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INVENTORY MANAGEMENT AND BILLING SYSTEM
SDF Mini Project

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Inventory Management and Billing System

Details of Team Members:

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B7 CSE

Abstract of Project:

In large shops and markets, it could be tedious to keep record of the stock of all items they have.

The function of this program is to help a store/shop to manage the items in their inventory. They can save quantity of each item in their inventory. Update the stock as soon as the sell a product or they order items for the store. They could also calculate the total value of all their products. They can check if something in their inventory is out of stock.

Other main function of the program is to help them create bills for customers. Those bills are saved in text files which could later be used by the store owner/manager as they wish. It also keeps record of the total sales. They can calculate the total profit they made in a particular duration of time.

The backbone of the project is file handling which saves the list of items in a text file. It could be opened in the program and the data could be loaded in multidimensional arrays. After performing the required operation, the data is saved back in the text file.

Topics of SDF-I used:

- File Handling
- Structures
- 1D Arrays and Multi-Dimensional Arrays
- Basic print, scan functions and mathematical operators
- Functions
- Loops: For loop, while loop, nested loops
- If else, nested if else
- String Methods
- Switch Case
- Pointers

Design of the project:

The program has a main menu from where user can enter a character choice to continue to do the specified action. The available choices are from A-M, and X to exit the program. These choices are as below:

A. List all inventory items: It prints all the data stored in the text file inventory.txt in a table format readable by the user.

B. Search inventory items: It takes a string keyword from the user as input, and check it against the list of all the items, the items whose name/barcode has the keyword as a substring are printed on the screen.

C. List product details: It takes the barcode of a product as user input and print all the details of the same item.

D. Create new item: It takes all the required details of a new item from the user and stores in the inventory.txt file.

E. Delete an item: It takes the barcode of an item as input and deletes the item whose barcode matches it, and stores the remaining items in the text file. It also decrements the serial numbers of remaining items accordingly.

F. Edit a product detail: Takes the old barcode as user input and then the user can give the item a new name/barcode or enter "-1" if he doesn't want it to be changed.

G. Update product price: Takes barcode of an item as input and give users the option to update its price and then store the new price in the text file.

H. Update product quantity: Takes barcode and quantity as input, and then the new quantity is stored as the sum of old quantity and the number by which we want to increment it.

I. Update product quantity in bulk: Sometimes when a store receives the delivery of stock, they may want to update the quantity in bulk, so that they don't have to chose the last option repeatedly, that's why this option is provided which takes continuous input of barcode and quantity as input from user until they enter -1 to terminate the loop.

J. Create a new bill: Option to create a new bill, it takes details like Customer Name, Address, Contact number as input, then runs a loop to take input of items, their quantity and tax rates. Afterwards it converts all the data into a bill format which is saved in a separate invoice file to be used later such as taking print outs of the bill. The same data is saved in sales.txt file so that the program can access all sales data which could be used to print list of sales in a particular period of time.

K. List all sales: Just like the first option, this one also prints the data stored in sales.txt file in user understandable table format.

L. Search sales within date range: Helps to filter the sales on basis of a time period.

M. Print bill details: This option prints complete bill on the screen after taking the invoice number as input.

Implementation Details

C Libraries Used:

- String: For performing string functions like strstr, strcmp, strlen, strcat, strtok etc.
- Stdio: Basic library for performing all input output functions.
- Time: Used for time functions when creating a new bill
- Stdlib.h: Used for functions like atoi, atof etc.
- Conio: Used for the getch() function used in the main function to wait for key press by user to continue ahead.
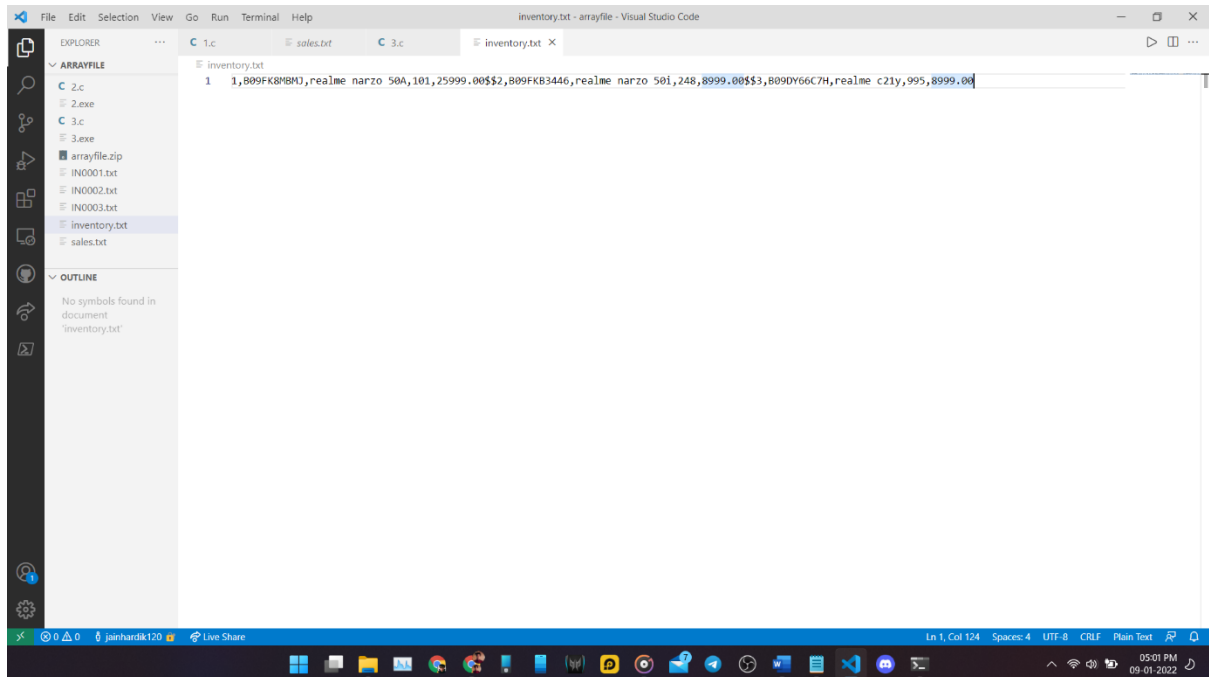
Constants Declared:

- Text Size and Number of Items/Sales: These all define the maximum limit of data stored in text files and are used to initialize arrays and strings of these size in the program.
- Company Details Constants: These all contains the details of billing company which is printed at the top of a bill.
- Blank Spaces, Linear Line: These are used in the printBillFormat function to align the text at the required position by introducing the required no of spaces, and printing separation line.

Structures Used:

- Inventory item: This structure contains the details of a inventory item such as barcode, name, quantity, price etc.
- Sales Item: This structure is used as a part of the bill structure and contains the details of an item sold such as tax rate, quantity, amount, total amount etc.
- Bill: This structure contains details the customer, invoice number, time and date of purchase, an array of the previously defined sales item structure, and the total taxes and total amount floats.
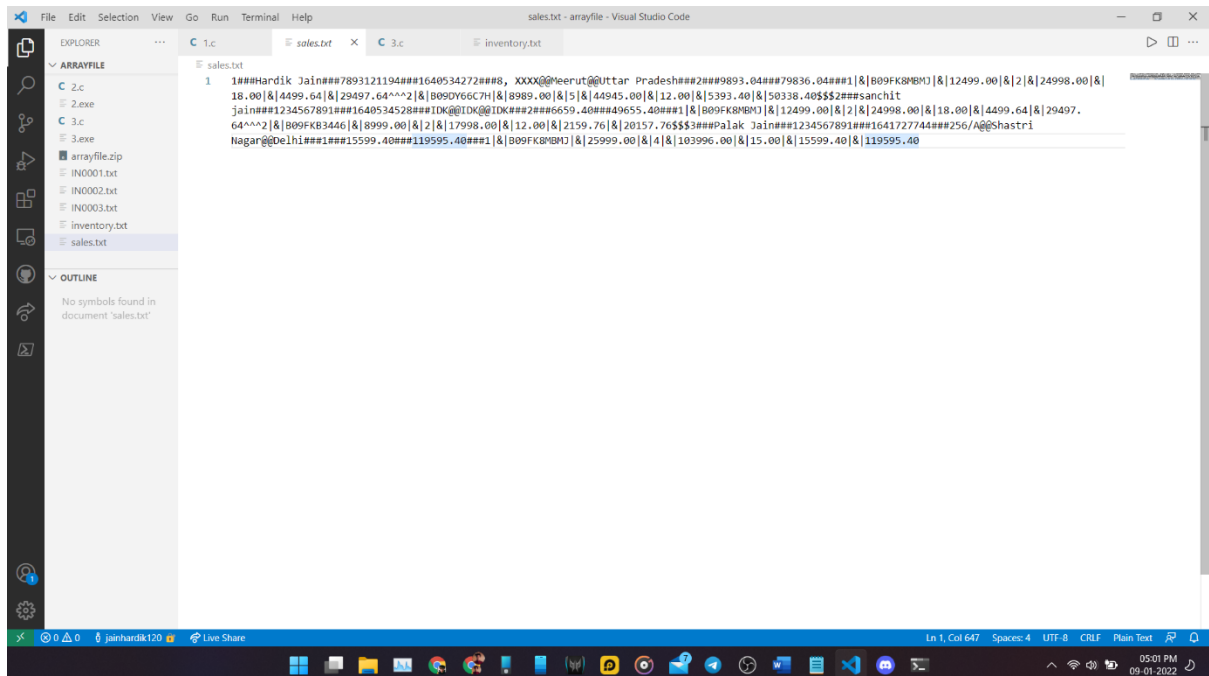
Screenshots of the program

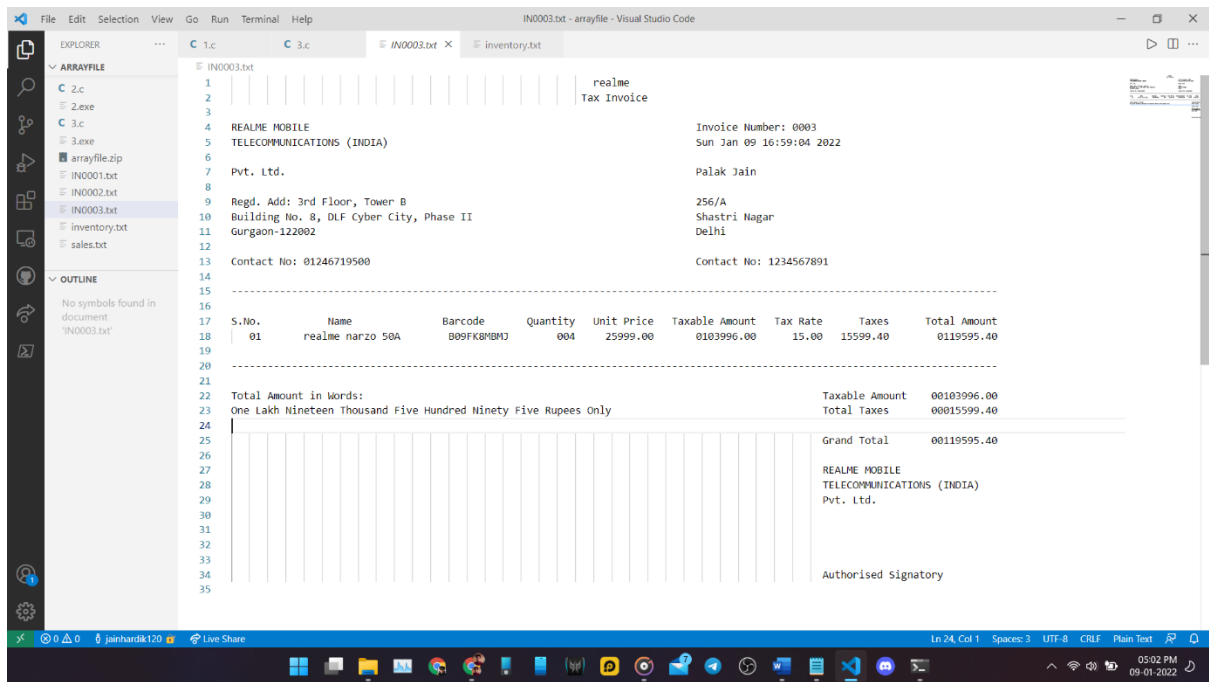Data stored in inventory.txt file separated by delimiters $$

Data stored in sales.txt file separated by delimiters $$$, ###, ^^^, |&|

Sample Bill file IN0003.txt

Entry Point of program:
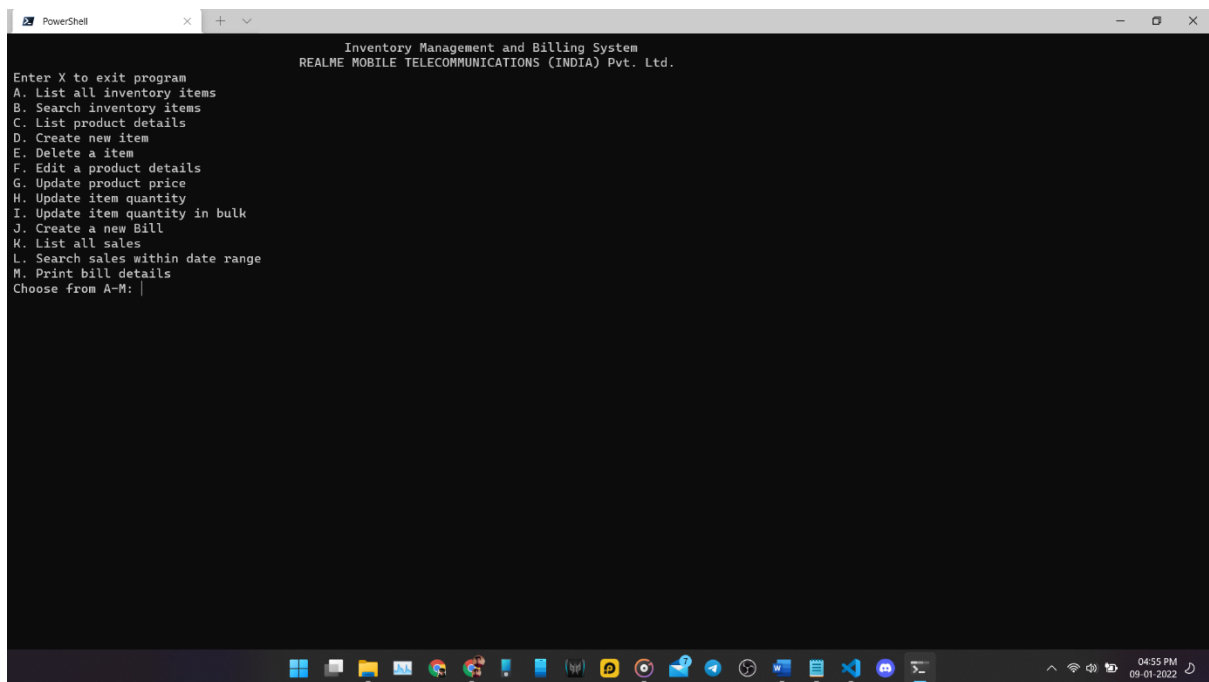
List all items function:


```
                           Inventory Management and Billing System
                      REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Printing all items...

1       B09FK8MBMJ       realme narzo 50A       105     12499.00
2       B09FKB3446       realme narzo 50i       248     8999.00
3       B09DY66C7H       realme c21y            995     8999.00


Press any key to continue...
```

Search Inventory Items function:


```
Search: narzo

These are the search results

1       B09FK8MBMJ       realme narzo 50A       105     12499.00
2       B09FKB3446       realme narzo 50i       248     8999.00


Press any key to continue...
```

Print item detail's function:


```
                    Inventory Management and Billing System
                REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Enter Barcode: B09FK8MBMJ
Printing...

Serial Number : 1
Barcode : B09FK8MBMJ
Name : realme narzo 50A
Quantity : 105
Price : 12499.00


Press any key to continue...
```

Create new item function:


```
                    Inventory Management and Billing System
                REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Enter new item details :
Enter Barcode of new item: BarcodeHere
Enter Name of new item: ItemNameHere
Enter Quantity of new item: 100
Enter Price of new item: 100.00

These are the details you entered:

Serial Number : 4
Barcode : BarcodeHere
Name : ItemNameHere
Quantity : 100
Price : 100.00

Press Y to save this new item: y
```

Delete item function:

Inventory Management and Billing System
REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Enter barcode of product to delete or enter "search" to find from list: BarcodeHere
Are you sure you want to delete "ItemNameHere" ?
Press Y/N to confirm/deny: y
Deleted successfully

Press any key to continue...

Update product details function:

```
                        Inventory Management and Billing System
                     REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Previous details are given below
Serial Number : 1
Barcode : B09FK8MBMJ
Name : realme narzo 50A
Quantity : 105
Price : 12499.00
Enter new details or type -1 to leave as it is:
Enter Barcode : -1
Enter Name : Realme Narzo 100A
```

```
                        Inventory Management and Billing System
                     REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
The new details you entered are:
Serial Number : 1
Barcode : B09FK8MBMJ
Name : Realme Narzo 100A
Quantity : 105
Price : 12499.00

Press Y/N to save changes:
```

Update Product Price function:

```
                        Inventory Management and Billing System
                        REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Current price of B09FK8MBMJ realme narzo 50A is 12499.00
Enter the new price : 25999
New price would be 25999.00
Press Y to confirm, N to decline the change: y
```

Update product quantity function:

```
                        Inventory Management and Billing System
                        REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Current quantity of B09FKB3446 realme narzo 50i is 248
Enter the quantity by which you want to increment: 50
New quantity would be 298
Press Y to confirm, N to decline the change: y


Press any key to continue...
```

Create a new bill function:


```
                            Inventory Management and Billing System
                        REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Enter customer name: Palak Jain
Enter contact number: 1234567891
Enter address line 1: 256/A
Enter address line 2: Shastri Nagar
Enter address line 3: Delhi
Start entering items details below:
Enter '-1' to exit
Enter barcode of item: B09FK8MBMJ
Enter quantity: 4
Enter tax rate: 15
Enter barcode of item: -1
```



```
                                     realme
                                  Tax Invoice

REALME MOBILE                              Invoice Number: 0003
TELECOMMUNICATIONS (INDIA)                 Sun Jan 09 16:59:04 2022
Pvt. Ltd.                                  Palak Jain

Regd. Add: 3rd Floor, Tower B              256/A
Building No. 8, DLF Cyber City, Phase II   Shastri Nagar
Gurgaon-122002                             Delhi

Contact No: 01246719500                    Contact No: 1234567891
------------------------------------------------------------------------------------------------------
S.No.        Name          Barcode    Quantity   Unit Price   Taxable Amount   Tax Rate    Taxes     Total Amount
  01    realme narzo 50A   B09FK8MBMJ    004       25999.00      0103996.00      15.00    15599.40    0119595.40
------------------------------------------------------------------------------------------------------
Total Amount in Words:                                      Taxable Amount   00103996.00
One Lakh Nineteen Thousand Five Hundred Ninety Five Rupees Only   Total Taxes      00015599.40

                                                            Grand Total      00119595.40

                                                            REALME MOBILE
                                                            TELECOMMUNICATIONS (INDIA)
                                                            Pvt. Ltd.




                                                            Authorised Signatory
Press any key to continue...
```

```
                    Inventory Management and Billing System
                REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Enter 'Y/N' to save the bill and store in sales file: y


Press any key to continue...
```

List all sales function:

```
                    Inventory Management and Billing System
                REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Printing all sales...

0001    26-11-2021    Hardik Jain              7893121194    Items: 02    Taxes: 09893.04    Total: 0079836.04
0002    26-11-2021    sanchit jain             1234567891    Items: 02    Taxes: 06659.40    Total: 0049655.40
0003    09-00-2022    Palak Jain               1234567891    Items: 01    Taxes: 15599.40    Total: 0119595.40


Press any key to continue...
```

List sales within date range function:

```
                    Inventory Management and Billing System
                    REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Searching for bills from Wed Dec 29 00:00:00 2021 to Mon Jan 10 23:59:59 2022

0003    09-00-2022    Palak Jain              1234567891   Items: 01   Taxes: 15599.40   Total: 0119595.40

                                                                       Total: 15599.40   Total: 0119595.40


Press any key to continue...
```

Print previous invoice details function:

```
                    Inventory Management and Billing System
                    REALME MOBILE TELECOMMUNICATIONS (INDIA) Pvt. Ltd.
Enter X to exit program
A. List all inventory items
B. Search inventory items
C. List product details
D. Create new item
E. Delete a item
F. Edit a product details
G. Update product price
H. Update item quantity
I. Update item quantity in bulk
J. Create a new Bill
K. List all sales
L. Search sales within date range
M. Print bill details
Choose from A-M: m
Enter invoice number: 1
```

```
                                      realme
                                   Tax Invoice

REALME MOBILE                                  Invoice Number: 0001
TELECOMMUNICATIONS (INDIA)                     Sun Dec 26 21:27:52 2021
Pvt. Ltd.                                      Hardik Jain

Regd. Add: 3rd Floor, Tower B                  8, XXXX
Building No. 8, DLF Cyber City, Phase II       Meerut
Gurgaon-122002                                 Uttar Pradesh

Contact No: 01246719500                        Contact No: 7893121194

-------------------------------------------------------------------------------

S.No.       Name          Barcode      Quantity   Unit Price   Taxable Amount   Tax Rate    Taxes      Total Amount
   01    realme narzo 50A  B09FW8MBMJ     002       12499.00      0024998.00      18.00     04499.64     0029497.64
   02       realme c21y    B09DY66C7H     005       08989.00      0044945.00      12.00     05393.40     0050338.40

-------------------------------------------------------------------------------

Total Amount in Words:                                    Taxable Amount    00069943.00
Seventy Nine Thousand Eight Hundred Thirty Six Rupees Only Total Taxes      00009893.04

                                                          Grand Total       00079836.04

                                                          REALME MOBILE
                                                          TELECOMMUNICATIONS (INDIA)
                                                          Pvt. Ltd.



                                                          Authorised Signatory

Press any key to continue...
```

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