**Saveetha School of Engineering**

**Saveetha Institute of Medical and Technical Sciences**

**Department of Computer Science & Engineering**

**Course Code:** CSA03 **Course Title**: Data Structures

**ASSIGNMENT 1 CO/PO MAPPING (Total: 50 Marks)**

**Course Objectives:** The course on Data structures aims to provide the students with the following:

1. Understand the abstract properties of various linear and non-linear data structures such as stacks, queues, lists, trees and graphs.

2. Identify the advanced data structures such as balanced search trees, hash tables, priority

queues

3. Analyze the various searching and sorting algorithms, including linear search, binary

search, insertion sort, selection sort, heap sort and quick sort.

4. Choose the appropriate data structure and algorithm for specified applications.

5. To understand about writing algorithms and step by step approach in solving problems with the help of fundamental data structures.

**Course Outcomes:** On successful completion of the course, the student will be able to:

1. Design and implement an appropriate linear data structures and nonlinear data structures.

2. Understand the computational efficiency of the principle algorithms for sorting, searching,

and hashing.

3. Demonstrate different methods for traversing trees and graphs.

4. Demonstrate the appropriate data structure and algorithm for specified applications.

5. Ability to analyze algorithms and algorithm correctness.

**Blooms Taxonomy Levels (BTL)**

1. Remembering 2. Understanding 3. Applying 4. Analyzing 5. Evaluating 6. Creating

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| **Sl No** | **Assignment Questions** | **CO / K Level** |
| 1 | Describe the concept of Abstract data type (ADT) and how they differ from concrete data structures. Design an ADT for a stack and implement it using arrays and Linked List in C. Include operations like push, pop, peek, isEmpty, isFull and peek.  (10 Marks) | C02/K4 |
| 2 | The university announced the selected candidates register number for placement training. The student XXX, reg. no. 20142010 wishes to check whether his name is listed or not. The list is not sorted in any order. Identify the searching technique that can be applied and explain the searching steps with the suitable procedure. List includes 20142015, 20142033, 20142011, 20142017, 20142010, 20142056, 20142003. (10 Marks) | CO2/K4 |