File Structure: Assignment #2

100 points

Cairo University, Faculty of Computers and Information

Notes:

1. *Cheaters will be graded by –ve points , Don't copy any code from anywhere ..*
2. *Submit your code to through Acadox only.*
3. *Submit one compressed file with you ID and Group Name*
4. *Due Date 17/4/2017 10:30 PM*
5. *Team = max 2 students, team must be from the same lab*

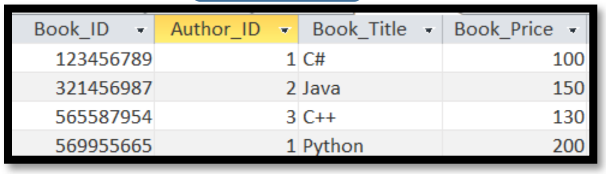
We want to store data about **books** and **authors**. (for simplicity consider any book has only one author, but any author may have more than one book, i.e. author has at least one book.)

Book attributes
Char [13]: Book_ID //primary key
Char [30]: Author_ID //sec. key
Char[50]: Book _Title
Float : Book_Price

author attributes
Char [30]: Author_ID //primary key
Char[50]: Author_Name //sec. key
Char[50]: Author_Address
Char[11]: Author_Mobile

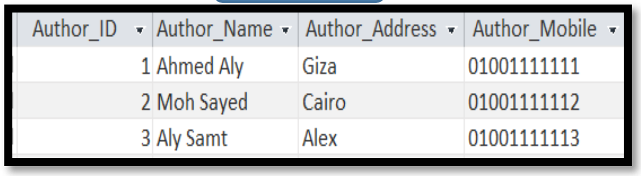
- Consider we want to save 10 books and 10 authors.
- Save the data for books and authors in the following format: **delimited fields, length indicator records.**
- You should develop the following indexes
  1. **Primary index using the Book_ID (for Books datafile)**
  2. **Primary index using the Author_ID (for Authors datafile)**
  3. **Secondary index using Author_ID (for Books datafile) //Author_ID is sec. key in Books datafile**
  4. **Secondary index using Name (for Authors datafile)**
- The user can write a **query** that contains **fixed** key words (formatted in **red** below)
- Examples for queries that user can write
  - **select all from Books where Author_ID = 'xxxx'** // this query will use sec. index to get results
  - **select all from Authors where Author_ID = 'xxxx'** // this query will use primary. index to get results
  - **select Book_Tile from Books where Book_ID = 'xxxx'** // this query will use sec. index to get results
  - **select all from Books and Authors** // (check snapshot below as an example)

Books

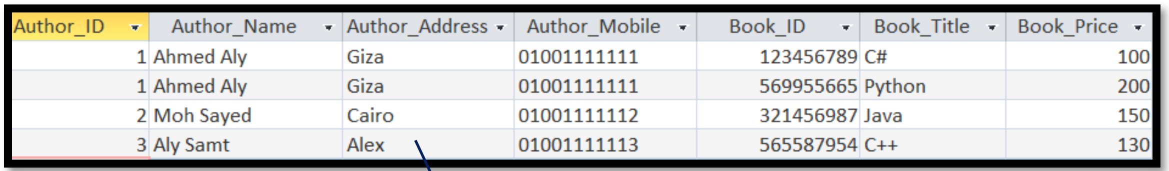


Book_ID	Author_ID	Book_Title	Book_Price
123456789	1	C#	100
321456987	2	Java	150
565587954	3	C++	130
569955665	1	Python	200

Authors



Author_ID	Author_Name	Author_Address	Author_Mobile
1	Ahmed Aly	Giza	01001111111
2	Moh Sayed	Cairo	01001111112
3	Aly Samt	Alex	01001111113



Author_ID	Author_Name	Author_Address	Author_Mobile	Book_ID	Book_Title	Book_Price
1	Ahmed Aly	Giza	01001111111	123456789	C#	100
1	Ahmed Aly	Giza	01001111111	569955665	Python	200
2	Moh Sayed	Cairo	01001111112	321456987	Java	150
3	Aly Samt	Alex	01001111113	565587954	C++	130

select all from Books and Authors

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the main welcome screen is below.

```
1)   Add New Book
2)   Add New Author
3)   Delete Book (ID)
4)   Delete Author (ID)
5)   Print Book(ID)
6)   Print Book(title)
7)   Print Author(ID)
8)   Print Author(name)
9)   Write a Query
10)  Exit
```

Important notes:

- All indexes are sorted ascending
- *No need to use a status flag to check that indexes are up-to-date.*
- *But, you MUST implement secondary indexes using* ***inverted list*** *technique.*
- Searching in indexes is performed using ***binary search***.
- To delete a record just put an * in the beginning of that record. (no need for avail list implementation)
- All operations (add, delete) will affect indexes *as explained in lecture 13*.
- Search operations will use indexes (primary or secondary)
- Bind all secondary indexes with the primary index, don't bind them by addresses directly.

Assume any other information you need.