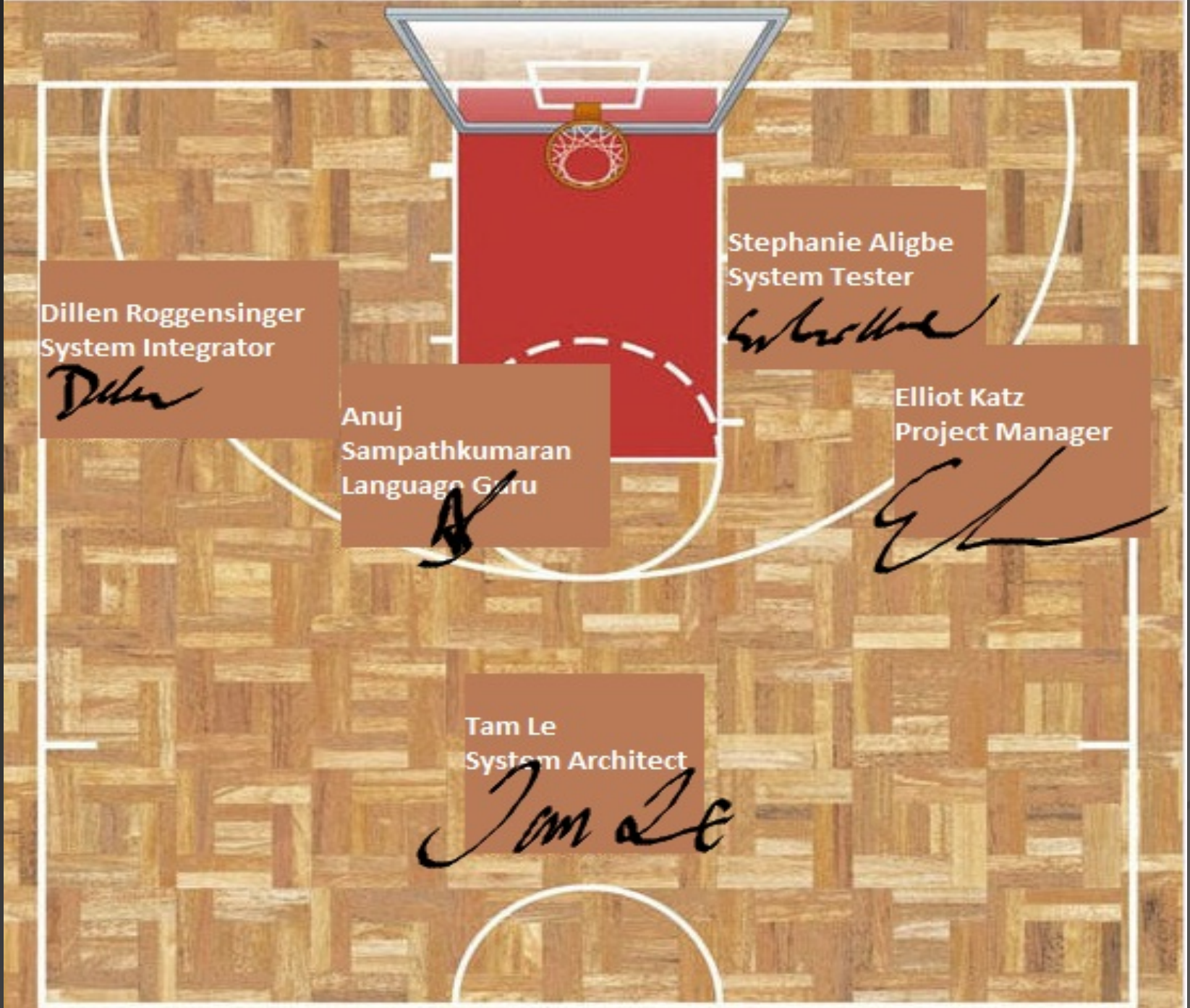


A Fantasy League Language

FLOOD

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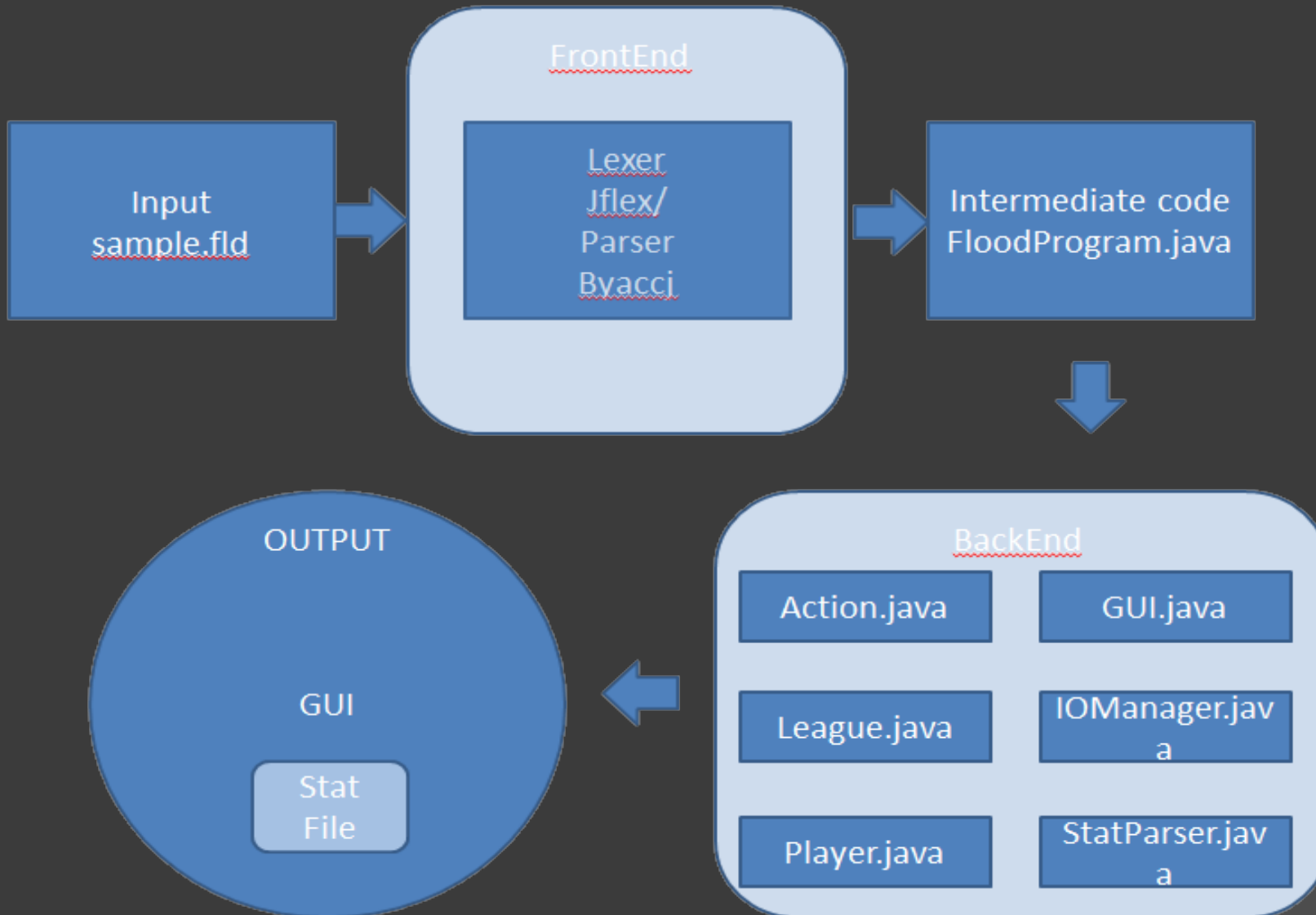
Introduction

- Fantasy gaming has become part of the American lexicon.
- Over 30 million currently play some form of fantasy sports.
- Economic impact estimated to be 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*

<i>Flt</i>	<i>Str</i>	<i>User</i>
<i>Int</i>	<i>Bool</i>	<i>Player</i>

Language Basics

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


```

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



Rank	Team	Points
1	Carlo Ancelotti	0.00
2	Jose Mourinho	0.00
3	Alex Ferguson	0.00
4	Josep Guardiola	0.00
5	Massimiliano Allegri	0.00

Application in Progress



Rank	Team	Points
1	Jose Mourinho	19.50
2	Alex Ferguson	19.00
3	Massimiliano Allegri	13.00
4	Josep Guardiola	12.50
5	Carlo Ancelotti	11.00

Application

Confirm a Draft

The screenshot shows the 'Draft' tab of the application. The user is Carlo Ancelotti's turn. A dialog box titled 'Select an Option' is displayed, asking 'Are you sure you want to draft: Rodney Strasser'. The dialog has 'Yes', 'No', and 'Cancel' buttons. In the background, a table lists players and their points for the season.

Player	Position	Points All Season
Darren Fletcher	midfielder	3.50
Mark van Bommel	midfielder	3.50
Ramires		
Maxwell Andrade		
John Terry		
Darron Gobson		
Sergio Ramos		
Frank Lampard		
Ezequiel Garay		
Xabi Alonso	midfielder	2.50
Eric Abidal	defender	2.50
Oliver Norwood	midfielder	2.50
Alessandro Nesta	defender	2.50
Lassana Diarra	midfielderforward	2.50
Carles Puyol	defender	2.50
Rodney Strasser	midfielder	2.50
Javier Macherano	midfielder	2.00
Gerard Pique	defender	1.50

Confirm a Trade

The screenshot shows the 'Trade' tab of the application. The user is Josep Guardiola, and the trade is with Carlo Ancelotti. A dialog box titled 'Select an Option' is displayed, asking 'Are you sure you want to trade?'. The dialog has 'Yes', 'No', and 'Cancel' buttons. In the background, two tables show the player lists for both users.

Player	Position	Points All Season
Javier Macherano	midfielder	2.0
Carles Puyol	defender	2.5
Eric Abidal	defender	2.5
Ezequiel Garay	defender	3.0
Rio Ferdinand	defender	4.0
Didier Drogba	forward	7.0
Lionel Messi	foward	14.5

Player	Position	Points All Season
Thiago Silva	defender	1.5
Fabio	defender	3.0
Maxwell Andrade	defender	3.5
Darron Gobson	midfielder	3.5
Gabriel Obertan	forward	4.0
Edwin Van der ...	goal keeper	4.5
Fernado Torres	forward	11.5

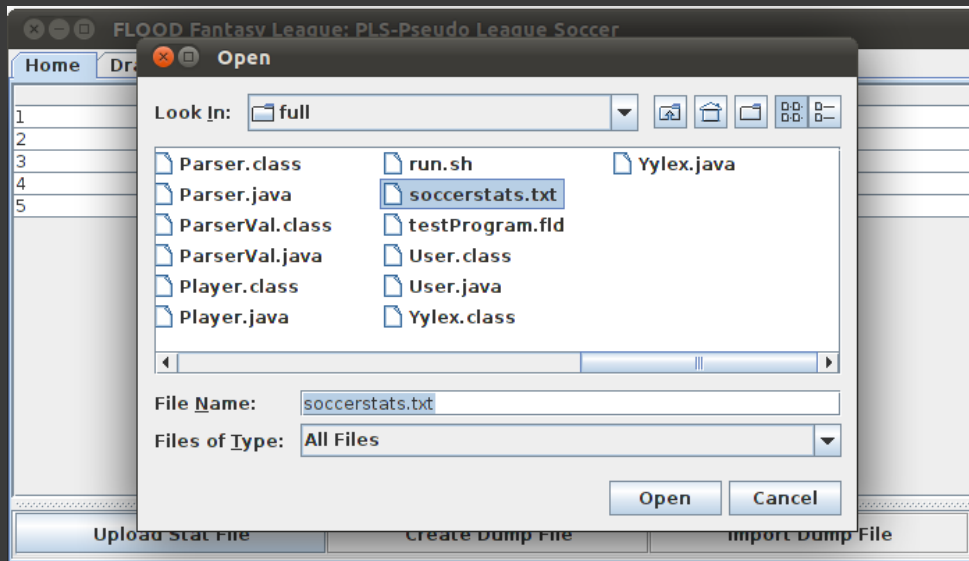
Confirm a Drop

The screenshot shows the 'Drop' tab of the application. The user is Alex Ferguson. A dialog box titled 'Select an Option' is displayed, asking 'Are you sure you want to drop: Ramires'. The dialog has 'Yes', 'No', and 'Cancel' buttons. In the background, a table lists players and their points for the season.

Player	Position	Points All Season
Xabi Alonso	midfielder	2.5
Sergio Ramos	defender	3.0
Flavio Roma	goal keeper	3.0
Ramires	midfielder	3.5
Andres Iniesta	midfielder	4.0
Gennaro Gattuso	midfielder	4.5
Patrice Evra	defender	5.5

Application

Upload a Statistics File

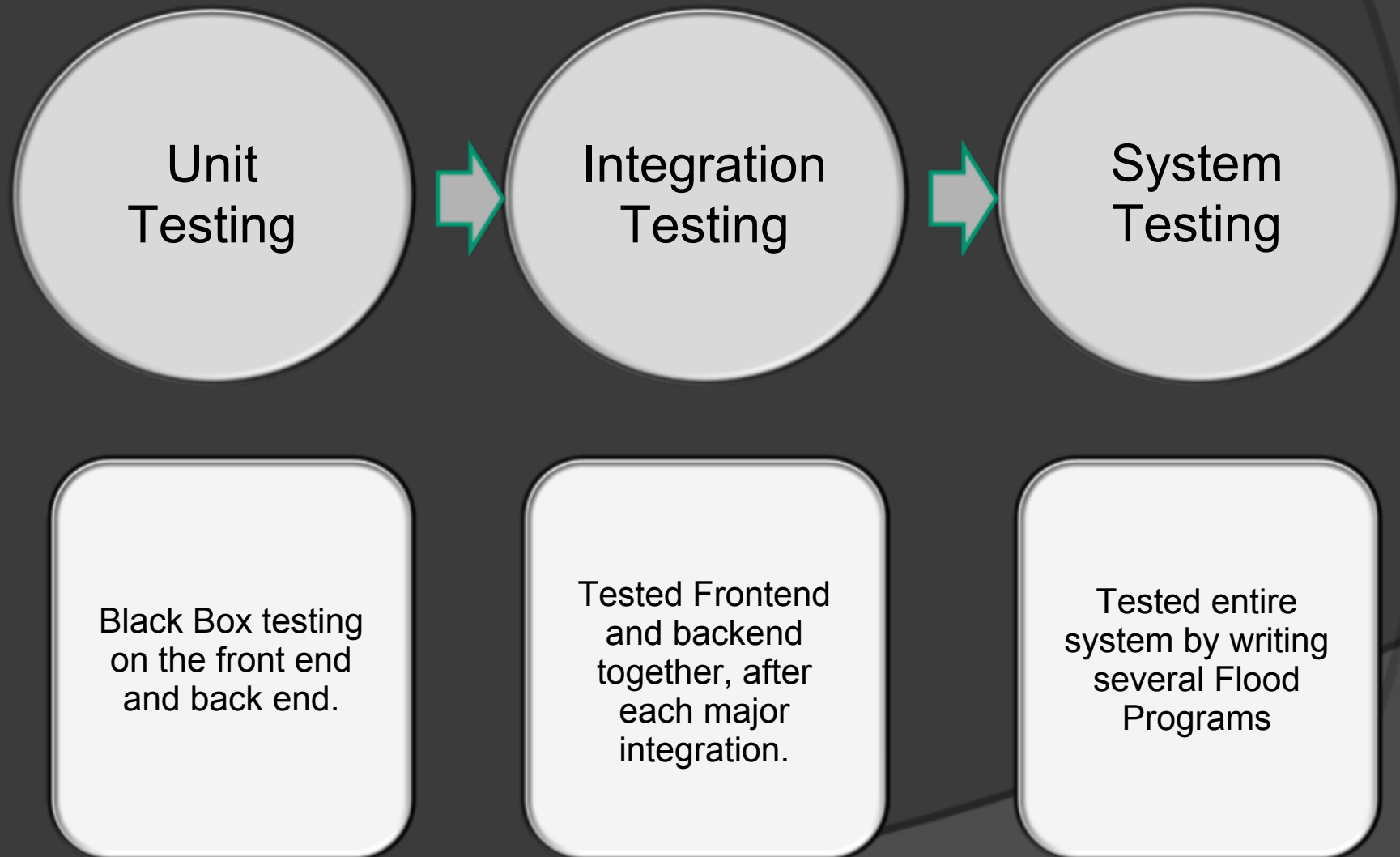


View All Possible Actions

The screenshot shows the "Actions" tab in the application. The table lists various actions and their corresponding point values:

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?

