Programming Fundamentals
Project

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Note:

- ***This is an individual Project.***
- ***100 % marks will be given on the basis of No Memory leakage, No dangling pointers, and No extra space should be wasted. Also make use of helper functions where ever required.***
- ***String data type not allowed instead use CString with null termination else you will get 0.***
- ***File Handling is must***
- ***Submission will be on portal in Lab under folder named Project_Submissions.***

Project 2: Your task is to design a departmental store management system. The store has multiple shelves with numbers on it for placing multiple items, initially the shelf is empty, means that there is no item on the shelf. The store consists of k number of shelves, and each shelf has exactly p number of positions for items to be placed on it. The store wants to design a software to keep the records of item on the shelves. The software should be able to perform the following operations:

1. Insert the item at a particular position in a given shelf, if it's empty else place the item in the first empty location in that shelf, and if there is no location empty on that shelf then do not insert it and display the appropriate message to the user.
2. Display all the items in a given shelf.
3. Remove the item from particular position in a given shelf if it is there.
4. Remove all the item from a given shelf
5. Return total number of the items in the specified shelf
6. Return the total number of items in all the shelves.
7. Find item in the store and return the shelf number and its position if it exists.
8. Update the item at given position (can be empty or filled) by replacing it with the new item.
9. Check if the shelf is empty
10. Check if the shelf is full

Your process will start for asking number of shelves (k) and (p) positions on each shelf (Each shelf can have varying storage positions)

Sample Input/Output:

- *Enter no of shelves: 2*
- *Enter no of positions on each shelf: 4*

  ********** **Menu** **********

- *Press 1 for* ***Inserting an item****.*
- *Press 2 for* ***Displaying all items*****.**

- *Press 3 for **Remove an item.***
- *Press 4 for **Remove all the items.***
- *Press 5 for **Return total no of items.***
- *Press 6 for **find an item.***
- *Press 7 for **updating an item.***
- *Press 8 to **check if shelf is empty.***
- *Press 9 to **check if shelf is full.***
- *Press 0 to **Quit.***

- *Enter Choice: 1*
  Enter Shelf: 1 Enter Position: 1
  Enter Item: Glass
  Added successfully!

- *Enter Choice: 1*
  Enter Shelf: 1 Enter Position: 2
  Enter Item: Bag
  Added successfully!

- *Enter Choice: 1*
  Enter Shelf: 2 Enter Position: 1
  Enter Item: Biscuit Box
  Added successfully!

- *Enter Choice: 5*
  Total no of items: 3

- *Enter Choice: 6*
  Enter item name to find: Bag
  Item found at: Shelf: 1 Position: 2

- *Enter Choice: 7*
  Enter shelf no to update: 3
  Error! Shelf not found.

- *Enter Choice: 7*
  Enter shelf no to update: 2 *Enter position: 1*
  Enter item to update with: Bottle
  Shelf updated!

- *Enter Choice: 3*
  Enter shelf no to remove item: 1 *Enter position: 2*
  Item removed!

- *Enter Choice: 9*
  Enter shelf no: 2
  Shelf 2 is not full.

- *Enter Choice: 4*
  All items removed from every shelf!

- *Enter Choice: 8*
  Enter shelf no: 1
  Shelf 1 is empty.

- *Enter Choice: 0*
  Thank you!