MENOUFIA UNIVERSITY
FACULTY OF COMPUTERS & INFORMATION
Department: AII & Bioinformatics
Subject: CS250/CS251 file Organization

جامعة المنوفية
كلية الحاسبات والمعلومات
2nd Semester Final exam
Year: 2nd Year

Write a research article that include one theoretical topic from part1 and one practical project from part2

Part1 Theoretical Topics:

1- Static and dynamic Indexing to show their structure, add, remove, and retrieve the record key.

2- Hashing technique to show 3- hash function and collisions resolution

3- RAID, disk scheduling, and error correction

4- File reclaiming space and Data Compression

5- Hadoop distributed file system and MapReduce

Part2 Practical Projects: You must submit the code for your selected project and screenshots for each operation.

Project-01: Address Book

Develop an address book application using **arrays** and **file operations**. The address book should hold the following details:

First Name	Address	Contact Number (primary key and
Last Name	Email	include area code) eg. 040-2731021

Your application should provide the following operations:

1- Add New Contact
2- Delete Contact
3- Update Contact
4- Search by name or contact with suggestion (Linear & Binary).
5- Display the contacts into two orders:
   a. The same order they added.
   b. Sorted by the Name.
6- Save contacts to file
7- Undo for last operation & Redo for last undo. (Operation here may be of those [Add, Update, or Delete]).
8- Display the most 5 popular Contacts (the popularity of any Contacts depends on the number of times it appears in search results).
9- Quit

Important Notes:

- The application must read all contact saved into the file at the first moment the application start running. (Your contacts are stored into permanent storage (Your Hard Disk)).
- The file used to store the contacts is ***updated based on the following conditions***:
   1. When **exiting** the application
   2. When selecting **"Save contacts to file" option** from your application option menu.
   3. When your application has been **recorded at least five changes in your contacts** (changes such add a new contact, edit contact, or delete a contact).

- The application **updates your contact file on your hard disk only if** one of the above conditions has been fired.
- You should store the popularity of the contacts into the file.

Project-02: Dictionary

Develop a dictionary application using **arrays** and **file operations**, the dictionary will give the meaning of the word entered, **and if the entered word is not present** in the dictionary the application will say that the word is **not found**, and then **will auto-suggest words** which are close to the entered word. Each word includes the following info (word, meaning).
Your application should provide the following operations:
1- Add New Word to the dictionary
2- Update Word
3- Delete Word
4- Search for word (with auto-suggest if the word not found) (Linear & Binary).
     a. Equals
     b. Start with
     c. End with
     d. Contains
5- Save to file
6- Display all dictionary word sorted (Asc. or Desc).
7- Undo for last operation & Redo for last undo. (Operation here may be of those [Add, Update, or Delete]).
8- Display the most 5 popular words (the popularity of any word depends on the number of times it appears in search results).
9- Quit

Important Notes:
- The application must load your dictionary saved into the file at the first moment the application start running. (Your dictionary is stored into permanent storage (Your Hard Disk)).
- The file used to store the dictionary is ***updated based on the following conditions***:
    1. When **exiting** the application
    2. When selecting **"Save to file" option** from your application option menu.
    3. When your application has been **recorded at least five changes in your dictionary** (changes such add a new word, edit word, or delete word).
- The application **updates your dictionary file on your hard disk only if** one of the above conditions has been fired.
- You should store the popularity of the words into the file.

Project-03: Letter Templates

Develop a letter templates application using **arrays** and **file operations**. The application should hold the following details for any letter:

From	To	Date	Subject	Salutation	Body	Signature

Your application should provide the following operations:

1- Add New Letter
2- Delete Letter
3- Update Letter
4- Find Letters (Search by from, to, date, or subject) (Linear & Binary).
5- Save to file

6- Display all letters sorted (Asc. or Desc based on Date).
7- Undo for last operation & Redo for last undo. (Operation here may be of those [Add, Update, or Delete]).
8- Display the most 5 popular formats (the popularity of any letter format depends on the number of times it appears in search results).
9- Quit.

Important Notes:
- The application must load your letters saved into the file at the first moment the application start running.
- The file used to store the letters is ***updated based on the following conditions***:
    1. When **exiting** the application
    2. When selecting **"Save to file" option** from your application option menu.
    3. When your application has been **recorded at least five changes in your letters** (changes such add a new letter, edit letter, or delete letter).
- The application **updates your letters file on your hard disk only if** one of the above conditions has been fired.
- You should store the popularity of the letter's formats into the file.

Project-04: Inventory System

Develop inventory application using arrays and file operations. The application should hold the following details for any item:
- Product_ID (primary key) eg. 20-071-020,
- Product_Name,
- Product_Amount,
- Price,
- Type_of_Product (eg. eat, syrup, hard, soft ………)
- Shelf_Number.

Your application should provide the following oprations:
1- Add New Item
2- Delete Item
3- Update Item
4- Find Item (Search by name, type, Shelf_Number) (Linear & Binary).
5- Save to file
6- Display all items sorted (Asc or Desc based on Product_Name or Price).
7- Undo for last operation & Redo for last undo. (Operation here may be of those [Add, Update, or Delete]).
8- Display the most 5 popular items (the popularity of any item depends on the number of times it appears in search results).
9- Quit.

Important Notes:
- The application must load your items saved into the file at the first moment the application start running.
- The file used to store the letters is ***updated based on the following conditions***:
    1. When **exiting** the application
    2. When selecting **"Save to file" option** from your application option menu.

3. When your application has been **recorded at least five changes in your items** (changes such add a new item, edit item, or delete item).
- The application **updates your items file on your hard disk only if** one of the above conditions has been fired.
- You should store the popularity of the items into the file.

Project-05: Library System

Develop Library application using **arrays** and **file operations**. The application should hold the following details for any book:
- ISBN (primary key) eg. 0-201-87401-6,
- Book_Name,
- Auther_Name,
- Publisher_Name,
- Year_of_Publishing,
- Edition_Number.

Your application should provide the following operations:
1- Add New Book
2- Delete Book
3- Update Book
4- Find Book (Search by Book_Name, Auther_Name, Year_of_Publishing, or ISBN) (Linear & Binary).
5- Save to file
6- Display all Books sorted (Asc. or Desc based on Book_Name or Year_of_Publishing).
7- Undo for last operation & Redo for last undo. (Operation here may be of those [Add, Update, or Delete]).
8- Display the most 5 popular Books (the popularity of any Books depends on the number of times it appears in search results).
9- Quit.

Important Notes:
- The application must load your Books saved into the file at the first moment the application start running.
- The file used to store the letters is ***updated based on the following conditions***:
  1. When **exiting** the application
  2. When selecting **"Save to file" option** from your application option menu.
  3. When your application has been **recorded at least five changes in your Books** (changes such add a new book, edit book, or delete book).
- The application **updates your books file on your hard disk only if** one of the above conditions has been fired.
- You should store the popularity of the Books into the file.

Best Regards
Dr. Arabi Keshk