Lex and Yacc – 1: Lex and Yacc - The Simplest Lex Program, Recognizing Words With LEX, Symbol Tables, Grammars, Parser-Lexer Communication, The Parts of Speech Lexer, A YACC Parser, The Rules Section, Running LEX and YACC, LEX and Hand- Written Lexers, Using LEX - Regular Expression, Examples of Regular Expressions, A Word Counting Program, Parsing a Command Line.

UNIT – 8   6 Hours
Lex and Yacc - 2
Using YACC – Grammars, Recursive Rules, Shift/Reduce Parsing, What YACC Cannot Parse, A YACC Parser - The Definition Section, The Rules Section, Symbol Values and Actions, The LEXER, Compiling and Running a Simple Parser, Arithmetic Expressions and Ambiguity, Variables and Typed Tokens.

Text Books:
1. Leland.L.Beck: System Software, 3rd Edition, Pearson Education, 1997.
   (Chapters 1.1 to 1.3, 2 (except 2.5.2 and 2.5.3), 3 (except 3.5.2 and 3.5.3), 4 (except 4.4.3))
2. John.R.Levine, Tony Mason and Doug Brown: Lex and Yacc, O'Reilly, SPD, 1998.
   (Chapters 1, 2 (Page 2-42), 3 (Page 51-65))

Reference Books:
1. D.M.Dhamdhere: System Programming and Operating Systems, 2nd Edition, Tata McGraw - Hill, 1999.

OPERATING SYSTEMS

Subject Code: 10CS53	I.A. Marks : 25
Hours/Week : 04	Exam Hours: 03
Total Hours : 52	Exam Marks: 100

PART – A

UNIT – 1   6 Hours
Introduction to Operating Systems, System structures: What operating systems do; Computer System organization; Computer System architecture; Operating System structure; Operating System operations; Process management; Memory management; Storage management; Protection and security; Distributed system; Special-purpose systems; Computing environments.Operating System Services; User - Operating System interface; System calls; Types of system calls; System programs; Operating System

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design and implementation; Operating System structure; Virtual machines; Operating System generation; System boot.

UNIT – 2   **7 Hours**
Process Management: Process concept; Process scheduling; Operations on processes; Inter-process communication. Multi-Threaded Programming: Overview; Multithreading models; Thread Libraries;   Threading issues. Process Scheduling: Basic concepts; Scheduling criteria; Scheduling algorithms; Multiple-Processor scheduling; Thread scheduling.

UNIT – 3   **7 Hours**
Process Synchronization : Synchronization: The Critical section problem; Peterson's solution; Synchronization hardware; Semaphores; Classical problems of synchronization; Monitors.

UNIT – 4   **6 Hours**
Deadlocks: Deadlocks: System model; Deadlock characterization; Methods for handling deadlocks; Deadlock prevention; Deadlock avoidance; Deadlock detection and recovery from deadlock.

PART – B

UNIT – 5   **7 Hours**
Memory Management: Memory Management Strategies: Background;
Swapping; Contiguous memory allocation; Paging; Structure of page table;
Segmentation. Virtual Memory Management: Background; Demand paging;
Copy-on-write; Page replacement; Allocation of frames; Thrashing.

UNIT – 6   **7 Hours**
File System, Implementation of File System: File System: File concept;
Access methods; Directory structure; File system mounting; File sharing;
Protection. Implementing File System: File system structure; File system
implementation; Directory implementation; Allocation methods; Free space
management

UNIT – 7   **6 Hours**
Secondary Storage Structures, Protection : Mass storage structures; Disk
structure; Disk attachment; Disk scheduling; Disk management; Swap space
management. Protection: Goals of protection, Principles of protection,
Domain of protection, Access matrix, Implementation of access matrix,
Access control, Revocation of access rights, Capability-Based systems.

UNIT – 8   **6 Hours**
Case Study: The Linux Operating System: Linux history; Design
principles; Kernel modules; Process management; Scheduling; Memory
management; File systems, Input and output; Inter-process communication.

Text Books:
1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne: Operating
   System Principles, 8th edition, Wiley India, 2009.
   (Chapters: 1, 2, 3.1 to 3.4 , 4.1 to 4.4, 5.1 to 5.5, 6.1 to 6.7, 7, 8.1 to
   8.6, 9.1 to 9.6, 10, 11.1 to 11.5, 12.1 to 12.6, 17.1 to 17.8, 21.1 to
   21.9)

Reference Books:
1. D.M Dhamdhere: Operating systems - A concept based Approach,
   2nd Edition, Tata McGraw- Hill, 2002.
2. P.C.P. Bhatt: Introduction to Operating Systems: Concepts and
   Practice, 2nd Edition, PHI, 2008.
3. Harvey M Deital: Operating systems, 3rd Edition, Pearson
   Education, 1990.

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