PUNE INSTITUTE OF COMPUTER TECHNOLOGY

DHANKAWADI, PUNE – 43.

SCHEDULE OF LAB EXPERIMENTS

ACADEMIC YEAR: 2020-2021

DEPARTMENT: COMPUTER ENGINEERING **Date : 18/01/2021**

CLASS: T.E. **SEMESTER: II**

SUBJECT: System Programming & Operating System Lab

LAB EXP.NO	PROBLEM STATEMENT	COMPLETION DEADLINE
Group A	**Based on system programming**	
1.	Design suitable data structures and implement pass-I of a two-pass assembler for pseudo-machine in Java using object oriented feature. Implementation should consist of a few instructions from each category and few assembler directives.	Last week of January 2021
2.	Implement Pass-II of two pass assembler for pseudo-machine in Java using object oriented features. The output of assignment-1 (intermediate file and symbol table) should be input for this assignment.	First week of February, 2021
3.	Design suitable data structures and implement pass-I of a two-pass macro-processor using OOP features in Java	Second week of February, 2021
4	Write a Java program for pass-II of a two-pass macro-processor. The output of assignment-3 (MNT, MDT and file without any macro definitions) should be input for this assignment.	Fourth week of February, 2021
Group B	**Based on LEX and YACC**	

1	Write a program to create Dynamic Link Library for any mathematical operation and write an application program to test it. (Java Native Interface / Use VB or VC++).	First week of March, 2021
2.	Write a program using Lex specifications to implement lexical analysis phase of compiler to generate tokens of subset of Java program.	Second week of March, 2021
3	Write a program using Lex specifications to implement lexical analysis phase of compiler to count no. of words, lines and characters of given input file.	Third week of March, 2021
4	Write a program using YACC specifications to implement syntax analysis phase of compiler to validate type and syntax of variable declaration in Java.	Fourth week of March, 2021
5	Write a program using YACC specifications to implement syntax analysis phase of compiler to recognize simple and compound sentences given in input file.	First week of April, 2021
Group C	**Based on process management (OS)**	
1.	Write a Java program (using OOP features) to implement following scheduling algorithms: FCFS , SJF (Preemptive), Priority (Non-Preemptive) and Round Robin (Preemptive)	Second week of April, 2021
2.	Write a Java program to implement Banker's Algorithm	Third week of April, 2021
3.	Implement UNIX system calls like ps, fork, join, exec family, and wait for process management (use shell script/ Java/ C programming).	Fourth week of April, 2021

4.	Study assignment on process scheduling algorithms in Android and Tizen.	First week of May, 2021
Group D	**Based on memory management (OS)**	
1.	Write a Java Program (using OOP features) to implement paging simulation using 1. Least Recently Used (LRU) 2. Optimal algorithm	Second week of May, 2021

15/01/2021

Subject Coordinator

(Prof. S. P. Shintre)

Head Computer Engg. Dept.

(Prof. M. S. Takalikar)

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SUBJECT: System Programming & Operating System Lab

Course Objectives:

- To implement basic language translator by using various needed data structures
- To implement basic Macroprocessor
- To design and implement Dynamic Link Libraries
- To implement scheduling schemes

Course Outcomes:

On completion of the course, student will be able to–

- Implement language translator (assembler, macro processor) for a given assembly language program.
- Implement lexical analysis & syntax analysis phase of compiler using LEX & YACC tools for subset of English language & features of C/ JAVA language.
- Demonstrate the implementation and use of DLL.
- Implement operating system algorithms for CPU scheduling, page replacement, and deadlock avoidance.

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CLASS: T.E. **SEMESTER: II**

SUBJECT: System Programming &Operating System Lab

LAB EXP.NO	PROBLEM STATEMENT
Group A	**Based on system programming**
1.	Design suitable data structures and implement pass-I of a two-pass assembler for pseudo-machine in Java using object oriented feature. Implementation should consist of a few instructions from each category and few assembler directives.
2.	Implement Pass-II of two pass assembler for pseudo-machine in Java using object oriented features. The output of assignment-1 (intermediate file and symbol table) should be input for this assignment.
3.	Design suitable data structures and implement pass-I of a two-pass macro-processor using OOP features in Java
4	Write a Java program for pass-II of a two-pass macro-processor. The output of assignment-3 (MNT, MDT and file without any macro definitions) should be input for this assignment.
Group B	**Based on LEX and YACC**
1	Write a program to create Dynamic Link Library for any mathematical operation and write an application program to test it. (Java Native Interface / Use VB or VC++).
2.	Write a program using LEX specifications to implement lexical analysis phase of compiler to generate tokens of subset of Java program.

3	Write a program using LEX specifications to implement lexical analysis phase of compiler to count no. of words, lines and characters of given input file.
4	Write a program using YACC specifications to implement syntax analysis phase of compiler to validate type and syntax of variable declaration in Java.
5	Write a program using YACC specifications to implement syntax analysis phase of compiler to recognize simple and compound sentences given in input file.
Group C	**Based on Operating System (Process management)**
1.	Write a Java program (using OOP features) to implement following scheduling algorithms: FCFS , SJF (Preemptive), Priority (Non-Preemptive) and Round Robin (Preemptive)
2.	Write a Java program to implement Banker's Algorithm
3.	Implement UNIX system calls like ps, fork, join, exec family, and wait for process management (use shell script/ Java/ C programming).
4.	Study assignment on process scheduling algorithms in Android and Tizen.
Group D	**Based on Operating System (Memory management)**
	Write a Java Program (using OOP features) to implement paging simulation using 1. Least Recently Used (LRU) 2. Optimal algorithm

15/01/2021

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(Mrs. S.P. Shintre)

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