

# NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - Compiler Design (Prof. Rupesh Nasre)

Subject Co-ordinator - Prof. Rupesh Nasre

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Part 1, Programming languages and compilers  
Lecture 2 - Introduction - Part 2, Language translators  
Lecture 3 - Introduction - Part 3, Phases of a compiler  
Lecture 4 - Introduction - Part 4, Static vs Dynamic contexts, Parameter passing  
Lecture 5 - Lexing - Part 1, Terminology, Regex, flex tool- Part 1  
Lecture 6 - Lexing - Part 2, Lexical errors, Input buffering  
Lecture 7 - flex tool- Part 2  
Lecture 8 - Lexing - Part 3, Lookahead, KMP string matching  
Lecture 9 - Lexing - Part 4, Regex to DFA conversion - Part 1  
Lecture 10 - Lexing - Part 5, Regex to DFA conversion - Part 2, Prasing - Part 1  
Lecture 11 - Parsing - Part 2, CFG, Parse tree, Precedence, Ambiguity  
Lecture 12 - flex tool - Part 3  
Lecture 13 - Parsing - Part 3, Sentinel forms, Error recovery, if-else ambiguity  
Lecture 14 - Parsing - Part 4, Left recursion, Recursive descent parsing  
Lecture 15 - Parsing - Part 5, First and Follow, Predictive parsing table  
Lecture 16 - Parsing - Part 6, Predictive parsing table, LL(1) grammars  
Lecture 17 - Discussions and doubts clarification - Part 1  
Lecture 18 - Parsing - Part 6, Bottom-up, Shift-reduce parsing, SLR parsing  
Lecture 19 - Parsing - Part 6, LR(0) automaton, SLR parsing using automaton  
Lecture 20 - Parsing - Part 7, SLR(1) parsing table, SLR(1) parsing algorithm  
Lecture 21 - Parsing - Part 8, Viable prefixes, LR(1) parsing, LR(1) automaton  
Lecture 22 - Parsing - Part 9, LALR parsing, SDT- Part 1, attributes  
Lecture 23 - Syntax Directed Translation - Part 2, S- and L-attributed SDD  
Lecture 24 - Syntax Directed Translation - Part 3, L-attributed SDD, Applications  
Lecture 25 - Syntax Directed Translation - Part 4, Actions within productions  
Lecture 26 - Discussions and doubts clarification - Part 2  
Lecture 27 - Quiz-1 discussion, SDT - Part 5, Code generation for while loop  
Lecture 28 - Intermediate Code Generation - Part 1, Syntax trees and DAGs  
Lecture 29 - Intermediate Code Generation - Part 2, Three-address code

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- Lecture 30 - Discussions and doubts clarification Part 3
- Lecture 31 - Intermediate Code Generation - Part 3, Static single assignment
- Lecture 32 - Intermediate Code Generation - Part 4, IR for type expressions
- Lecture 33 - Intermediate Code Generation - Part 4, IR for array expressions
- Lecture 34 - Intermediate Code Generation - Part 4, IR for boolean expressions
- Lecture 35 - Intermediate Code Generation - Part 4, IR for break, continue, switch
- Lecture 36 - Code Generator - Part 1, Introduction, IR and target code
- Lecture 37 - Code Generator - Part 2, Instruction selection, ordering
- Lecture 38 - Code Generator - Part 2, Basic blocks and CFG
- Lecture 39 - x86 assembly code
- Lecture 40 - Code optimizer - Part 1, Local optimizations within a basic block
- Lecture 41 - Code optimizer - Part 2, Array references, Peephole optimization
- Lecture 42 - Discussions and doubts clarification - Part 4
- Lecture 43 - Code optimizer - Part 3, Register allocation, Liveness
- Lecture 44 - Code optimizer - Part 4, Register allocation as graph coloring
- Lecture 45 - Discussions and doubts clarification - Part 5
- Lecture 46 - Code optimizer - Part 5, Data flow analysis, Reaching definitions
- Lecture 47 - Discussions and doubts clarification - Part 6
- Lecture 48 - Code optimizer - Part 6, DFA for reaching definitions, Live variables