



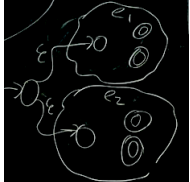


Lecture 2: January 8th, 2020

*Lecturer: Ondřej Lhoták**Notes By: Harsh Mistry*

2.1 Analysis

- Answers two questions
 - Is the input valid?
 - What does the program mean?
- Formal Languages
- Precise specs of sets of strings
- Lexical analysis (Screening) (JLS Ch 3)
 - Scanning is about splitting the input sequence of characters into a sequence of tokens
 - Int main (int foo) return foo;
 - 1. Int
 - 2. Main
 - 3. (
 - 4. Int
 - 5. Foo
 - 6.)
 - 7.
 - 8. Return
 - 9. Foo
 - 10. ;
 - 11. 1
- Creating a scanner
 - 1. . Just write some code
 - 2. . Maximal munch algorithm using a DFA
 - (a) Design DFA by hand
 - (b) Use a tool. Pass a regular expressions into lex to get a DFA.
 - $REGEX \rightarrow NFA \rightarrow DFA$
- Converting Regular Expressions to NFA

ϵ	$meaning L(\epsilon)$	NFA
\emptyset	$\{\}$	
$a \in \Sigma$	$\{a\}$	
ϵ	$\{\epsilon\}$	
$e_1 e_2$	$\{xy x \in L(e_1), y \in L(e_2)\}$	
$e_1 e_2$	$L(e_1) \cup L(e_2)$	
e^*	$L(\epsilon e ee eee \dots)$	