

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Lesson Plan for the Academic year 2020-21

Faculty: Dr. M A Anusuya, Prof. Sheela N and Prof. Vani Ashok

Class & Section: IV Semester

Subject with Code: System Programming Lab (CS47L)

Pre-requisite: Theory of Computations, Data structure, Programming in C.

Week	Programs	Remarks
Compiler Design: LEX Programs		
1	1. Count the number of vowels and consonants in a given string. 2. Create pattern to Recognize and develop a LEX program to count the number of i) Positive and Negative integers and ii) Positive and Negative Fractions.	
2	3. Write a LEX program to recognize a valid C program and also check for valid loop structure in it. 4. Recognize a valid Arithmetic expression and also Count number of operators present and print them separately.	
3	5. Write a LEX program to recognize and count the number of identifiers in a file. 6. Program to count the number of operators and operands in a given valid expression.	
Compiler Design: YACC Programs		
4	1. Recognize a valid and Evaluate Arithmetic expression that uses operators +, -, *, /. 2. Recognize nested IF control statements and displays the number of levels of nesting in the nested IF.	
5	3. Design a YACC program to recognize the grammar $\{a^n b \mid n \geq 0\}$. Verify the following string belongs to this grammar: (i) a (ii) ab (iii) aaab (iv) abb. 4. Recognize valid declaration and definition statement in C	
6	5. Develop C program to construct the top down parsing table for any grammar and also Parse the input generated by the grammar. 6. Develop C program to construct the any one bottom up parsing table for any grammar and also Parse the input generated by the grammar.	
Operating System:		

7	Shell Programming: a) Unix Commands b) Vi Commands	
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	c) Unix Shell programming commands a) Concatenation of two strings b) Comparison of two strings c) Maximum of three numbers d) Fibonacci series e) Arithmetic operation using case	
8	System Calls a. Process Creation b. Executing a command c. Sleep command d. Sleep command using getpid e. Signal handling using kill f. Wait command	
9	I/O System Calls a) Reading from a file b) Writing into a file c) File Creation	
10	a)Implementation of ls command b)Implementation of grep command	
11	Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. Print average. waiting time and turnaround time.	
12	Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. Printaverage. waiting time and turnaround time.	

Course Outcomes: After completion of course, the students are able to:

	Analyze unix commands, system calls, shell scripts
CO2:	Analyze and implement CPU Scheduling Algorithms.
CO3:	Apply the knowledge of regular expressions to recognize the tokens generated by

	the Lexical analyzer.
CO4:	Implement the LEX and YACC programs to recognize, validate and evaluate arithmetic Expressions and grammars.
CO5:	Design and Implement the various types of parsers for the given context free grammar

Text Books:

1. Alfred V Aho, Monica S. Lam, Ravi Sethi, Jeffrey D Ullman: Compilers-Principles, Techniques and Tools, 2nd Edition, Pearson education, 2014.
2. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne: Operating System Principles, 9th Edition, Wiley India, 2013
3. P.C.P. Bhatt: Introduction to Operating Systems: Concepts and Practice, 2nd Edition, PHI, 2008.
4. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne: Operating System Principles, 9th Edition, Wiley India, 2013

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