



Final Exam

Data Structure

Computer and Syst. Dept.
Time Allowed: 120 minutes.
CIE, BME Students.
Total Marks: 50
2018 – 2019

Solve the following Questions:

- يسمح باستخدام القلم الرصاص (شرط وضوح الخط).
- استخدم اقل عدد من الكلمات في الاجزاء النظرية.

1. What is meant by a data structure? Then:
 - (a) What is the difference between Database and data structure, show the relation graphically.
 - (b) Write short notes about; Stack - linked lists – Tree – Graph - Queue.
(8 marks)
2. Construct a class Circle, each Circle has a radius. The class contains two methods to get the circle area and circumference. Write a java program to enter the radius of the circle, then print its area.
(6 marks)
3. Using Vectors, Write a program using vectors for a simple dictionary.
(5 marks)
4. Write a program to Enter the elements of A[5][5] then:
 - Calculate the average of elements.
 - Calculate the maximum element at the 4th column.
 - Searching for an element in the matrix diagonal.
(6 marks)
5. Write a class LowArray that contains two methods, the first is setElem(), which set a value of a specific array element, and getElem() which returns the value of a specific array element. Then, write a program that uses that class to:
 - Create an object from LowArray class.
 - Fill the created object with elements.
 - Print the elements of your object.
 - Searching for a specific element in your object.
 - Deleting an element.
(10 marks)
6. Write a class MyStack that contains five methods as following:
 - Push() → to insert a new element at the top of the stack.
 - Pop() → to remove the element at the top of the stack.
 - Peek() → to return the value of the element at the top of the stack.
 - isEmpty() → to check whether the stack is empty.
 - isFull() → to check whether the stack is full.

Then, write a java program to create a stack (object from MyStack class) of size 10, then insert the elements 20, 40, 60, and 80 to your stack, then print the element on the stack top, then finally, empty the stack and print its contents.

(10 marks)



7. Show the contents of a stack after performing the following operations:

- Push(10)
- Push(20)
- Peek()
- Pop()
- Push(30)
- Push(40)
- Pop()
- Pop()
- Peek()
- Push(50)
- Push(60)
- Peek()
- Pop()

(5 marks)

----- *End of Questions* -----

With Best Wishes

Prof. Dr. Ahmed Saleh

Plz, send feedback about the exam to:

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