

Prelude

Other uses of compiler technology

- Used in CS410 to parse graphics model
- Used frequently throughout career to embed languages within applications
- domain-specific XML

Notice also that ...

- JLex is also a compiler
- I wonder how it parses its input? Did it use a parser generator?



Plan for Today

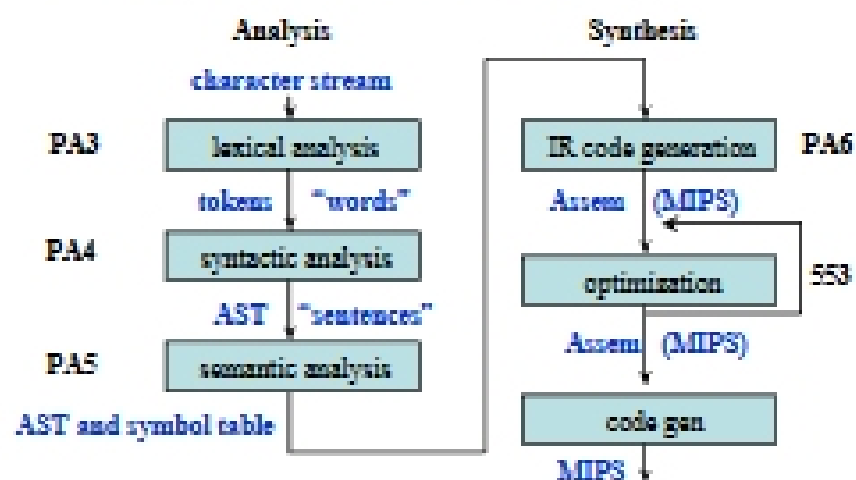
Previously ...

- Tokens can be expressed to the lexer generator JLex as regular expressions

How do lexer generators work?

- Convert regular expressions to NFA
- Converting an NFA to DFA
- Implementing the DFA

Structure of the MiniJava Compiler



Specifying Tokens with JFlex

JFlex example input file:

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

%%
Write
Echo
New
Quote

%%
NewPrio()
return new Symbol(sym.EOF, new
TokenValue("EOF", yyLine, yychar));
NewPrio()
return new Symbol(sym.EOF, new
```

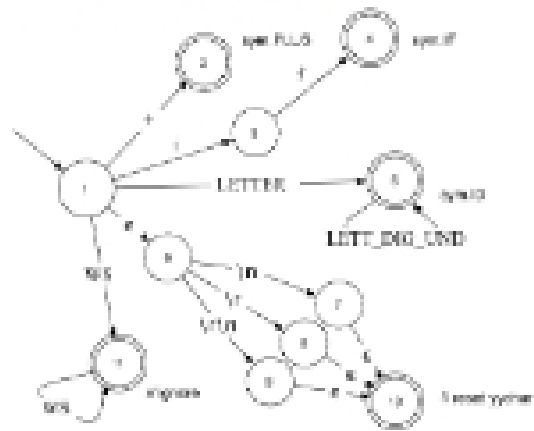
```
LETTER=[a-zA-z]
DIGIT=[0-9]
UNDERSCORE="_"
LETT_DIG_UNDER=(LETTER)|(DIGIT)|(UNDERSCORE)
ID=(LETTER)((LETT_DIG_UNDER)*

%%
"ID" { return new Symbol(sym.ID, new
TokenValue(yytext(), yyLine, yychar)); }

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

(ID) { return new Symbol(sym.ID, new ...
```

Example NFA for Multiple Tokens



DFA from IF and ID NFAs

