

# File Structure: Assignment #1

## 100 points



Cairo University, Faculty of  
Computers and Information

### Notes:

1. Cheaters will be graded by **-ve points**
2. Submit your code through Acadox system.
3. Due Date **16/3/2017 10:30 PM**
4. Discussion of assignment will be in your lab.
5. Group = max 2 students, **Groups must be from the same Lab.**

Consider we want to store the data of a set of electronic devices in a file; every device has the following attributes

- **ID : char[20]**
- **Name: char [ 30]**
- **brand: char [30]**
- **Price: float**

The file structure is as follows:

- The fields separated by a delimiter, use this mark as delimiter: #
- Every record is preceded by its length.
- Test your program by storing the data of 10 devices in that file and applying the four listed functionalities below.
- You should use the avail list when deleting records.

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### The required functionalities:

- **Add** new record, check first the **avail list** if you can use a deleted slot or not. Use the first fit strategy. If the avail list has a slot **X** that can be used in storing the new record and the slot **X** size is greater than the new record size, no need to return the remaining space again to the avail list. If there are no records in the avail list, you should add in the end of file. [20 points]
- **Update** a record given the **ID** , if the new record's size is **equal or less than** the size of the old record, then insert in the same place, if new size is greater than the old one , **perform delete operation then add operation**. Hint: the deleted record will be inserted into avail list. . [20 points]
- **Delete** a record, update the Avail List after each delete . [20 points]
- **Search** for a record given an **ID**, if found print its data, if not tell user that this device is not found. Use sequential search. . [20 points]
- **CompactFile** : due to the delete and the add operations, internal fragmentations may be produced, so in this function you are asked to remove these fragmentation. After compacting the file, the avail-list will be free, **Print the number of bytes before and after compacting the file**. [20 points]

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The Main Welcome Screen should be like this.

| <b>Store Management System</b>    |  |
|-----------------------------------|--|
| 1) Add New Device                 |  |
| 2) Update Device                  |  |
| 3) Delete Device                  |  |
| 4) Search for a Device By ID      |  |
| 5) Compact File                   |  |
| 6) Exit                           |  |
| <b>Please Enter Your Choice :</b> |  |