

K. K. Wagh Institute of Engineering Education & Research, Nasik

Computer Engineering Department

SE A/B (2019 Course)

Data Structures Laboratory (210246)

AY 2020-2021

List of Assignments

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| **ExpNo** | **Title** | **CO** | **Due Date** |
| 1 | Write a Python program to store marks scored in subject “Fundamental of Data Structure” by N students in the class. Write functions to compute following:   1. The average score of class 2. Highest score and lowest score of class 3. Count of students who were absent for the test 4. Display mark with highest frequency | CO1, CO4 | 22/8/2020 |
| 2 | Write a Python program to compute following operations on String:   1. To display word with the longest length 2. To determines the frequency of occurrence of particular character in the string 3. To check whether given string is palindrome or not 4. To display index of first appearance of the substring 5. To count the occurrences of each word in a given string | CO1, CO4 | 5/9/2020 |
| 3 | Write a **Python** program to compute following computation on matrix:  a) Addition of two matrices B) Subtraction of two matrices c) Multiplication of two matrices d) Transpose of a matrix | CO1, CO4 | 12/12/2020 |
| 4 | 1. Write a **Python** program to store names and mobile numbers of your friends in sorted order on names. Search your friend from list using binary search (recursive and non- recursive). Insert friend if not present in phonebook 2. Write a **Python** program to store names and mobile numbers of your friends in sorted order on names. Search your friend from list using Fibonacci search. Insert friend if not present in phonebook. | CO1, CO2, CO4 | 19/9/2020 |
| 5 | Write a **Python** program to store first year percentage of students in array. Write function for sorting array of floating point numbers in ascending order using   1. Selection Sort 2. Bubble sort and display top five scores. | CO1, CO2, CO4 | 10/10/2020 |
| 6 | Write a **Python** program to store second year percentage of students in array. Write function for sorting array of floating point numbers in ascending order using   1. Insertion sort 2. Shell Sort and display top five scores | CO1, CO2, CO4 | 24/10/2020 |
| 7 | Department of Computer Engineering has student's club named 'Pinnacle Club'. Students of second, third and final year of department can be granted membership on request. Similarly one may cancel the membership of club. First node is reserved for president of club and last node is reserved for secretary of club. Write C++ program to maintain club member‘s information using singly linked list. Store student PRN and Name. Write functions to:   1. Add and delete the members as well as president or even secretary. 2. Compute total number of members of club 3. Display members   D )Two linked lists exists for two divisions. Concatenate two lists. | CO1, CO3, CO4 | 31/10/2020 |
| 8 | Write C++ program for storing binary number using doubly linked lists. Write functions-   1. To compute 1‘s and 2‘s complement 2. Add two binary numbers | CO1, CO3, CO4 | 7/11//2020 |
| 9 | A palindrome is a string of character that‘s the same forward and backward. Typically, punctuation, capitalization, and spaces are ignored. For example, “Poor Dan is in a droop” is a palindrome, as can be seen by examining the characters “poor danisina droop” and observing that they are the same forward and backward. One way to check for a palindrome is to reverse the characters in the string and then compare with them the original-in a palindrome, the sequence will be identical. Write C++ program with functions-   1. To print original string followed by reversed string using stack 2. To check whether given string is palindrome or not | CO1, CO4 | 14/11//2020 |
| 10 | Implement C++ program for expression conversion as infix to postfix and its evaluation using stack based on given conditions:   1. Operands and operator, both must be single character. 2. Input Postfix expression must be in a desired format.   Only '+', '-', '\*' and '/ ' operators are expected. | CO1, CO4 | 28/11/2020 |
| 11 | Queues are frequently used in computer programming, and a typical example is the creation of a job queue by an operating system. If the operating system does not use priorities, then the jobs are processed in the order they enter the system. Write C++ program for simulating job queue. Write functions to add job and delete job from queue. | CO1, CO4 | 28/11/2020 |
| 12 | Pizza parlor accepting maximum M orders. Orders are served in first come first served basis. Order once placed cannot be cancelled. Write C++ program to simulate the system using circular queue using array. | CO1, CO4 | 5/12/2020 |
| 13 | A double-ended queue (deque) is a linear list in which additions and deletions may be made at either end. Obtain a data representation mapping a deque into a one- dimensional array. Write C++ program to simulate deque with functions to add and delete elements from either end of the deque. | CO1, CO4 | 12/12/2020 |

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