

CS350 Syllabus, Spring 2006

Topic	Chapter	Lab	Review Q's	Details & Review Questions
Introduction	1-1.2	-	-	Phases of compilation; Algorithms for manipulating algorithms
Lexical scanning	2	1	2.1 Run 2.5a w/xzxy 2.4,5,2,8	Regular expressions and the “lex” language Finite Automata Converting R.E. → NFA → DFA
Parsing	3	2	3.3 3.11,12a 3.12,13,14	Review of CFG's, LL parsing LR(0) parse tables — generation and use SLR, LR(1), and LALR(1) table generation
Fixed-point algorithms	3.2		3.6a,5(no table)	FIRST, FOLLOW and NULLABLE calculations as examples of fixed-point algorithm
Attribute grammars	Dragon 5-5.3	3	Dragon 5.1,3,4,6a	Static analysis as tree labelling; Detecting illegal lvalues
Abstract syntax	4	4	-	Abstract syntax trees and their construction as synthesized attributes
Inherited attributes	Dragon 5.4,7,(10)		Dragon 5.12a,14	Evaluation of arbitrary attribute grammars; Efficient evaluation of L-attributed grammars
Type checking	5	5	5.3	Symbol table data structures; Representing type information; Attributes and traversals for type checking
Code generation (arithmetic)	7-7.2,8	6	7.1,2 in HERA	Intermediate representations & canonical forms; Machine language for arithmetic; Sethi-Ullman register allocation; Simpleminded code generation
(control flow)	7.2	6		Machine language for branches; Representations of conditional expressions;
(functions)	6-6.1,7.2-3	6-7	6.1,2,3,5	String operations and simple function calls Storage for parameters, local variables, returns; Return addresses, Dynamic links, Static links; Code generation for function calls; Code generation for variable references;
(types)		8		Escape analysis Code generation for arrays; Code generation for records
Instruction selection revisited	8, 9-9.2		8.6,7; 9.1,3	Instruction tiles Maximal Munch instruction selection Dynamic programming-based instruction selection
Register allocation revisited	10,11		10.1 & color it	Liveness analysis Fixed point evaluation of live ranges Graph coloring and register allocation
Optimizations and analyses (time permitting)	17 18-18.4 19		17.2,5,1 19.11,8,7	Constant folding Constant and copy propagation Dead code elimination Hoisting invariant computations Induction variables and array bounds checks Static Single Assignment form