Objective:

- Python application based on List
- Append, Insert, Delete elements from List
- Conditions and Control statements

This application implements Inventory Application based on Python Lists. Inventory item consists of:

- Inventory item name
- Inventory item serial number
- Inventory item quantity
- Inventory item price

This application supports:

- Adding Items to the List (Inventory)
- Displaying Items from existing Inventory
- Item Sales from existing Inventory
- Ending application

Write a function, that adds item to the inventory. Criteria for adding item to inventory is based:

- If inventory is empty then add inventory item
- If inventory is not empty, check if inventory item serial number exists. If it exists (new item serial number is same as the item serial number), then add the quantity to the existing quantity
- If item name exists (in the List), but item serial number does not exist, then a separate item is created (having same name)
- If item name and item serial number is not in the List (inventory), item is added in the List (inventory)

Item Inventory (List) can be displayed only when there is at least one item in the inventory.

When item is to be added to inventory (**option 1**), user enters item name, item serial number, quantity of item and price of item. This is shown below:

```
Enter your choice:      2
There are NO Items in the inventory yet!

    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:      1
Enter inventory item name to add:       Computer
Enter item serial number:       C1234
Enter item quantity:       5
Enter item price:       $897.6746
There are no items in the inventory at present....adding new item to inventory..
```

When user chooses option 2, to display all items from inventory, following is displayed:

```
    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:      2
                                                          Muhammad Khan
                                                            N01234567

                              MK Warehouse Data:

        Item Name         Item Serial Number      Item Quantity          Item Price

        Computer                 C1234                    5                $897.67

    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:    |
```

When user chooses option 1 to add another item, following is displayed:

```
Enter your choice:      1
Enter inventory item name to add:        Keyboard
Enter item serial number:       KB1234
Enter item quantity:       8
Enter item price:       $45.89457
There are items in the inventory... searching if the item name or item serial number exists...
Item is not in inventory ... adding the item to the inventory........
Item added to inventory
[['Computer', 'C1234', 5, 897.67], ['Keyboard', 'KB1234', 8, 45.89]]

   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:      |
```

Option 2 is used to display the items in the inventory:

```
   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:      2
                                                                    Muhammad Khan
                                                                    N01234567

                                        MK Warehouse Data:

            Item Name           Item Serial Number           Item Quantity           Item Price

            Computer                  C1234                        5                  $897.67
            Keyboard                  KB1234                       8                  $45.89
      Secondary Storage 1 TB          SS1234                       15                 $87.57

   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:      |
```
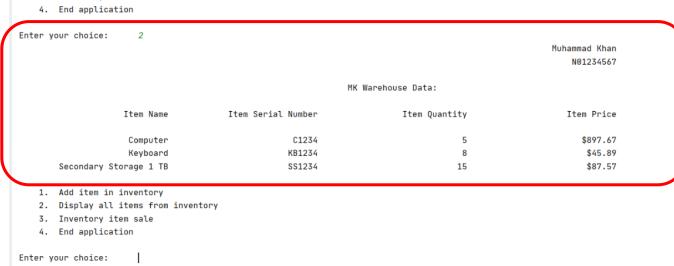
When user chooses option 1, and Computer is already in the inventory, following is displayed:

```
   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:      1
Enter inventory item name to add:        Computer
Enter item serial number:       C1234
Enter item quantity:      6
Enter item price:      $880.5626
There are items in the inventory... searching if the item name or item serial number exists...
Item name:   Computer already in inventory
Item serial number:  C1234 is also matched along with item name.....
Updating the Quantity
[['Computer', 'C1234', 11, 897.67], ['Keyboard', 'KB1234', 8, 45.89], ['Secondary Storage 1 TB', 'SS1234', 15, 87.57], ['Mouse', 'M12345', 24, 12.98]]

   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:
```

Here both item name and item serial number already exists. In this case, the Quantity of items is updated. In the previous display the Quantity of Computer was 5 and in this step Quantity of Computers is 6. This makes total quantity of item as 11. This is shown below:

```
Enter your choice:      2
                                                                              Muhammad Khan
                                                                              N01234567

                                    MK Warehouse Data:
```

Item Name	Item Serial Number	Item Quantity	Item Price
Computer	C1234	11	$897.67
Keyboard	KB1234	8	$45.89
Secondary Storage 1 TB	SS1234	15	$87.57
Mouse	M12345	24	$12.98

```
   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:     |
```

Note here that the higher value of the price is kept as Item Price. In the case when the item price was lower, then the higher value of the price is updated. In the second case, the price entered was $888.5626. This value is lower than $897.67, which is already in the inventory item price. This price does not change and higher price is maintained as part of inventory item price.

When Computer is added, having different Item serial number, this is treated as different inventory item and this item is added as a new item.

This is displayed with option 2, below:

```
   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:      2
                                                                     Muhammad Khan
                                                                     N01234567

                                        MK Warehouse Data:

            Item Name          Item Serial Number          Item Quantity          Item Price

            Computer                   C1234                    11                   $897.67
            Keyboard                   KB1234                    8                    $45.89
   Secondary Storage 1 TB              SS1234                   15                    $87.57
              Mouse                    M12345                   24                    $12.98
            Computer                   C23456                  100                   $789.38

   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:
```

Option 3 – Inventory Item Sales

Items to be sold are searched either by:

> Item name

> Or   Item serial number.

User is asked to either choose item name to select an inventory item for sale or choose item serial number to choose an item for sale:

If inventory Item does not exist in the inventory, then message to that effect is displayed, as shown below:

```
Enter your choice:       3


    1.   Inventory item sale by item name
    2.   Inventory item sale by item serial number


Please let us know item to purchase by name or by serial number:       1
Enter name of the item:      Desktop Computer
Enter Quantity of item to purchase:          6
Item is NOT in inventory....
Sale cannot go through.... Please contact our sales department later...


    1.   Add item in inventory
    2.   Display all items from inventory
    3.   Inventory item sale
    4.   End application


Enter your choice:
```

Here Desktop Computer is NOT in inventory, so the sale does not go through!

When item is in inventory (searched by item name – very first name when it is matched) then based on the quantity of items for sale, the sales process go through, shown below:

```
Enter your choice:      3

    1.  Inventory item sale by item name
    2.  Inventory item sale by item serial number

Please let us know item to purchase by name or by serial number:      1
Enter name of the item:     Computer
Enter Quantity of item to purchase:      10
                                                              Muhammad Khan
                                                                 N01234567

          Item Name         Item Serial Number      Item Quantity      Item Price

          Computer               C1234                  10              $897.67
                               Total Sale Price:                       $8976.70
                                  Tax Amount:                          $1166.97
                               Total Amount Paid:                      $10143.67

    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:     |
```

Note here the Total Sale Price, Tax Amount (at 13%) and Total Amount Paid. Each value is **preceded with symbol '$'**.
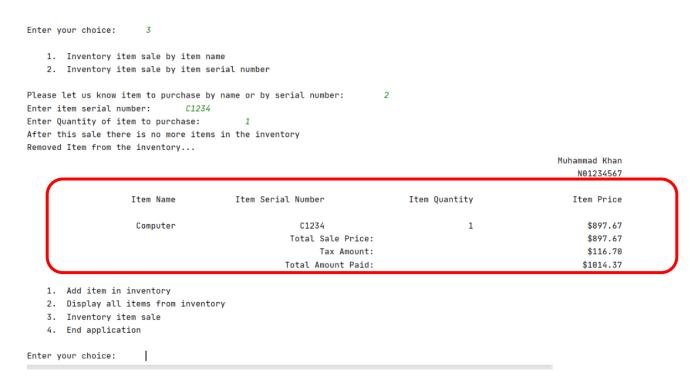
Following display shows inventory information, after sales of 10 Computers. Please note that now inventory is left with only 1 Computer (having item serial number C1234).

```
Enter your choice:      2
                                                                    Muhammad Khan
                                                                    N01234567

                                        MK Warehouse Data:

            Item Name            Item Serial Number         Item Quantity         Item Price

            Computer                    C1234                      1                $897.67
            Keyboard                    KB1234                     8                $45.89
    Secondary Storage 1 TB              SS1234                    15                $87.57
            Mouse                       M12345                    24                $12.98
            Computer                    C23456                   100                $789.38

    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:      |
```

Now if I try to buy items (e.g. Computer) and my Quantity that I want to buy is MORE than the item Quantity in stock, the sale does not go through. This is shown below:

```
Enter your choice:      3

    1.  Inventory item sale by item name
    2.  Inventory item sale by item serial number

Please let us know item to purchase by name or by serial number:      2
Enter item serial number:      C1234
Enter Quantity of item to purchase:      2
We do not have enough quantity in stock...
Sale does not go through......

    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:
```

When the Sales is made where the sold Quantity is such that the quantity sold makes the total items in the inventory to be ZERO (i.e., all items from the inventory are sold),

then this item is removed from inventory. This is shown below in the two output displays:

```
Enter your choice:      3

   1.  Inventory item sale by item name
   2.  Inventory item sale by item serial number

Please let us know item to purchase by name or by serial number:       2
Enter item serial number:      C1234
Enter Quantity of item to purchase:       1
After this sale there is no more items in the inventory
Removed Item from the inventory...
                                                                    Muhammad Khan
                                                                    N01234567

            Item Name          Item Serial Number        Item Quantity          Item Price

            Computer                 C1234                    1                $897.67
                                Total Sale Price:                              $897.67
                                        Tax Amount:                            $116.70
                                Total Amount Paid:                             $1014.37

   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:    |
```

Now the display of inventory does not show the row with Computer (having serial number C1234). This item was reduced to ZERO in the previous sale:

```
Enter your choice:      2
                                                                    Muhammad Khan
                                                                    N01234567

                                    MK Warehouse Data:

            Item Name          Item Serial Number        Item Quantity          Item Price

             Keyboard                 KB1234                  8                $45.89
      Secondary Storage 1 TB          SS1234                 15                $87.57
                Mouse                 M12345                 24                $12.98
              Computer                C23456                 25                $789.38

   1.  Add item in inventory
   2.  Display all items from inventory
   3.  Inventory item sale
   4.  End application

Enter your choice:    |
```

I can still buy Computer with item serial number C23456.

```
Enter your choice:      2
                                                                      Muhammad Khan
                                                                      N01234567

                                  MK Warehouse Data:

              Item Name         Item Serial Number        Item Quantity            Item Price

              Computer                C1234                   1                    $897.67
              Keyboard                KB1234                  8                    $45.89
       Secondary Storage 1 TB         SS1234                  15                   $87.57
                 Mouse                M12345                  24                   $12.98
              Computer                C23456                  100                  $789.38
             ──────────────────────────────────────────────────────────

    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:      |




Enter your choice:      3

    1.  Inventory item sale by item name
    2.  Inventory item sale by item serial number

Please let us know item to purchase by name or by serial number:       2
Enter item serial number:      C23456
Enter Quantity of item to purchase:      75
                                                                      Muhammad Khan
                                                                      N01234567

              Item Name         Item Serial Number        Item Quantity            Item Price

              Computer                C23456                  75                   $789.38
                                      Total Sale Price:                           $59203.50
                                           Tax Amount:                            $7696.45
                                    Total Amount Paid:                            $66899.96

    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:
```
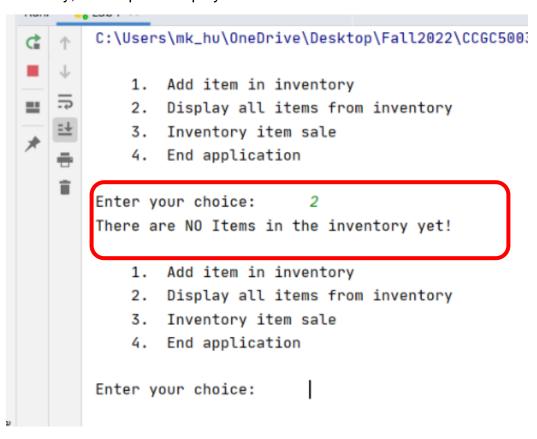
```
Enter your choice:     2
                                                                    Muhammad Khan
                                                                      N01234567

                                    MK Warehouse Data:

          Item Name           Item Serial Number        Item Quantity        Item Price

             Computer                 C1234                     1              $897.67
             Keyboard                 KB1234                    8              $45.89
     Secondary Storage 1 TB           SS1234                   15              $87.57
                Mouse                 M12345                   24              $12.98
             Computer                 C23456                   25              $789.38

    1.  Add item in inventory
    2.  Display all items from inventory
    3.  Inventory item sale
    4.  End application

Enter your choice:     |
```

When the Inventory Items List is empty and user enters option 2 to display all items in inventory, the output is displayed as:

```
C:\Users\mk_hu\OneDrive\Desktop\Fall2022\CCGC500:

    1.   Add item in inventory
    2.   Display all items from inventory
    3.   Inventory item sale
    4.   End application

Enter your choice:      2
There are NO Items in the inventory yet!

    1.   Add item in inventory
    2.   Display all items from inventory
    3.   Inventory item sale
    4.   End application

Enter your choice:        |
```

When user enters option 4, to end application, message to that effect is displayed and the application ends. This is shown below:

```
    1.   Add item in inventory
    2.   Display all items from inventory
    3.   Inventory item sale
    4.   End application

Enter your choice:      4
Application Ending.....

 Process finished with exit code 0
```

For this Lab assignment, upload the source code in the zipped project folder.

Rubric for Lab4:

Well documented source code: **1 Mark**

Add item to the Inventory Items warehouse using List   **4 Marks**

- o Empty List
- o Item Not present; item name (not present) having different Item Serial Number
- o Item present with same name but different Serial Number
- o Item present having same name and same item serial number

Sales Inventory Item when:

- o Inventory Item does not exist
- o Inventory Item exists
- o Inventory sales require higher number of items to be sold with respect to items already present in inventory stock

                                                    4 Marks

Complete application ending or invalid value   **1 Mark**