

**Reference Books:**

1. Ravi Sethi: Programming languages Concepts and Constructs, 2<sup>nd</sup> Edition, Pearson Education, 1996.
2. R Sebesta: Concepts of Programming Languages, 8<sup>th</sup> Edition, Pearson Education, 2008.
3. Allen Tucker, Robert Nonan: Programming Languages, Principles and Paradigms, 2<sup>nd</sup> Edition, Tata McGraw-Hill, 2007.

**FILE STRUCTURES LABORATORY****Subject Code: 10ISL67****Hours/Week : 03****Total Hours : 42****I.A. Marks : 25****Exam Hours: 03****Exam Marks: 50****PART - A****Design, develop, and implement the following programs**

1. Write a C++ program to read series of names, one per line, from standard input and write these names spelled in reverse order to the standard output using I/O redirection and pipes. Repeat the exercise using an input file specified by the user instead of the standard input and using an output file specified by the user instead of the standard output.
2. Write a C++ program to read and write student objects with fixed-length records and the fields delimited by "|". Implement pack ( ), unpack ( ), modify ( ) and search ( ) methods.
3. Write a C++ program to read and write student objects with Variable - Length records using any suitable record structure. Implement pack ( ), unpack ( ), modify ( ) and search ( ) methods.
4. Write a C++ program to write student objects with Variable - Length records using any suitable record structure and to read from this file a student record using RRN.
5. Write a C++ program to implement simple index on primary key for a file of student objects. Implement add ( ), search ( ), delete ( ) using the index.
6. Write a C++ program to implement index on secondary key, the name, for a file of student objects. Implement add ( ), search ( ), delete ( ) using the secondary index.

7. Write a C++ program to read two lists of names and then match the names in the two lists using Cosequential Match based on a single loop. Output the names common to both the lists.
8. Write a C++ program to read k Lists of names and merge them using k-way merge algorithm with  $k = 8$ .
9. Write a C++ program to implement B-Tree for a given set of integers and its operations insert ( ) and search ( ). Display the tree.
10. Write a C++ program to implement B+ tree for a given set of integers and its operations insert ( ), and search ( ). Display the tree.
11. Write a C++ program to store and retrieve student data from file using hashing. Use any collision resolution technique.
12. Write a C++ program to reclaim the free space resulting from the deletion of records using linked lists.

**Note:** In the examination *each* student picks one question from the lot of *all* 12 questions.

#### SOFTWARE TESTING LABORATORY

Subject Code: 10ISL68  
Hours/Week : 03  
Total Hours : 42

I.A. Marks : 25  
Exam Hours: 03  
Exam Marks: 50

1. Design and develop a program in a language of your choice to solve the triangle problem defined as follows: Accept three integers which are supposed to be the three sides of a triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Derive test cases for your program based on decision-table approach, execute the test cases and discuss the results.
2. Design and develop a program in a language of your choice to solve the triangle problem defined as follows: Accept three integers which are supposed to be the three sides of a triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Assume that the upper limit for the size of any side is 10. Derive test cases for your program based on boundary-value analysis, execute the test cases and discuss the results.

  
H.O.D.

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