



STANLEY
COLLEGE OF ENGINEERING & TECHNOLOGY FOR WOMEN
(Approved by AICTE, New Delhi | Affiliated to Osmania University, Hyderabad)
Address : Chapel Road, Abids, Hyderabad

BIT 352

COMPILER CONSTRUCTION

UNIT-I

Introduction: Programs related to compilers. Translation process, Major data structures, Other issues in compiler structure. Boot strapping and porting.

Lexical analysis – The role of Lexical Analyzer. Input Buffering, Specification of Tokens. Recognition of Tokens, The Lexical-Analyzer Generator Lex.

UNIT-II

Syntax Analysis – Introduction, Top-Down parsing, Bottom-Up parsing, Introduction to LR Parsing, More powerful LR parsers, Using Ambiguous Grammars, Parser Generators YACC.

UNIT-III

Syntax Directed Translation – Syntax Directed Definitions. Evaluation Orders for SDDs. Applications of Syntax Directed Translation.

Intermediate code generation: Variants of Syntax Trees, Three-Address Code, Types and Declarations, Translation of Expressions, Type Checking. Control Flow.

UNIT-IV

Storage Organization: Stack Allocation of Space. Access to Non local Data on the Stack, Heap Management, Introduction to Garbage Collection.

Code Generation : Issues in the Design of a Code Generator, The Target Language, Addresses in the Target Code, Basic Blocks and Flow Graphs, Optimization of Basic Blocks, Peephole Optimization, Register Allocation and Assignment, Machine Independent Optimizations – The Principal Sources of Optimizations, Introduction to data flow analysis, Foundation of data flow analysis.

UNIT-V

Optimizing for Parallelism and Locality - Basic Concepts, Matrix Multiply: An In-Depth Example, Data Reuse, Synchronization between Parallel Loops.

Linkers and Loaders – Basic Loader functions. Design of an Absolute Loader, A simple bootstrap loader, Machine dependent and independent features.

Suggested Reading:

1. Alfred V Aho, Monica S Lam, Ravi Sethi, Jeffrey D Ullman – Compilers: Principles, Techniques & Tools – Pearson Education, Second Edition, 2007
2. Leland L Bech, System Software: An Introduction to Systems Programming, Pearson Education Asia, 1997.
3. Kenneth C Loudon, Compiler Construction: Principles and Practice, Cengage Learning, 1997.