Course Code: CPCS 203 Course Name: Programming II

Assignment #1 (Invoicing System)

Description:

Invoicing System is a software (program) that shall be used to store different data like:

- ✓ Customer names.
- ✓ Item names and its prices.
- ✓ Items purchased by each customer.

This software shall also generates invoices for each customer based on the items he/she purchased.

Basic Requirements:

- The program shall ***read the data*** from a text file called "input.txt" that follows a specific pattern. If the file doesn't exist, print a message to let the user know what happened. – see Input file for more details.
- The program shall generate a ***text file as the output*** called "print.txt" that contains the results of the commands written in the input file – see print file for more details.
- The program shall load data dynamically from the given text file "input.txt" and ***user is not involved*** in data entry.

The Initial Procedure of the Program:

You will use File I/O concepts to read the given file [input.txt]. Make sure the file exist or display a message that the file does not exist. The file consists of:

- 2 integers to determine array size for **customer names**, **item names, item prices** [see input.txt file]:

- ✓ The first number (4) in the file refers to the number of customers to be stored in the System [means, system shall accept ONLY FOUR customers name.
- ✓ The second number (10) refers to the number of Items name to be stored in the system [means system shall accept ONLY 10 Items name]

Note: Item prices shall be of same size as of item names.

- Create a **Single Dimension Array** to store customers name (See Table 1), and create a **method** that read all names of customers from given input.txt file and stored customer name in an array.

Table 1. Customers information

Customer Name
Jawad_Ali
Saif_Abdulraheem
Fatima_Mohamed
Nada_Ali

// array of type String for the customer name

- Create a **Single Dimension Array** to store Item names (See Table 2), and create a **method** that read all Items names from given input.txt file and stored Item name in an array.

Table 2. Item Names information

Item name
Pen
Pencil
Book
Keyboard
Mouse

Watch
Toys
Shoe
Sunglass
Perfume

// array of type String for the Item names

- Create a **Single Dimension Array** to store Item prices (See Table 3), and create a **method** that read all Items prices from given input.txt file and stored Item price in an array.

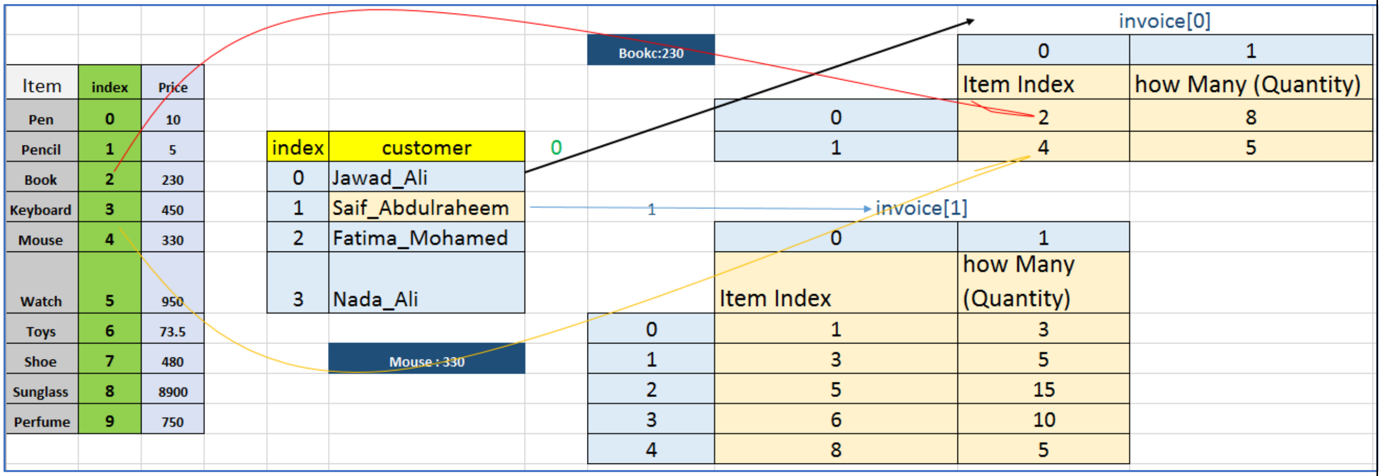
Table 3. Item prices' information

Item prices
10.0
5.0
230.0
450.0
330.0
950.0
73.5
480.0
8900.0
750.0

// array of type double for the Item prices

- Create a **3-Dimentional array** to store items purchased and how many such purchased by each customers as shown (See Table 6).

Table 4. Customer purchase record stored in 3 Dimension Array



Item	index	Price
Pen	0	10
Pencil	1	5
Book	2	230
Keyboard	3	450
Mouse	4	330
Watch	5	950
Toys	6	73.5
Shoe	7	480
Sunglass	8	8900
Perfume	9	750

index	customer
0	Jawad_Ali
1	Saif_Abdulraheem
2	Fatima_Mohamed
3	Nada_Ali

Bookc:230

Mouse : 330

0

invoice[0]

	0	1
	Item Index	how Many (Quantity)
0	2	8
1	4	5

1

invoice[1]

	0	1
	Item Index	how Many (Quantity)
0	1	3
1	3	5
2	5	15
3	6	10
4	8	5

The 3- Dimensional array virtually link customer, Item and price arrays. Each customer has number of items he/she want to buy, so this 3 Dimensional array have different rows and columns based on the total items customer is buying, which of the items he/she purchased and how many of them as shown in above table 4 and figure 1 illustrates the structure of the 3D array.

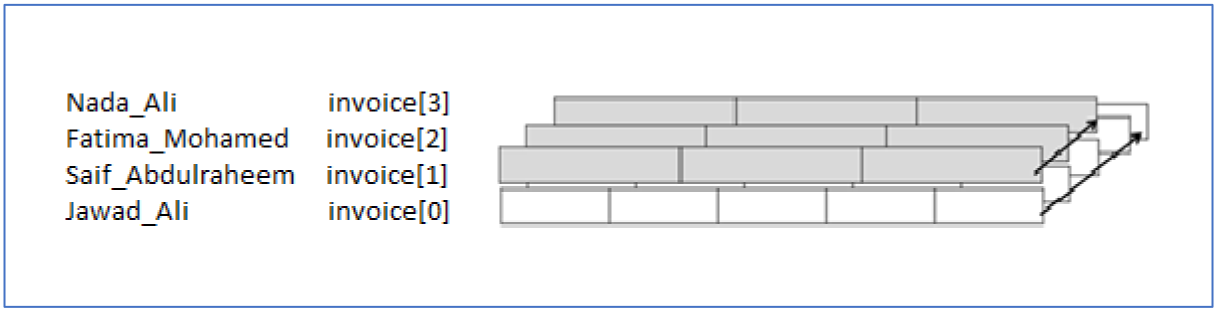


Figure 1 The structure of the 3D array

// Three Dimensional Array

Note: All Commands must be implemented using separate methods.

The commands you will have to implement are as follows:

- **add_cutomer**– Your program shall read customer names and store in an array to be used in the system. [see input.txt]

  add_cutomer Jawad_Ali Saif_Abdulraheem …

  In above line **add_cutomer** is a command and **Jawad_Ali**, **Saif_Abdulraheem** etc**.** are customer names.

// Method to do above task

- **add_ItemName** – Your program shall read Items names and store in an array to be used in the system. [see input.txt]

  add_ItemName Pen Pencil Book …

  In above line **add_ItemName** is a command and **Pen, Pencil, Book** etc. are name of items.

// Method to do above task

- **add_ItemPrice** – Your program shall read Items prices and store in an array to be used in the system. [see input.txt]

  add_ItemPrice 10.0 5.0 230.0

  In above line **add_ItemPrice** is a command and **10.0, 5.0, 230** are prices of items Pen, Pencil, Books etc. respectively.

// Method to do above task

- **add_Invoice**– Your program shall read how many items purchased by customer, create a structure to store the index of item he/she purchased and how many such items purchased. [see input.txt]

add_Invoice **0 2 2 8 4 5**

In above line **add_Invoice** is a command and

First number (0) means first customer
Second number (2) means he/she purchased two items.
Third number (2) means he purchased item with index 2, which is book
2
Fifth number (4) means he purchased item with index 4, which is Mouse.
Sixth number (5) means he purchased 5 items with index 4 which is Mouse in our system.

Similarly

add_Invoice 2 7 1 10 2 20 3 15 4 10 6 10 7 15 8 5

In above line **add_Invoice** is a command and

First number (2) means third customer
Second number (7) means he/she purchased seven items.
Third number (1) means he purchased item with index 1, which is Pencil
Fourth number (10) means he purchased 10 items with index 1 which is Pencil in our system.
Fifth number (2) means he purchased item with index 2, which is Book
Sixth number (20) means he purchased 20 items with index 2 which is book in our system.
Fifth number (3) means he purchased item with index 3 which is Keyboard
Sixth number (15) means he purchased 15 items with index 3 which is Keyboard in our system.
Fifth number (4) means he purchased item with index 4, which is Mouse
Sixth number (10) means he purchased 10 items with index 4 which is Mouse in our system.
Fifth number (6) means he purchased item with index 6, which is Toys
Sixth number (10) means he purchased 10 items with index 6 which is Toys in our system.
Fifth number (7) means he purchased item with index 7, which is Shoe

Sixth number (15) means he purchased 15 items with index 7 which is Shoe in our system.
Fifth number (8) means he purchased item with index 8, which is Sunglass
Sixth number (5) means he purchased 5 items with index 8 which is Suglass in our system.

Note: You have to add the items purchased details for each customer as per above explanation. [**see input.txt / Table 4] and** Think]

// Method to do above task

- **print_Item_details**– Your program shall automatically generate report based on Total Items available in the system and save in the output file. [see print.txt]
  // Method to Print item detail in the output file.

- **search_Item Watch**– Your program shall automatically Search the item based on name in the system and save in the output file. [see print.txt]
  // Method to search the item and its detail in the output file.

  In above line **search_Item** is a command and **Watch** is the item you are searching in the system. Make sure to display exact message in the output file if record found or not found. [see print.txt]

- **print_All_Invoices-** Your program shall automatically generate Invoices for all the customer with detailed report like items purchased along sub-total and grand total of the invoice. This shall also generate a unique invoice number for each invoice and save in the output file. Make sure to generate exact invoice as given. [see print.txt]

  // **Method** to generate invoice number. [start with JED + any Radom number in range of 10000]
  // **Method** to generate name of customer as per given sample output. [remove _]

You shall create a supporting method String textSplit(String text) to return a text by removing _ char from the given text. For example given text to the method is Jawad_Ali and the method return Jawad Ali.

// **Method** to generate invoices of each customer with complete details of the items purchased, how many, total, grand total etc.

- **about_App** Your program shall automatically save information about you as per given hint ([Your Full Name] , write your full name), etc. in the output file. Make sure to generate exact information, only replace it with your record. [see print.txt]

- **Quit -**This option will be used to Exit from the System.