



01002

Data Structures and Alg.

Course Details



Course No	01002
Course Name	Data Structures and Algorithms
Course Type	Special
Course Cost	250 JD
No of Lectures	30 Lectures
No of Hours	60 Hours
Lecturer	Mohammad Al-Jada
Text Book	Data Structures and Algorithms Text Book, By Mohammad Al-Jada, Dar Al-Dia-Amman

Introduction

The main problem that faces a programmer is to find the best way to store data, to compress data, to view data, to manage data, and many more things, note that this problem is not facing the programmer only! It faces the computer developers and hardware

makers, this problem is how to sort the instruction into CPU, how to execute them, how to manage memory, etc...

All these problems can be solved using Data Structures and Algorithms, the Data structures is used to store data and manage data, the Algorithms are used to find the best way to do some function on that data, like sorting, searching, compression, and more...

Data Structures are used to store data, either on memory or in file. This structures are used to find the best way to store and retrieve data, if the programmer want to store data and read the first data he stores in file he must use the QUEUE data structure, if he want to store data and read the last data stored he uses STACK data structure, also to construct a DATABASE file you need to use a data structure like dictionaries or linked lists, and so on.

After saving the data and find the best way to store it, you need to manage this data to get information; you can use SORTING algorithms to sort data, or SEARCHING algorithms to search for item in the data, or use COMPRESS algorithms to save storage space.

This course talks about many data structures and algorithms. The student after this course will be very good in structuring the data and managing it.

Lectures

Subject	Lectures
Stack	1
Queue	1
Double Ended Queue	1
Priority Queue, Circular Queue	1
Vectors	1
Link Lists & Double Linked Lists , Circular Linked Lists	3
Sequences	1
Dictionaries	1
Hah Tables	1
Look-Up Table	1
Trees: Shapes, Binary Tree, Heap Tree	1
Graphs: Directed , Undirected, Complete, Symmetric, Weighed, Sub Graphs, Adjacent Relation, Path, Simple Path, Connected Graph, Biconnected Graph, Cycle in	3

Graphs, Acyclic Graph, Adjacency List, Adjacency Matrix.

Searching General Concepts , Sequential Search , 3
Hashing Search , Binary Search, Binary Search Tree

Graph Search : Breadth First Search, Graph Search : 4
Depth First Search, Graph Search : Greedy Method,
Graph Search : Minimum Spanning Tree, Kruskal
Method, Graph Search : Multi Stage Graph

Sorting General Concepts, Bubble Sort, Quick Sort, 4
Selection Sort, Insertion Sort, Merge Sort, Heap Sort,
Shell Sort, Radix Sort

Compression General Concepts, Files Compression, 3
RLE Compression, Huffman Compression