

Jeffrey Shen

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Foundations of Programming (Python)

Assignment 06

Functions and Classes with Python

Introduction

In this document, I will provide an overview of using functions and classes. This report will include discussion of the CDInventory.py script and what challenges I came across.

CD Inventory Script

From previous week's assignment, a python script was created that manages a CD inventory based on user input. This week focused on implementing functions and classes. The initial pseudocode was provided by the instructor. The menu and structure of the code is as follows:

[l] load Inventory from file	if strChoice == 'x'
[a] Add CD	do this
[i] Display Current Inventory	elif strChoice == 'l'
[d] delete CD from Inventory	do this
[s] Save Inventory to file	elif strChoice == 'a'
[x] exit	do this
	elif strChoice == 'i'
	do this
	elif strChoice == 'd'
	do this
	elif strChoice == 's'
	do this

In the beginning of the script, I initialize the variables needed. These are the table/dictionaries that data will be stored in.

```
1 '''
2 Title: Assignment06.py
3 Desc: Working with classes and functions.
4 DBiesinger, 2020-Jan-01, Created File
5 Jeffrey Shen, 2020-Feb-25, Created file and comments
6 '''
7
8 '''DATA'''
9 strChoice = '' # User input
10 lstTbl = [] # list of lists to hold data
11 dicRow = {} # list of data row
12 strFileName = 'Load.txt' # data storage file
13 objFile = None # file object
```

Figure 1 Initialize Variables

The first class is called "DataProcessor" – this holds a grouping of user defined functions. There is user adding, user deleting, and user saving to manage their CD inventory.

```

16 class DataProcessor:
17     """Processing user inputted data"""
18     def user_add():
19         """Adds CD title and artist from user input
20
21         Args:
22             None.
23
24         Returns:
25             None.
26         """
27         strID = input('Enter ID: ').strip()
28         strTitle = input('What is the CD's title? ').strip()
29         strArtist = input('What is the Artist's name? ').strip()
30         intID = int(strID)
31         dicRow = {'ID': intID, 'Title': strTitle, 'Artist': strArtist}
32         lstTbl.append(dicRow)
33         IO.show_inventory(lstTbl)
34
35     def user_del():
36         """Deletes ID from user input
37
38         Args:
39             None.
40
41         Returns:
42             None.
43         """
44         intRowNr = -1
45         blnCDRemoved = False
46         for row in lstTbl:
47             intRowNr += 1
48             if row['ID'] == intIDDel:
49                 del lstTbl[intRowNr]
50                 blnCDRemoved = True
51                 break
52             if blnCDRemoved:
53                 print('The CD was removed')
54             else:
55                 print('could not find this CD!')
56         IO.show_inventory(lstTbl)
57
58     def user_save():
59         """Saves current table of files
60
61         Args:
62             None.
63
64         Returns:
65             None.
66         """
67         objFile = open('CDInventory.txt', 'w')
68         for row in lstTbl:
69             lstValues = list(row.values())
70             lstValues[0] = str(lstValues[0])
71             objFile.write(','.join(lstValues) + '\n')
72         objFile.close()
73
74     pass

```

Figure 2 DataProcessor Class

Each of these functions in the class are called objects. They are function called in the main while loop. The functions have the same syntax as from previous week's assignment, however, the key difference is that they are organized into a class structure.

The next class is "FileProcessor" – this holds two functions: read from text file and create a list of dictionary, write to text file.

```

77 class FileProcessor:
78     """Processing the data to and from text file"""
79     @staticmethod
80     def read_file(file_name, table):
81         """Function to manage data ingestion from file to a List of dictionaries
82
83         Reads the data from file identified by file_name into a 2D table
84         (List of dicts) table one line in the file represents one dictionary row in table.
85
86         Args:
87         file_name (string): name of file used to read the data from
88         table (List of dict): 2D data structure (List of dicts) that holds the data during runtime
89
90         Returns:
91         None.
92         """
93         table.clear()...# this clears existing data and allows to load data from file
94         objFile = open('Load.txt', 'r')
95         for line in objFile:
96             data = line.strip().split(',')
97             dicRow = {'ID': int(data[0]), 'Title': data[1], 'Artist': data[2]}
98             table.append(dicRow)
99         objFile.close()
100
101     @staticmethod
102     def write_file(strFileName, table):
103         """Writes file data to text file
104
105         Args:
106         file_name and table data
107
108         Returns:
109         None.
110         """
111         with open('CDInventory.txt', 'a+') as f:
112             for row in lstTbl:
113                 txt_line = ",".join([str(value) for value in row.values()]) + '\n'
114                 f.write(txt_line)
115         f.close()
116
117     pass

```

Figure 3 FileProcessor Class

The last class included is “IO” for input and output. There are three functions: print the menu options to user, determine menu input choice, show CD inventory from table. The class is used for presentation and is associated with print commands that are shown to the user for input/output.

```

120 """PRESENTATION (Input/Output)"""
121 class IO:
122
123     @staticmethod
124     def print_menu():
125         """Displays a menu of choices to the user
126
127         Args:
128         None.
129
130         Returns:
131         None.
132         """
133         print('Menu\n[l] Load Inventory from file\n[a] Add CD\n[i] Display Current Inventory')
134         print('[d] delete CD from Inventory\n[s] Save Inventory to file\n[x] exit\n')
135
136     @staticmethod
137     def menu_choice():
138         """Gets user input for menu selection
139
140         Args:
141         None.
142
143         Returns:
144         choice (string): a lower case sting of the users input out of the choices l, a, i, d, s or x
145         """
146         choice = ''
147         while choice not in ['l', 'a', 'i', 'd', 's', 'x']:
148             choice = input('Which operation would you like to perform? (l, a, i, d, s or x): ').lower().strip()
149             print()...# Add extra space for layout
150         return choice
151
152     @staticmethod
153     def show_inventory(table):
154         """Displays current inventory table
155
156         Args:
157         table (List of dict): 2D data structure (List of dicts) that holds the data during runtime.
158
159         Returns:
160         None.
161         """
162         print('===== The Current Inventory: =====')
163         print('ID\tCD Title (by: Artist)\n')
164         for row in table:
165             print('({}) (by: {})'.format(*row.values()))
166         print('=====')
167
168     pass

```

Figure 4 IO Class

In the main while loop, the structure was outlined above but follows an if-elif-elif-elif-elif-elif-else: structure. However, the key aspect in this aspect was to function call from the while loop. This way, the code structure is organized into presentation, processing, and data. For example, in line 199 and 200, if the user selects “a” to add a CD, DataProcessor and IO classes are called. These are then followed by the function associated in that class. The rest of the code is formatted as such so that functions are called respectively.

```

173 # 2. start main loop
174 while True:
175     # 2.1 Display Menu to user and get choice
176     IO.print_menu()
177     strChoice = IO.menu_choice()
178     # 3. Process menu selection
179     # 3.1 process exit first
180     if strChoice == 'x':
181         break
182     # 3.2 process load inventory
183     elif strChoice == 'l':
184         print('WARNING: If you continue, all unsaved data will be lost and the Inventory re-loaded from file.')
185         strYesNo = input('type \'yes\' to continue and reload from file. otherwise reload will be canceled: ')
186         if strYesNo.lower() == 'yes':
187             print('reloading...')
188             FileProcessor.read_file(strFileName, lstTbl)
189             IO.show_inventory(lstTbl)
190         else:
191             input('canceling... Inventory data NOT reloaded. Press [ENTER] to continue to the menu.')
192             IO.show_inventory(lstTbl)
193         continue # start loop back at top.
194     # 3.3 process add a CD
195     elif strChoice == 'a':
196         # 3.3.1 Ask user for new ID, CD Title and Artist
197         # 3.3.2 Add item to the table
198         DataProcessor.user_add()
199         IO.show_inventory(lstTbl)
200         continue # start loop back at top.
201     # 3.4 process display current inventory
202     elif strChoice == 'i':
203         IO.show_inventory(lstTbl)
204         continue # start loop back at top.
205     # 3.5 process delete a CD
206     elif strChoice == 'd':
207         # 3.5.1 get User input for which CD to delete
208         # 3.5.1.1 display Inventory to user
209         IO.show_inventory(lstTbl)
210         # 3.5.1.2 ask User which ID to remove
211         intIDDel = int(input('Which ID would you like to delete? ').strip())
212         # 3.5.2 search thru table and delete CD
213         DataProcessor.user_del()
214         # show updated table
215         IO.show_inventory(lstTbl)
216         continue # start loop back at top.
217     # 3.6 process save inventory to file
218     elif strChoice == 's':
219         # 3.6.1 Display current inventory and ask user for confirmation to save
220         IO.show_inventory(lstTbl)
221         strYesNo = input('Save this inventory to file? [y/n] ').strip().lower()
222         # 3.6.2 Process choice
223         if strYesNo == 'y':
224             # 3.6.2.1 save data
225             DataProcessor.user_save()
226         else:
227             input('The inventory was NOT saved to file. Press [ENTER] to return to the menu.')
228             continue # start loop back at top.
229     # 3.7 catch-all should not be possible, as user choice gets vetted in IO, but to be safe:
230     else:
231         print('General Error')

```

Figure 5 Main While Loop

In the appendix, an example scenario of the script is shown, depicting each of the menu operations (both in Spyder and in the Terminal).

Questions

- What is a function?
 - A function is a way of grouping statements that execute particular set of code via defined name.
- What are parameters?
 - Allow values to be passed for processing, generally called arguments.

- What are arguments?
 - Generally, arguments are values provided to a function. For example, “def Function(argument)”
- What is the difference between parameters and arguments?
 - Parameters are variables in a method definition whereas arguments are the actual value passed into the function.
- What are return values?
 - They are what variables are outputted by a function (“returns” the results)
- What is the difference between a global and a local variable?
 - Global variables are reached anywhere in the code whereas local is only within that scope.
- What is shadowing?
 - Variable declared within a certain scope (method, class) has the same name as a variable declared in an outer scope.
- How do you use functions to organize your code?
 - Functions help clearly separate tasks, so it is more readable and modifiable. In this assignment, functions were defined by user input actions.
- What is the difference between a function and a class?
 - Class is a definition of an object which contains variables (attributes). A function is a method in an object and is a prescribed set of code that can be called.
- How do functions help you program using the “Separations of Concerns” pattern?
 - Code is separated into data, processing, and presentation. There can be classes for each and functions within so that when calling in the main code, it’s easier to follow.

Summary

In this lab, I explored using classes and functions in Python to manage a CD inventory. The idea of using functions and classes stems from Object Oriented Programming¹ and organizing your code into a Separations of Concerns (SOC). This way the code is more readable to viewers and yourself. The challenge in this assignment was learning how to accurately function call from the while loop. The syntax and formatting was confusing at first since there were so multiple functions and classes. I could see why SOC is used for more complex programs.²

¹ https://www.w3schools.com/python/python_classes.asp

² <https://docs.python.org/3/tutorial/classes.html>

Appendix

Complete Code for AddressBook.py

```
1 '''
2 Title: Assignment06.py
3 Desc: Working with classes and functions.
4 DBiesinger, 2020-Jan-01, Created File
5 Jeffrey Shen, 2020-Feb-25, Created file and comments
6 '''
7
8 '''para'''
9 strchoice = '' # User input
10 lstTbl = [] # list of lists to hold data
11 dicRow = {} # list of data row
12 strFileName = 'Load.txt' # data storage file
13 objFile = None # file object
14
15
16 class DataProcessor:
17     """Processing user inputted data"""
18     def user_add():
19         """Adds CD title and artist from user input
20
21         Args:
22             None.
23
24         Returns:
25             None.
26         """
27         strID = input('Enter ID: ').strip()
28         strTitle = input('What is the CD's title? ').strip()
29         strArtist = input('What is the Artist's name? ').strip()
30         intID = int(strID)
31         dicRow = {'ID': intID, 'Title': strTitle, 'Artist': strArtist}
32         lstTbl.append(dicRow)
33
34     def user_del():
35         """Deletes ID from user input
36
37         Args:
38             None.
39
40         Returns:
41             None.
42         """
43         intRowNr = -1
44         blnCDRemoved = False
45         for row in lstTbl:
46             intRowNr += 1
47             if row['ID'] == intIDDel:
48                 del lstTbl[intRowNr]
49                 blnCDRemoved = True
50                 break
51         if blnCDRemoved:
52             print('The CD was removed')
53         else:
54             print('Could not find this CD!')
55
56     def user_save():
57         """Saves current table of files
58
59         Args:
60             None.
61
62         Returns:
63             None.
64         """
65         objFile = open('CDInventory.txt', 'w')
66         for row in lstTbl:
67             lstValues = list(row.values())
```

```
68             lstValues[0] = str(lstValues[0])
69             objFile.write(' '.join(lstValues) + '\n')
70         objFile.close()
71
72     pass
73
74
75 class FileProcessor:
76     """Processing the data to and from text file"""
77     def read_file(file_name, table):
78         """Function to manage data ingestion from file to a list of dictionaries
79
80         Args:
81             file_name (string): name of file used to read the data from
82             table (list of dict): 2D data structure (list of dicts) that holds the data during runtime
83
84         Returns:
85             None.
86         """
87         table.clear() # this clears existing data and allows to load data from file
88         objFile = open('Load.txt', 'r')
89         for line in objFile:
90             data = line.strip().split(',')
91             dicRow = {'ID': int(data[0]), 'Title': data[1], 'Artist': data[2]}
92             table.append(dicRow)
93         objFile.close()
94
95     def write_file(strFileName, table):
96         """Writes file data to text file
97
98         Args:
99             file_name and table data
100
101         Returns:
102             None.
103         """
104         with open('CDInventory.txt', 'w') as f:
105             for row in lstTbl:
106                 txt_line = ' '.join([str(value) for value in row.values()]) + '\n'
107                 f.write(txt_line)
108             f.close()
109
110     pass
111
112
113 """PRESENTATION (Input/output)"""
114 class IO:
115     def menu_choice():
116         """Gets user input for menu selection
117
118         Args:
119             None.
120
121         Returns:
122             choice (string): a lower case string of the users input out of the choices l, a, i, d, s or x
123
124         """
125         choice = ''
126         while choice not in ['l', 'a', 'i', 'd', 's', 'x']:
127             choice = input('Which operation would you like to perform? [l, a, i, d, s or x]: ').lower().strip()
128             print() # Add extra space for layout
129         return choice
130
131     def show_inventory(table):
132         """Displays current inventory table
133
134         Args:
135             table (list of dict): 2D data structure (list of dicts) that holds the data during runtime.
136
137         Returns:
138             None.
139         """
140         print('===== The Current Inventory: =====')
141         for row in table:
142             print(f'{row["ID"]} (By: {row["Artist"]}) {row["Title"]}')
143         print('=====')
144
145     pass
146
147
148 # Main while loop
149 while True:
150     # 1.1 When program starts, read in the currently saved Inventory
151     FileProcessor.read_file(strFileName, lstTbl)
152
153     # 2. start main loop
154     while True:
155         # 2.1 Display Menu to user and get choice
156         strchoice = IO.menu_choice()
157         # 2. Process Menu Selection
158         if strchoice == 'l':
159             DataProcessor.user_add()
160         elif strchoice == 'd':
161             DataProcessor.user_del()
162         elif strchoice == 's':
163             DataProcessor.user_save()
164         elif strchoice == 'i':
165             IO.show_inventory(lstTbl)
166         elif strchoice == 'a':
167             print('WARNING: If you continue, all unsaved data will be lost and the Inventory re-loaded from file.')
168             stryesno = input('Type \'yes\' to continue and reload from file. otherwise reload will be canceled: ')
169             if stryesno.lower() == 'yes':
170                 print('reloading...')
171                 FileProcessor.read_file(strFileName, lstTbl)
172                 IO.show_inventory(lstTbl)
173             else:
174                 print('Inventory data NOT reloaded. Press [ENTER] to continue to the menu.')
175                 continue # start loop back at top.
176         elif strchoice == 'x':
177             break
178         # 3.1 process add a CD
179         # 3.2 add user for new ID, CD title and Artist
180         # 3.2 Add item to the table
181         DataProcessor.user_add()
182         IO.show_inventory(lstTbl)
```

```
133
134
135     def menu_choice():
136         """Gets user input for menu selection
137
138         Args:
139             None.
140
141         Returns:
142             choice (string): a lower case string of the users input out of the choices l, a, i, d, s or x
143
144         """
145         choice = ''
146         while choice not in ['l', 'a', 'i', 'd', 's', 'x']:
147             choice = input('Which operation would you like to perform? [l, a, i, d, s or x]: ').lower().strip()
148             print() # Add extra space for layout
149         return choice
150
151     def show_inventory(table):
152         """Displays current inventory table
153
154         Args:
155             table (list of dict): 2D data structure (list of dicts) that holds the data during runtime.
156
157         Returns:
158             None.
159         """
160         print('===== The Current Inventory: =====')
161         for row in table:
162             print(f'{row["ID"]} (By: {row["Artist"]}) {row["Title"]}')
163         print('=====')
164
165     pass
166
167
168 # Main while loop
169 while True:
170     # 1.1 When program starts, read in the currently saved Inventory
171     FileProcessor.read_file(strFileName, lstTbl)
172
173     # 2. start main loop
174     while True:
175         # 2.1 Display Menu to user and get choice
176         strchoice = IO.menu_choice()
177         # 2. Process Menu Selection
178         if strchoice == 'l':
179             DataProcessor.user_add()
180         elif strchoice == 'd':
181             DataProcessor.user_del()
182         elif strchoice == 's':
183             DataProcessor.user_save()
184         elif strchoice == 'i':
185             IO.show_inventory(lstTbl)
186         elif strchoice == 'a':
187             print('WARNING: If you continue, all unsaved data will be lost and the Inventory re-loaded from file.')
188             stryesno = input('Type \'yes\' to continue and reload from file. otherwise reload will be canceled: ')
189             if stryesno.lower() == 'yes':
190                 print('reloading...')
191                 FileProcessor.read_file(strFileName, lstTbl)
192                 IO.show_inventory(lstTbl)
193             else:
194                 print('Inventory data NOT reloaded. Press [ENTER] to continue to the menu.')
195                 continue # start loop back at top.
196         elif strchoice == 'x':
197             break
198         # 3.1 process add a CD
199         # 3.2 add user for new ID, CD title and Artist
200         # 3.2 Add item to the table
201         DataProcessor.user_add()
202         IO.show_inventory(lstTbl)
```

```

201 .....continue-# start loop back at top.
202 .....
203 ....# 3.4 process display current inventory
204 ....elif strchoice == 'i':
205 .....IO.show_inventory(lsttbl)
206 .....continue-# start loop back at top.
207 .....
208 ....# 3.5 process delete a CD
209 ....elif strchoice == 'd':
210 .....# 3.5.1 get user input for which CD to delete
211 .....# 3.5.1.1 display inventory to user
212 .....IO.show_inventory(lsttbl)
213 .....# 3.5.1.2 ask user which ID to remove
214 .....intIDdel = int(input('Which ID would you like to delete? ').strip())
215 .....# 3.5.2 search thru table and delete CD
216 .....DataProcessor.user_del()
217 .....# show updated table
218 .....IO.show_inventory(lsttbl)
219 .....continue-# start loop back at top.
220 .....
221 ....# 3.6 process save inventory to file
222 ....elif strchoice == 's':
223 .....# 3.6.1 display current inventory and ask user for confirmation to save
224 .....IO.show_inventory(lsttbl)
225 .....strYesNo = input('Save this inventory to file? [y/n] ').strip().lower()
226 .....# 3.6.2 process choice
227 .....if strYesNo == 'y':
228 .....# 3.6.2.1 save data
229 .....DataProcessor.user_save()
230 .....else:
231 .....input('The inventory was NOT saved to file. Press [ENTER] to return to the menu.')
232 .....continue-# start loop back at top.
233 ....# 3.7 catch-all should not be possible, as user choice gets vetted in IO, but to be safe:
234 ....else:
235 .....print('General Error')

```

Example Run from Spyder

```

In [2]: runfile('C:/Python/Assignment06/Assignment06.py', wdir='C:/Python/Assignment06')
Menu

[1] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [1, a, i, d, s or x]: 1

WARNING: If you continue, all unsaved data will be lost and the Inventory re-loaded from file.

type 'yes' to continue and reload from file. otherwise reload will be canceled: yes
reloading...
===== The Current Inventory: =====
ID      CD Title (by: Artist)

1       The Search (by:AJR)
2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
=====
Menu

[1] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [1, a, i, d, s or x]: a

Enter ID: 4

What is the CD's title? To Die For

What is the Artist's name? Sam Smith
===== The Current Inventory: =====
ID      CD Title (by: Artist)

1       The Search (by:AJR)
2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
4       To Die For (by:Sam Smith)
=====

```

```

Menu

[1] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [1, a, i, d, s or x]: d

===== The Current Inventory: =====
ID      CD Title (by: Artist)

1       The Search (by:AJR)
2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
4       To Die For (by:Sam Smith)
=====
Which ID would you like to delete? 1
The CD was removed
===== The Current Inventory: =====
ID      CD Title (by: Artist)

2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
4       To Die For (by:Sam Smith)
=====
Menu


[1] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [1, a, i, d, s or x]: s

===== The Current Inventory: =====
ID      CD Title (by: Artist)

2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
4       To Die For (by:Sam Smith)
=====
Save this inventory to file? [y/n] y

```

 CDInventory - Notepad

File Edit Format View Help

```

2,Paralyzed,NF
3,Everything,Michael Buble
4,To Die For,Sam Smith

```

Example Run from Terminal

```
Anaconda Powershell Prompt (Anaconda3)
(base) PS C:\Users\CASE> cd C:\_Python\
(base) PS C:\_Python> cd .\Assignment06\
(base) PS C:\_Python\Assignment06> python .\Assignment06.py
Menu

[1] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [1, a, i, d, s or x]: 1

WARNING: If you continue, all unsaved data will be lost and the Inventory re-loaded from file.
type 'yes' to continue and reload from file. otherwise reload will be canceled: yes
reloading...
----- The Current Inventory: -----
ID      CD Title (by: Artist)
-----
1       The Search (by:AJR)
2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
-----
Menu

[1] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [1, a, i, d, s or x]: a

Enter ID: 4
What is the CD's title? Be Your Man
What is the Artist's name? Rhys Lewis
----- The Current Inventory: -----
ID      CD Title (by: Artist)
-----
1       The Search (by:AJR)
2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
4       Be Your Man (by:Rhys Lewis)
-----
Menu

[1] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit
```

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Anaconda Powershell Prompt (Anaconda3)

Which operation would you like to perform? [1, a, i, d, s or x]: d

----- The Current Inventory: -----
ID      CD Title (by: Artist)
-----
1       The Search (by:AJR)
2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
4       Be Your Man (by:Rhys Lewis)
-----
Which ID would you like to delete? 4
The CD was removed
----- The Current Inventory: -----
ID      CD Title (by: Artist)
-----
1       The Search (by:AJR)
2       Paralyzed (by:NF)
3       Everything (by:Michael Buble)
-----
Menu

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Which operation would you like to perform? [1, a, i, d, s or x]: s

----- The Current Inventory: -----
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-----
Save this inventory to file? [y/n] y
Menu

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Which operation would you like to perform? [1, a, i, d, s or x]: i

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```



CDInventory - Notepad

File Edit Format View Help

1, The Search, AJR
2, Paralyzed, NF
3, Everything, Michael Buble