17HS028 DATA STRUCTURES USING JAVA LAB

Course Objectives

To introduce the fundamental concept of data structures and to emphasize the importance of data structures in developing and implementing efficient algorithms.

Course Outcomes

After completing this course satisfactorily, a student will be able to:

1. Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are representedin memory and used by algorithms
2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, andgraphs.
3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs
4. Demonstrate different methods for traversing trees
5. Compare alternative implementations of data structures with respect to performance
6. Compare and contrast the benefits of dynamic and static data structures implementations
7. Describe the concept of recursion, give examples of its use, describe how it can be implemented using a stack .
8. Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing.

1. Write a Program to implement the Linked List operations
2. Write a Program to implement the Stackoperations using an array.
3. Write Programs to implement theQueue operations using an array.
4. Write Programs to implement the Stackoperations using a singly linked list.
5. Write Programs to implement theQueue operations using a singly linked list.
6. Write a program for arithmetic expression evaluation
7. Write a program to search an item in a given list using Linear Search and Binary Search
8. Write a program for Quick Sort
9. Write a program for Merge Sort
10. Write a program on Binary Search Tree operations(insertion, deletion and traversals)
11. Write a program for Graph traversals

REFERENCE BOOKS

1. ReemaThareja, “Data Structures Using C”, 2nd edition, Oxford University Press, 2014.