CSE 202 (204) Data Structures Sessional

Lab Assignment

Submission Deadline: **Before 25 October 2018.**

You will need to solve below tasks and submit individual source files (c or cpp) in a single folder by sharing them in GitHub as PRIVATE. Any publicly shared assignment will be scored zero marks.

Task No.	
1	**String Processing**
1.1	Consider S='JOHN PAUL JONES', T='A THING OF BEAUTY IS A JOY FOREVER' Find index of 'JO', 'JOY', ' JO', 'A', ' A ', 'THE'
1.2	Consider INSERT(text, position, string) and do following- INSERT('AAAAA', 1, 'BBB') INSERT('AAAAA', 3, 'BBB') INSERT('AAAAA', 6, 'BBB')
1.3	Suppose T is the text 'THE STUDENT IS ILL'. User INSERT to change T so that it reads: (i) THE STUDENT IS VERY ILL (ii) THE STUDENT IS ILL TODAY (iii) THE STUDENT IS VERY ILL TODAY
1.4	DELETE('AAABBB', 2, 2) DELETE('JOHN PAUL JONES', 6, 5) REPLACE('AAABBB', 'AA', BB) REPLACE('JOHN PAUL JONES', 'PAUL', 'DAVID')
1.5	Implement the "slow" algorithm 3.3 in your text book, search pattern P in text T as follows - (i) P=abc, T=$(ab)^5$=abababababab (ii) P=aaa, T=abaabbaaabbbaaaabbbb
2	**Arrays, Records and Pointers**
2.1	Implement Bubble sort algorithm and calculate number C of comparisons and the number D of interchanges which alphabetize the n=6 letters in PEOPLE
2.2	Let DATA be the following sorted 13 element array: DATA: 11, 22, 30, 33, 40, 44, 55, 60, 66, 77, 80, 88, 99 Apply binary search to DATA for different values of ITEM by taking input from user.
3	**Linked List**
3.1	Show menu to insert, find, and delete an item from a linked list. Construct a linked list of integer by taking input from user. Delete and find an item based on user input as well.
4	**Stacks, Queues, Recursion**
4.1	Consider the following arithmetic expression P written in postfix notation: P: 5, 6, 2, +, *, 12, 4, /, -

	Implement algorithm 6.3 in your book which uses a STACK to hold operands, and evaluates P.
4.2	Using recursion, calculate factorial of a user provided number.
4.3	Using recursion, find nth number in Fibonacci sequence. Take n input from user.
4.4	Implement the Tower of Hanio algorithm in 6.9 for n disks. Take n input from user.
4.5	Implement different operations of a Queue (add, delete) as functions and call those functions as below - (i) insert A, B, and C (ii) delete (iii) insert D, E (iv) delete (v) delete (vi) insert F (vii) delete (viii) insert G, H (ix) delete (x) delete (xi) insert K (xii) delete (xiii) delete (xiv) delete

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