MCA 303 System Software

Module I

General concepts-Review of assembly and machine language programming, distinction between system software and application software, Language processors:- Introduction, Language processing activities.

Assemblers:- Elements of Assembly language programming, A simple assembly scheme, Pass structure of assemblers, Design of two pass assemblers

Module II

Macros and macro processors:- Macro definition and call, Macro expansion, Nested macro calls, advanced macro facilities, design of macro pre processor

Linker-Relocation and linking concepts-self relocating programs.

Loader-Types of loaders

Editor-Types of editors-Components of editor-Debug monitor

Module III

Introduction to compiling:- Compilers, Analysis of a source program, the phases of a compiler,

Lexical analysis:-The role of the lexical analyzer, Input buffering, specification of tokens Recognition of tokens, Finite automata, Conversion of an NFA to DFA, From a regular expression to an NFA

Module IV

Syntax analysis:- the role of the parser, Context free grammars, writing a grammer, Top dowm parsing Bottom up parsing, syntax directed translation-syntax directed definition, , Construction of Syntax Tree, L R parsers-LR parsing algorithm, Constructing SLR parsing tables, SLR parsing table

Module V

Intermediate code generation-postfix notation, syntax tree, three-address code, basic blocks and flow graph, the DAG representation of basic blocks, Backpatching, Code optimization:- The principal sources of optimization, optimization of basic blocks,

loops in flow graphs, Peephole optimization

Code Generations:- Issues in the design of a code generator, simple code generator

References

- System Programming and operating Systems- D.M.Dhamdhere Tata McGraw Hill (Modules 1& 2)
- Compilers Pinciples, Techniques and Tools- Alfred V Aho, Ravi Sethi, Jeffrry D Ullman (Modules 3, 4 & 5)
- Systems programming- John J Donovan
- System Software- Leland L Beck, Addison Wesley Publishing Company