City University

Dept. of Computer Science and Engineering
CSE 216 Algorithm Laboratory, Fall 2019
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CSE 216 Algorithm Laboratory

Problems for Lab 1

Submission Date: 27.12.2019

1. Write a C program that declare an array length of one hundred (100) and initialize the array with ten (10) values. Then do the following operations.
    a. Print the array using loop.
    b. Insert any value at tenth (10^{th}) index of the array. And print the whole array.
    c. Update fifth (5^{th}) index with another value. And print the whole array.
    d. Search a value X (take input X from user) in the array and print the index if X found in the array otherwise print Not Found.
    e. Insert a value Y (take input Y from user) in the array at third (3^{rd}) index and shift all other value to right. And print the whole array.
    f. Delete a value from Zth index (take input Z from user) from the array shift all other value to left. And print the whole array.
    g. Write a recursive function to print the array. Call the function after the above operations.
    h. Write a recursive function to print the array in reverse order. Call the function after the above operations.
2. Declare and initialize the array with ten (10) values. Then write the following C programs.
    a. Write a C program to implement **selection sort** to sort the given array in **ascending** order. (use **minimum** value for selection)
    b. Write a C program to implement **selection sort** to sort the given array in **descending** order. (use **minimum** value for selection)
    c. Write a C program to implement **selection sort** to sort the given array in **ascending** order. (use **maximum** value for selection)
    d. Write a C program to implement **selection sort** to sort the given array in **descending** order. (use **maximum** value for selection)

CSE 216 Algorithm Laboratory

Problems for Lab 2

Submission Date: 03.01.2020

Declare and initialize the array with ten (10) values. Then write the following C programs.

1. Write a C program to implement **insertion sort** to sort the given array in **ascending** order.
2. Write a C program to implement **insertion sort** to sort the given array in **descending** order.
3. Write a C program to implement **bubble sort** to sort the given array in **ascending** order.
4. Write a C program to implement **bubble sort** to sort the given array in **descending** order.
5. Write a C program to implement **iterative linear search** in and find X (take input X from user) in the array and print the index if X found in the array otherwise print Not Found.
6. Write a C program to implement **recursive linear search** in and find X (take input X from user) in the array and print the index if X found in the array otherwise print Not Found.
7. Write a C program to implement **iterative binary search** in and find X (take input X from user) in the array and print the index if X found in the array otherwise print Not Found.
8. Write a C program to implement **recursive binary search** in and find X (take input X from user) in the array and print the index if X found in the array otherwise print Not Found.

Lecture Wise Lesson Plan

Week No	Topic
Week 1 (13.12.2019)	Array Operation, Selection Sort, (Insertion, Bubble)
Week 2 (20.12.2019)	Linear Search, Binary Search, Function
Week 3 (27.12.2019)	Recursion, Merge Sort, Quick Sort
Week 4 (03.01.2020)	Graph Introduction (Graph representation with Adjacency Matrix (2D array) and Adjacency list (Vector))
Week 5 (10.01.2020)	Lab Midterm Exam
Week 6 (17.01.2020)	Midterm Exam
Week 7 (24.01.2020)	Midterm Exam
Week 8 (31.01.2020)	Graph Traversal (Depth First Search, Breadth First Search)
Week 9 (07.02.2020)	Single Source Shortest Path Algorithm (Dijkstra, Bellman-Ford)
Week 10 (14.02.2020)	Minimum Spanning Tree (Prim, Kruskal)
Week 11 (21.02.2020)	Holyday: Language Martyrs' Day
Week 12 (28.02.2020)	Week 11 (28.02.2020): Dynamic Programming (Knapsack (Fractional, 0/1))
Week 13 (06.03.2020)	Week 12 (06.03.2020): Lab Final Exam
Week 14 (13.03.2020)	Week 13 (13.03.2020): Final Exam
Week 15 (20.03.2020)	Week 14 (20.03.2020): Final Exam
	Missed Lab: N-Queen Problem