

## CS453 Compiler Construction

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*Send around sheet to collect email addresses.*

## Plan for Today

### Scanning/Lexing "Quiz"

#### Motivation

- Why study compilers?

#### Programming Assignment Overview

- The interpreter and compiler we will be building

#### Logistics of the course

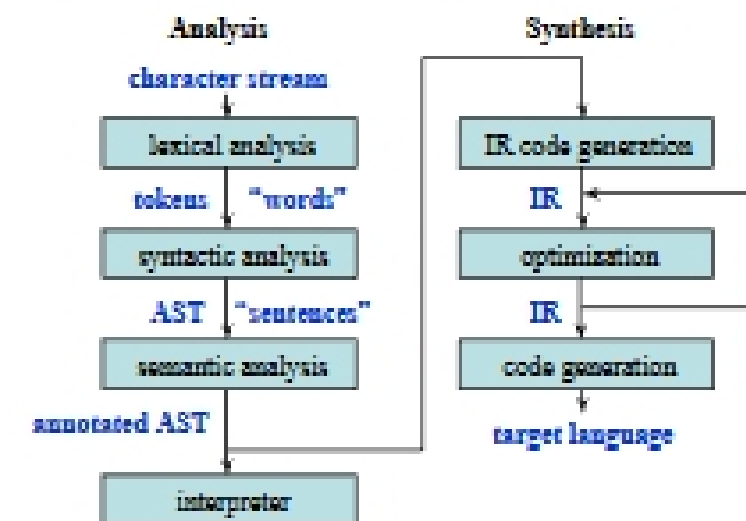
- Syllabus
- Discussion section

## Scanning/Lexing Quiz

```
class Driver {
    public static void main ( String [] id ) {
        System.out.println( boolean && ,
            new int [3], a.length );
    }

    public int [] foo ( ) { }
};
```

## Structure of a Typical Compiler



myWebCT Course Management System

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Control Panel

Designer Options

Calculation Editor: TotalPoints

Formula:

Column: PA1

Function: maximum

Update Cancel

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### SVG Renderer

```

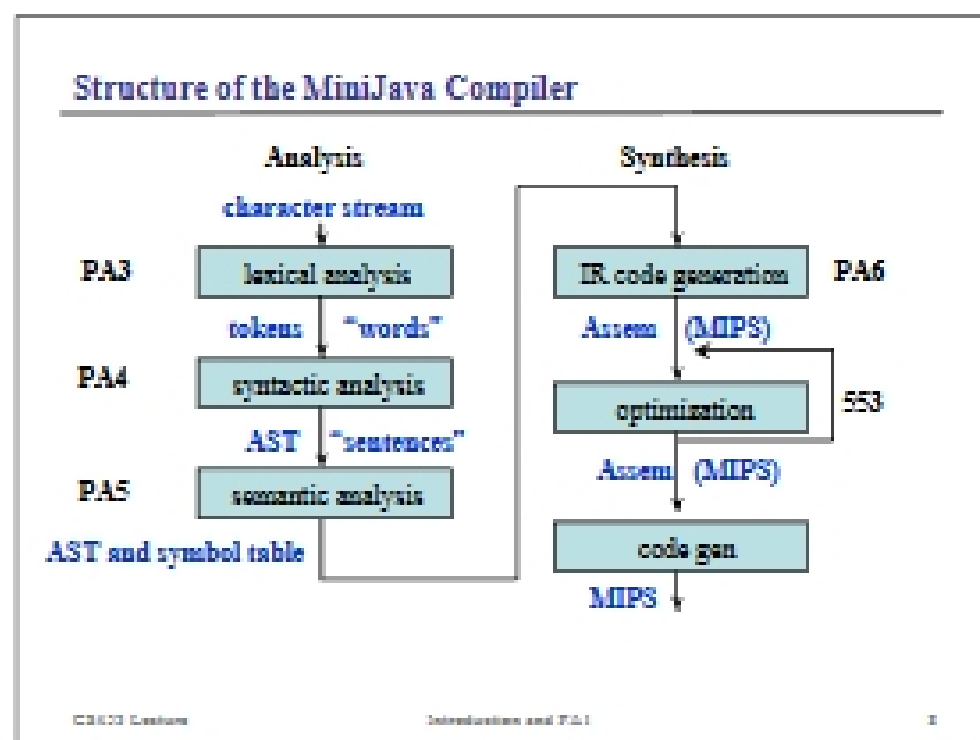
<svg xmlns="http://www.w3.org/2000/svg">
  <!-- rectangles -->
  <rect x="20" y="20" width="300" height="150" fill="red" />
  <rect x="30" y="20" width="300" height="150" fill="blue" />
  <rect x="40" y="20" width="300" height="150" fill="green" />

  <!-- white circle on top of rectangles -->
  <circle cx="120" cy="150" r="60" fill="white" />

  <!-- black diagonal line -->
  <line x1="0" y1="0" x2="300" y2="300" stroke="black" />
</svg>

```

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### Specifying Tokens with JFlex

Theory meets practice

- Regular expressions, formal language, grammar, parsing...

JFlex example lexer file:

```

package mjcparser;
import java_cup.runtime.Symbol;

%%
NLine
NChar
Ncup
Nsubtle

NewFunc1()
return new Symbol(sym.EOF, new
TokenValue("EOF", yylines,
yychar));
NewFunc1()

LETTER=[a-zA-z]
DIGIT=[0-9]
UNDERSCORE="_"
LETT_DIG_UND=(LETTER)|(DIGIT)|(UNDERSCORE)
ID=(LETTER)|(LETT_DIG_UND)*

%%
"%%" { return new Symbol(sym.EOF, new
TokenValue("%%", yylines, yychar); }

"boolean" {return new
Symbol(sym.BOOLEAN,...

{ID} { return new Symbol(sym.ID, new ...
NewFunc1()

```

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