

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

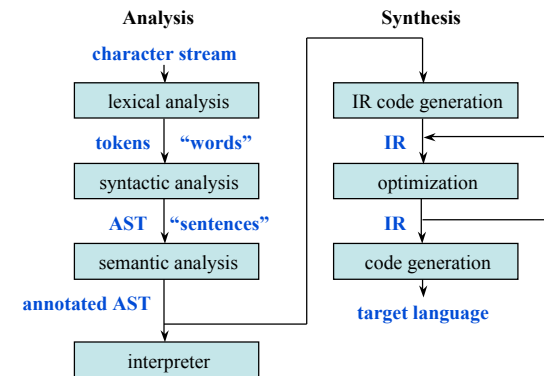
Logistics of the course

- 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 Resume Course Course Map Check Browser Log Out Help

Control Panel CS 453 Introduction to Compiler Construction

View Designer Options

Homepage > Manage Course > Manage Students > Manage Columns > **Setup Column**

Calculation Editor: TotalPoints

Formula:

Column: PA1

Function: maximum

() CE C

7 8 9 /

4 5 6 *

1 2 3 -

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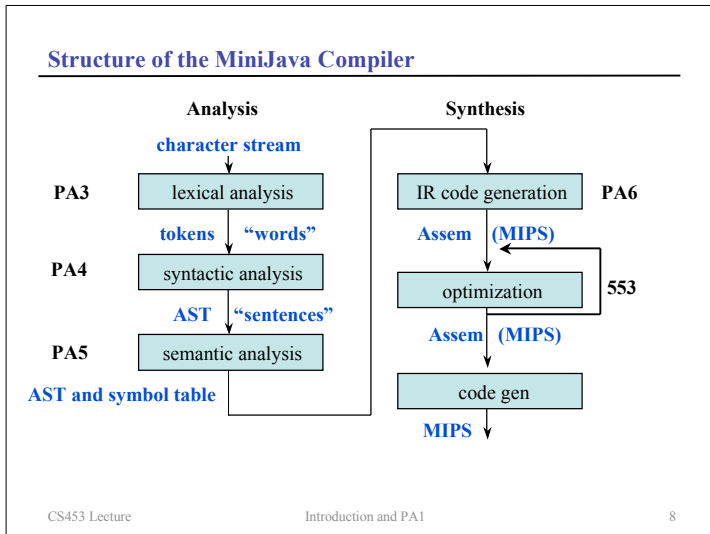
SVG Renderer

```
<svg xmlns="http://www.w3.org/2000/svg">
  <!-- rectangles -->
  <rect x="20" y="20" width="300" height="250" fill="red" />
  <rect x="30" y="20" width="300" height="250" fill="blue" />
  <rect x="40" y="20" width="300" height="250" 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 languages, grammars, parsing...

JFlex example input file:

```
package mjparser;
import java_cup.runtime.Symbol;

LETTER=[A-Za-z]
DIGIT=[0-9]
UNDERSCORE="_"
LETT_DIG_UND={LETTER}|{DIGIT}|{UNDERSCORE}
ID={LETTER}{LETT_DIG_UND}*

%%
%line
%char
%cup
%public

%%
"&&" { return new Symbol(sym.AND, new
  TokenValue(yytext(), yyline, yychar)); }

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

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

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

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