DOCUMENTATION

DADSA

PYTHON COURSEWORK

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Data Structures

For the purpose of this assignment the choice of data structure chosen to be used is a list and more specifically a standard type list. A standard type list was implemented because it is the easiest to manipulate the data(elements) going in and out of it using simple user fed inputs. To store data in the Dhoani and separate islands two lists were created. One list collects and stores the item name and the other the item's amount entered by the user. There are four islands in this program(A, B, C, D) and each of these islands has their own list created where it stores data entered from the Dhoani. Below is a snippet from where the data structure was implemented. It was initialized as an empty data structure where user inputs will fill the data structure elements instead of hardcoding. Time Complexity explained briefly is how a program or algorithm runs efficiently in a certain case. In our case the program uses various functions to repeat various tasks. Tasks such as displaying menus, program related functions are called on inside each other. Space complexity can also be explained similarly. Space Complexity is the general space occupied by a program or algorithm to run the program. As in the case of this assignment.

```
#### ----LISTS---- ####
# Lists for Dhoani's Item Name and Item Amount.
dhoaniItemName = []
dhoaniItemAmount = []
# Lists for Supplier Island 01 Item Name and Item Amount.
supplierIslandAlpha = []
# Lists for Supplier Island 02 Item Name and Item Amount.
supplierIslandBeta = []
# Lists for Island A Item Name and Item Amount.
islandA_ItemName = []
islandA_ItemAmount = []
#islandA = islandA_ItemName + islandA_ItemAmount
# Lists for Island B Item Name and Item Amount.
islandB_ItemName = []
islandB_ItemAmount = []
# Lists for Island C Item Name and Item Amount.
islandC_ItemName = []
islandC_ItemAmount = []
# Lists for Island D Item Name and Item Amount.
islandD_ItemName = []
islandD_ItemAmount = []
#### ----LISTS---- ####
```

Classes

This program consists of only one class and that is a superclass. This class functions to nest different functionalities(functions) needed to run the program. Main functions of this superclass is to display a separate menu needed for various parts of the duration of the program as well as show to show functions displaying the Dhoani's specific functions and messages. Below is a snippet of the superclass mentioned.

```
#### ----CLASSES---- ####
# This class will display Dhoani's drive and stop m
class MENU_AND_TRAVEL:
    # Dhoani's function messages.
    drive = "Dhoani is now travelling to "
    stop = "Dhoani has stopped at "

    # Dhoani's drive function.
    def get_drive(self):
        # Prints message of the Dhoani's function.
        return self.drive

    # Dhoani's stop function.
    def get_stop(self):
        # Prints message of the Dhoani's function.
        return self.stop

    # This function displays the main console menu.
    # Option 6 is continue and option 7 is quit.
    def consoleMenu(self):
        print("")
        print("")
        print("---------------------------------")
        print("|      BigCon Construction      |")
        print("--------------Menu---------------")
        print("1- Add Items                    |")
        print("2- Remove Items                 |")
        print("3- Search Items                 |")
        print("4- Deliver Items                |")
        print("5- Print Items                  |")
        print("7- QUIT PROGRAM                 |")
        print("---------------------------------")
```

Functions

This program consists of a total of eleven functions and one while loop. Five out of eleven of those functions help run the program generally. One function's main job is to display the main console menu that greets the user when the program is run. This main console menu iterates multiple times and is called in the program globally if the user wishes to add, remove, search, deliver to, print or quit the program. Other than the main console menu there are two additional menus that display an items menu and a destinations menu. There is no separate function created in the program that lets the user quit the program. The function of quitting the program is implemented using the functionality already provided in the Python programming language. Below is a snippet of one of the functions meant to deliver items.

```
# This function will add items.
def addItems():
    # Prints the Items Menu and asks for user input.
    print("")
    menu_and_travel.itemsMenu()

    # Validates item name.
    itemName = input("Item Name: ").lower()
    if itemName not in ["diesel", "frozen", "fridge", "food", "protected mate
        # Error message.
        print("INVALID ITEM")

    # Validates item amount.
    itemAmount = int(input("Item Amount: "))
    if itemAmount >= 30000:
        print("INVALID AMOUNT")
    else:
        print("---------------------------------")
        #print("Capacity Reaced!")
        print("----ADDING ITEM!----")
        # This will calculate and print the Dhoani's current capacity left.
        dhoaniCapacity = 30000
        capacityCalculate = dhoaniCapacity - itemAmount
        print("Capacity left: " + str(capacityCalculate) + "KG")
        # Adds item name and item amount
        dhoaniItemName.append(itemName)
        dhoaniItemAmount.append(itemAmount)
```

Menus

Below are various menus that are present in the program.

Main Menu (Console Menu)

Use one of the options mentioned to use the program.

```
---------------------------------
|      BigCon Construction      |
--------------Menu---------------
1- Add Items                    |
2- Remove Items                 |
3- Search Items                 |
4- Deliver Items                |
5- Print Items                  |
7- QUIT                         |
---------------------------------
```

Items Menu

This menu displays a list of the items accepted in the Dhoani and separate islands.

```
---------------------------------
|      BigCon Construction      |
--------------Items--------------
1- Diesel                       |
2- Frozen                       |
3- Fridge                       |
4- Food                         |
5- Protected Material           |
6- Unprotected Material         |
---------------------------------
```

Deliver Menu

This menu displays a list of destinations the Dhoani can travel to.

```
---------------------------------
|      BigCon Construction      |
----------Destinations-----------
Island A                        |
Island B                        |
Island C                        |
Island D                        |
---------------------------------
```