Subject Code : P8CS7

Core Course – VII - Compiler Design

Unit I

Introduction on the phase of the complier – Lexical Analysis, Regular Expression, Non deterministic Automata, Deterministic Automata equivalent to NFA's. Minimizing the states of DFA, Implementation of Lexical Analyzer.

Unit II

Syntax Analysis – Top down Parsing Concepts, Recursive Descent Parsing, Predictive Parsers, Non recursive Predictive Parsing – Bottom Up Parsing, Handle pruning, Shift reduce parsing – Operator Precedence Parsing – Error recovery in Parsing, LR Parsers, Parser Generators – YACC.

Unit III

Intermediate Code Generation: Syntax directed Definitions, Construction of Syntax trees – Top down Translation, Bottom up Evaluation of inherited Attributed, Recursive Evaluators, Assigning Space at Complier Construction time – Type checking – Overloading of functions and operators Polymorphic function.

Unit IV

Storage Organization : Storage Organization, Storage Allocation Strategies,Parameter Passing, Symbol tables, Dynamic Storage Allocation, IntermediateLanguages – Representation of Declarations, Assignment Statement, BooleanExpression, Back patching, Procedure calls.

Unit V

Code Generation and Optimization: Design of the code generators, Runtime storage Management, Basic blocks and flow graphs, Register Allocation and Assignment, DAG representation of Basic blocks, Peephole optimization, Code optimization – The principle sources of optimization, Optimization of basic blocks, Global data flow Analysis, Loop optimizations.

Text Book(s)

1. Alfred Aho, Ravi Sethi, Jeffy D.Ullman, "Compilers – Principles, Techniques and Tools", 1986, Addison Wesley.
2. Dhamdhere D.M., "Compiler Construction Principles and Practice", 1981, Macmillan India.

References

Reinhard Wilhlm, Director Mauser, "Compiler Design", 1995, Addison Wesley.