Bangladesh Sweden Polytechnic Institute, Kaptai
Dept of Computer Technology

Semester Plan

Semester : 4TH

Subject code : 6631
Subject Name : DATA STRUCTURE AND ALGORITHM
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Designation : JR. INSTRUCTOR (COMPUTER)

Week	Date	Topic No	Topic Details	Theory Class	Practical Class	Class Test	Quiz Test
WEEK-1		1.1-1.6	1.1 Define data & information. 1.2 State data types. 1.3 Define Memory Location, array, & list. 1.4 State the types of array, & list. 1.5 Define String. 1.6 Define data structure.	T1			
		1.7-1.9	1.7 State the meaning of field, record and files. 1.8 Define stack & queue with example 1.9 Define trees , heaps, hashing function table & hashing table.	T2			
		1	Write and Test a program for data insertion & Deletion in a Linear Array.		P1		
WEEK-2		1.9	1.9 Define trees , heaps, hashing function table & hashing table.	T3			
		2.1-2.3	2.1 State the characteristics of Algorithm 2.2 Define the pseudo code & algorithmic notations. 2.3 Describe the structured programming and flowcharts.	T4			
		2	Write and Test a program for Multiplication of two Matrices		P2		

WEEK-3		2.3-2.5	2.3 Describe the structured programming and flowcharts. 2.4 Describe the Complexity of Algorithm 2.5 Define Time-space Trade off.	T5			
		3.1-3.3	1.9 Define linear array. 1.10 Write the algorithm for traversing linear arrays. 1.11 State the represent of linear array in Memory.	T6			
		3	Write and Test a program for inserting/Deleting nodes into/from a Linked List.		P3		
WEEK-4		3.4-3.5	3.4 Write the algorithm for inserting and deleting elements into/from linear arrays. 3.5 Write the algorithm of matrix multiplication.	T7		CT-1	
		3.5-3.6	3.5 Write the algorithm of matrix multiplication. 3.6 State the use of pointer arrays , Jagged array and records.	T8			
		4	Write and Test a program using PUSH and POP Operation in Stack.		P4		
WEEK-5		4.1-4.5	4.1 Define linked lists. 4.2 Describe the representation of linked lists in memory. 4.3 Write the algorithms to traverse a linked list. 4.4 Write the algorithms for searching a linked list. 4.5 Write the algorithms for inserting/deleting nodes into/from a linked list.	T9			
		4.5	4.5 Write the algorithms for inserting/deleting nodes into/from a linked list.	T10			
		5	Write and Test a program to convert an infix expression to postfix expression.		P5		

WEEK-6		5.1-5.3	5.1 State the meaning of the terms PUSH & POP. 5.2 Write the algorithm for adding or removing data into / from a Stack. 5.3 Describe the Polish and Reverse Polish Notation of arithmetic expression.	T11			
		5.3-5.4	5.3 Describe the Polish and Reverse Polish Notation of arithmetic expression. 5.4 Describe the operation of Infix, Postfix & Prefix transformation.	T12		CT-2	
		6	Write and Test a program for Data insertion and Deletion from a Queue.		P6		
WEEK-7		5.5	5 Write the algorithms to transform Prefix expression into Prefix expression and vice versa.	T13			
			Class test on chapter(3---5)	T14			
		7	Write and Test a program for N! and Fibonacci number using Recursion.		P7		
WEEK-8		6.1-6.2	6.1 Define Deques. 6.2 Describe Priority queues.	T15			
		6.2-6.3	6.2 Describe Priority queues. 6.3 Write the algorithms for inserting/deleting data into/from queues.	T16			
		8	Write and Test a program to find out data using linear search and binary search.		P8		

WEEK-9		7.1-7.3	7.1 Define Recursion 7.2 Explain the use of recursive subroutines. 7.3 Write the algorithms to compute N! and Fibonacci numbers byrecursive subroutines.	T17			-
		8.1-8.2	8.1 State the different techniques of searching. 8.2 Describe the linear and binary search algorithm.	T18			
		9	Write and Test a program to arrange Data Ascending and Descending using Bubble Sort and Quick Sort.		P9		
WEEK-10		8.2-8.4	8.3 Describe the linear and binary search algorithm. 8.4 Write the algorithms for linear & binary search. 8.5 Compare the complexity of linear & binary search algorithms.	T19			
			Class Test on chapter (5---7)	T20			
			Review(P1-P3)		P10		
WEEK-11		9.1-9.2	6.2 State the different techniques of Sorting. 6.3 Describe the technique of bubble sort, quick sort, heap sort, insertionsort, selection sort and merge sort.	T21			
		9.2-9.3	9.2 Describe the technique of bubble sort, quick sort, heap sort, insertionsort, selection sort and merge sort. 9.3 Write the algorithms for bubble sort, quick sort, heap sort, insertionsort, selection sort and merge sort.	T22			
			Review(P4-6)		P11		
WEEK-12		9.3-9.4	9.3 Write the algorithms for bubble sort, quick sort, heap sort, insertionsort, selection sort and merge sort. 9.4 Compare the complexity of different sorting algorithms.	T23			
			Review 9.1---9.4	T24			
			Review(P7-P9)		P12		

WEEK-13		10.1-10.3	10.1 Define String 10.2 State the types of structures for storing strings. 10.3 Describe the Record – oriented , Fixed-Length storage procedure of strings.	T25			
		10.4-10.6	10.4 State the advantages and disadvantages of record oriented, fixed-length storage . 10.5 Describe the process of variable length storage with fixed maximums. 10.6 Describe the process of linked storage structure.	T26			
			Review(P1-P9)		P13		
WEEK-14			Class Test on chapter(8---10)	T25			
			Review Class on (1---10)	T26			
					P13		

REFERENCE BOOKS:

1. Data Structures
   BY- Seymour Lipschutz (Schaum's Outline Series)

2. Data Structure and Algorithm
   By- Md.Mokter Hossain

   Md. Masud Karim

   Md. MoynulHoque