

Project 5

Description: For project 5 we are going to build a menu-driven application that will allow a user to maintain their collections. For example, I might have a coin collection, or a record collection, or a collection of all my valuable items.

An **Item** includes the following properties:

- Category – the category the item belongs to. For example, 'Records', 'Antiques', 'Coins', etc.
- Description – the description of the item. For example, 1940 Sewing machine
- Value – the value of the item in dollars
- Quantity – the number of items of this type that I have. For example, I might have two 1940 Sewing Machines

A **Collection** contains Item objects as described above.

The main menu is as follows:

Welcome to my Collection Manager

1. Display all items in my collection
2. Display all categories of my items
3. Display all items in a given category
4. Search for an item by description
5. Add an new item to my collection
6. Display all items above a given value
7. Calculate the total value of my collection
- S. Save to disk
- L. Load data from disk
- Q. Quit

Please enter a selection:

The following functionality should be implemented for the following menu items:

1. **Display all items in my collection**

All items in the collection should be displayed in a nicely formatted table, for example:

Description	Category	Value	Amount
Moby Dick	Book	10.00	1
War and Peace	Book	50.00	1
Desk	Antique	250.00	1
1924 Silver Dollar	Coins	37.50	5
Sewing Machine	Antique	450.00	1
Beatles - Let it Be	Record	125.00	1

2. **Display all categories of my items**

Please enter a selection: 2

Categories

Book
Antique
Coins
Record

3. **Display all items of a given category**

Please enter a selection: 3

Enter category: *Antique*

Items for category: *Antique*

Description	Category	Value	Amount
Desk	Antique	250.00	1
Sewing Machine	Antique	450.00	1

If the provided category does not exist a message should be displayed to the user.

4. Search for an item by description

Please enter a selection: 4

Enter item's description: Desk

Description	Category	Value	Amount
Desk	Antique	250.00	1

If the provided item description does not exist a message should be displayed to the user.

5. Add a new item to my collection

Please enter a selection: 5

Enter the item's category: Coin

Enter the item's description: 1925 Silver Dollar

Enter the item's value: 75.00

Enter the item's quantity: 1

Item added

6. Display all items above a certain value

Please enter a selection: 6

Enter the value: 100.00

Items over \$100.00

Description	Category	Value	Amount
Desk	Antique	250.00	1
Sewing Machine	Antique	450.00	1
Beatles - Let it Be	Record	125.00	1

7. Display the total value of my collection

Please enter a selection: 7

Collection value: \$1072.50

S. Save data

```
Please enter a selection: S  
Data saved...
```

Save the Collection data to a file on disk.

Note: this is already implemented by my using pickle

L. Load data from disk

```
Please enter a selection: L  
Data loaded...
```

Load data from a disk file and initialize the collection from this data.

Note: this is already implemented by my using pickle

Q. Quit

```
Please enter a selection: Q  
Thanks for using my Collection Manager
```

Exit the application.

Implementation Details

This application must be implemented using the Object-Oriented features of Python. I will provide the main template for the assignment as a Python file.

Your solution MUST include classes for the Item and Collection. These are provided in the template. I have already implemented the Item class and I have also provided some of the implementation for the Collection class.

I am also providing the implementation for the main function, which handles user menu selection and calls the appropriate Collection class methods depending on the user selections.

Foundations of Programming, Data Structures, and Algorithms

You MUST complete the implementation of the Collection class. Please refer to the inline documentation in the provided Python file as well as the video demo that I will provide. I chose to provide a partial implementation because it is important that you can understand someone else's code and be able to extend and modify it to solve a problem. Professional programmers spend most their time working with code that was written by someone else.