

RO8002 SYSTEM SOFTWARE

DETAILED SYLLABUS

OBJECTIVES:

The student should be made to:

- Understand the phases in a software project.
- Understand fundamental concepts of requirements engineering and Analysis Modelling.
- Understand the major considerations for enterprise integration and deployment.
- Learn various testing and maintenance measures.
- Learn about various parsing techniques.

UNIT I ASSEMBLERS

General Design procedures – Design of an Assembler – data structures – format of databases – algorithm – flow chart – PASS structures – modular functions. MACRO LANGUAGE AND MACRO PROCESSORS: Macro instructions, features of a macro facility –implementation.

UNIT II LOADERS

Loader schemes – compile and go loaders, general load scheme – absolute loaders – direct linking loaders and their design. Other loading schemes: linking loaders, overlays, dynamic binders.

UNIT III COMPILERS

Introduction – Structure of a compiler – phases of a compiler - compiler writing tools. LEXICAL ANALYSIS: Role of a lexical analyser – finite automata –regular expressions to finite automata – minimizing the number of states of a deterministic finite automaton – implementation of a lexical analyser.

UNIT IV PARSING TECHNIQUES

Context free grammars – derivations and parse trees – ambiguity – capabilities of context free grammars. Top down and bottom up parsing – handles – shift reduce parsing – operator precedence parsing – recursive descent parsing – predictive parsing.

UNIT V INTERMEDIATE CODE GENERATION

Postfix notation, Quadruples, triples, indirect triples – Representing information in a symbol table – introduction to code optimization – basic blocks – DAG representation – error detection and recovery - code generation.

TEXT BOOKS:

1. Leland Beck - "System Software – An Introduction to Systems Programming", Third Edition, Pearson Education, Inc., 2008
2. Srimanta Pal, "Systems Programming", Oxford University Press, 2011.

REFERENCES:

1. John J Donovan, "Systems Programming", McGraw Hill, 1999.
2. Dhamdhere D M, "Systems Programming", Tata McGraw Hill, 2001.
3. Aho A V, Sethi R and Ullman J D, "Compilers: Principles, Techniques and Tools", Addison Wesley, Longman, 1999.
4. Dhamdhere D M, "Compiler Construction Principles and Practice", Macmillan Company, 1997.
5. Holub Allen I, "Compiler Design in C", Prentice Hall, 2001.