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# **DOCUMENTATION**

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## **DADSA PYTHON COURSEWORK**

**AHMED AFFAAN**

**BSc COMPUTER SCIENCE**

**Student Number(UWE): 19045165**

**Student ID(VC): 1802035**

**Republic of Maldives**

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# Data Structures

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For the purpose of this assignment the choice of data structure chosen is a list. To store data in the Dhoani 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.

```
#### ----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.
island_a = []
# Lists for Island B Item Name and Item Amount.
island_b = []
# Lists for Island C Item Name and Item Amount.
island_c = []
# Lists for Island D Item Name and Item Amount.
island_d = []
#### ----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.

```
#### ----CLASSES---- ####
# This class will display Dhoani's drive and stop messages also the
various menu's needed for this program.
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                                    |")
```

```

print("-----")

# Asks for initial user input.
user_input = int(input("Enter choice: "))
consoleChoice(user_input)

# This function displays the Items Menu with their group code.
# Entering group code will not work. Enter the name displayed in the
menu.
def itemsMenu(self):
    print("")
    print("")
    print("-----")
    print("|          BigCon Construction          |")
    print("-----Items-----")
    print("1- Diesel                                |")
    print("2- Frozen                                |")
    print("3- Fridge                                |")
    print("4- Food                                  |")
    print("5- Protected Material                    |")
    print("6- Unprotected Material                  |")
    print("-----")

# This function displays the Deliver Items menu and their destination
names.
# Displays menu with destinations.
def deliverMenu(self):
    print("")
    print("")
    print("-----")
    print("|          BigCon Construction          |")
    print("-----Destinations-----")
    print("Island A                                |")
    print("Island B                                |")
    print("Island C                                |")
    print("Island D                                |")
    print("-----")
#### ----CLASSES---- #####

```

# 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.

```
# Iterates the program.
while True:
    #
    ##### ----FUNCTIONS---- #####
    # This function checks the users specific choice and directs them to
    that function.
    def consoleChoice(user_input):
        if user_input == 1:
            addItem()
        elif user_input == 2:
            removeItems()
        elif user_input == 3:
            searchItems()
        elif user_input == 4:
            deliverItems()
        elif user_input == 5:
            printItems()
        elif user_input == 7:
            exit()

    # This function will add items.
    def addItem():
        # 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 material", "unprotected material"]:
        # Error message.
        print("INVALID ITEM")

# Validates item amount.
itemAmount = int(input("Item Amount: "))
if itemAmount >= 30000:
    print("INVALID AMOUNT")
else:
    print("-----")
    print("Capacity Reached!")
    print("----ADDING ITEM!----")
    # This will calculate and print the Dhoani's current capacity
left.

    dhoaniCapacity = 30000
    capacityCalculate = dhoaniCapacity - itemAmount
    print("Current left: " + str(capacityCalculate) + "KG")
    # Adds item name and item amount
    dhoaniItemName.append(itemName)
    dhoaniItemAmount.append(itemAmount)

# Prints the Deliver Items Menu.
deliverItems()

# Asks user if they wish to continue or quit.
print("-----")
user_input = int(input("Continue (6) or Quit (7): "))
print("")
if user_input == 6:
    menu_and_travel.consoleMenu()
else:
    exit()

# This function will remove items.
def removeItems():
    # Prints the Items Menu and asks for user input.
    print("")

```

```

menu_and_travel.itemsMenu()
itemName = input("Item Name: ").lower()
itemAmount = int(input("Item Amount: "))

# Checks if Item Name and Item Amount is valid and removes it.
if((itemName != ["diesel", "frozen", "fridge", "food", "protected
material", "unprotected material"]) and (itemAmount > 30000)):
    print("INVALID INPUT")
else:
    # Dhoani
    if ((itemName in dhoaniItemName) and (itemAmount in
dhoaniItemAmount)):
        # Removing Item Name and Item Amount.
        print("")
        print("----REMOVING ITEM!----")
        # This will calculate and print the Dhoani's current
capacity left.
        dhoaniCapacity = 30000
        capacityCalculate = dhoaniCapacity - itemAmount
        print("Capacity regained: " + str(capacityCalculate) +
"KG")

        dhoaniItemName.remove(itemName)
        dhoaniItemAmount.remove(itemAmount)

        # Asking user if they wish to continue or quit.
        print("-----")
        user_input = int(input("Continue (6) or Quit (7): "))
        print("")
        if user_input == 6:
            menu_and_travel.consoleMenu()
        else:
            exit()

    # Island A.
    if ((itemName in island_a) and (itemAmount in island_a)):
        # Removing Item Name and Item Amount.
        print("")
        print("----REMOVING ITEM!----")
        # This will calculate and print Island A's current capacity
left.

```



```

        capacityCalculate = islandA_Capacity - itemAmount
        print("Capacity regained: " + str(capacityCalculate) +
"KG")

        island_a.remove(itemName)
        island_a.remove(itemAmount)

        # Asking user if they wish to continue or quit.
        print("-----")
        user_input = int(input("Continue (6) or Quit (7): "))
        print("")
        if user_input == 6:
            menu_and_travel.consoleMenu()
        else:
            exit()

# Island B.
if ((itemName in island_b) and (itemAmount in island_b)):
    # Removing Item Name and Item Amount.
    print("")
    print("----REMOVING ITEM!----")
    # This will calculate and print Island A's current capacity
left.

    capacityCalculate = islandB_Capacity - itemAmount
    print("Capacity regained: " + str(capacityCalculate) +
"KG")

    island_b.remove(itemName)
    island_b.remove(itemAmount)

    # Asking user if they wish to continue or quit.
    print("-----")
    user_input = int(input("Continue (6) or Quit (7): "))
    print("")
    if user_input == 6:
        menu_and_travel.consoleMenu()
    else:
        exit()

# Island C.
if ((itemName in island_c) and (itemAmount in island_c)):
    # Removing Item Name and Item Amount.

```

```

        print("")
        print("----REMOVING ITEM!----")
        # This will calculate and print Island A's current capacity
left.
        capacityCalculate = islandC_Capacity - itemAmount
        print("Capacity regained: " + str(capacityCalculate) +
"KG")

        island_c.remove(itemName)
        island_c.remove(itemAmount)

        # Asking user if they wish to continue or quit.
        print("-----")
        user_input = int(input("Continue (6) or Quit (7): "))
        print("")
        if user_input == 6:
            menu_and_travel.consoleMenu()
        else:
            exit()

# Island D.
if ((itemName in island_d) and (itemAmount in island_d)):
    # Removing Item Name and Item Amount.
    print("")
    print("----REMOVING ITEM!----")
    # This will calculate and print Island A's current capacity
left.
    capacityCalculate = islandD_Capacity - itemAmount
    print("Capacity regained: " + str(capacityCalculate) +
"KG")

    island_d.remove(itemName)
    island_d.remove(itemAmount)

    # Asking user if they wish to continue or quit.
    print("-----")
    user_input = int(input("Continue (6) or Quit (7): "))
    print("")
    if user_input == 6:
        menu_and_travel.consoleMenu()
    else:
        exit()

```

```

    # This function will search through the lists and print items and their
amounts.
def searchItems():
    print("----SEARCHING ITEMS----")
    print("-----")
    itemName = input("Item Name: ")
    itemAmount = int(input("Item Amount: "))

    if((itemName != ["diesel", "frozen", "fridge", "food", "protected
material", "unprotected material"]) and (itemAmount > 30000)):
        print("INVALID INPUT")
    else:
        # Dhoani
        if ((itemName in dhoaniItemName) and (itemAmount in
dhoaniItemAmount)):
            # Prints Item Name and Item Amount.
            print("")
            print("----ITEM EXISTS!----")
            print("----DHOANI----")
            print("Item Name: " + itemName.upper())
            print("Item Amount: " + str(itemAmount))

            # Asking user if they wish to continue or quit.
            print("-----")
            user_input = int(input("Continue (6) or Quit (7): "))
            print("")
            if user_input == 6:
                menu_and_travel.consoleMenu()
            else:
                exit()

        # Island A
    elif ((itemName in island_a) and (itemAmount in island_a)):
        # Prints Item Name and Item Amount.
        print("")
        print("----ITEM EXISTS!----")
        print("----ISLAND A----")
        print("Item Name: " + itemName.upper())
        print("Item Amount: " + str(itemAmount))

```

```

        # Asking user if they wish to continue or quit.
        print("-----")
        user_input = int(input("Continue (6) or Quit (7): "))
        print("")
        if user_input == 6:
            menu_and_travel.consoleMenu()
        else:
            exit()

# Island B
elif ((itemName in island_b) and (itemAmount in island_b)):
    # Prints Item Name and Item Amount.
    print("")
    print("----ITEM EXISTS!----")
    print("----ISLAND B----")
    print("Item Name: " + itemName.upper())
    print("Item Amount: " + str(itemAmount))

    # Asking user if they wish to continue or quit.
    print("-----")
    user_input = int(input("Continue (6) or Quit (7): "))
    print("")
    if user_input == 6:
        menu_and_travel.consoleMenu()
    else:
        exit()

# Island C
elif ((itemName in island_c) and (itemAmount in island_c)):
    # Prints Item Name and Item Amount.
    print("")
    print("----ITEM EXISTS!----")
    print("----ISLAND C----")
    print("Item Name: " + itemName.upper())
    print("Item Amount: " + str(itemAmount))

    # Asking user if they wish to continue or quit.
    print("-----")
    user_input = int(input("Continue (6) or Quit (7): "))
    print("")
    if user_input == 6:
        menu_and_travel.consoleMenu()

```

```

        else:
            exit()

    # Island D
    elif ((itemName in island_d) and (itemAmount in island_d)):
        # Prints Item Name and Item Amount.
        print("")
        print("----ITEM EXISTS!----")
        print("----ISLAND D----")
        print("Item Name: " + itemName.upper())
        print("Item Amount: " + str(itemAmount))

        # Asking user if they wish to continue or quit.
        print("-----")
        user_input = int(input("Continue (6) or Quit (7): "))
        print("")
        if user_input == 6:
            menu_and_travel.consoleMenu()
        else:
            exit()
    else:
        # Error message.
        print("INVALID INPUT")

    # Asking user if they wish to continue or quit.
    print("-----")
    user_input = int(input("Continue (6) or Quit (7): "))
    print("")
    if user_input == 6:
        menu_and_travel.consoleMenu()
    else:
        exit()

# This function will deliver items to destinations.
def deliverItems():
    # Calling the menu.
    menu_and_travel.deliverMenu()
    user_input = input("Deliver to?: ").lower()

    # Checks what destination the user has chosen and displays where it
    goes.

```

```

        if user_input not in ["island a", "island b", "island c", "island
d"]:
            # Error Message.
            print("INVALID INPUT")
            # Delivers to Island A.
            elif user_input in "island a":
                island_a.append(*dhoaniItemName)
                island_a.append(*dhoaniItemAmount)
                print(menu_and_travel.get_drive() + user_input.upper())
                calc = 50 / 25
                print("Time: " + str(calc) + " HRS")
                print("Distance: 50KM")
                print("")
                print("")
                print(menu_and_travel.get_stop() + user_input.upper())
            # Delivers to Island B.
            elif user_input in "island b":
                island_b.append(*dhoaniItemName)
                island_b.append(*dhoaniItemAmount)
                print(menu_and_travel.get_drive() + user_input.upper())
                calc = 130 / 25
                print("Time: " + str(calc) + " HRS")
                print("Distance: 130KM")
                print("")
                print("")
                print(menu_and_travel.get_stop() + user_input.upper())
            # Delivers to Island C.
            elif user_input in "island c":
                island_c.append(*dhoaniItemName)
                island_c.append(*dhoaniItemAmount)
                print(menu_and_travel.get_drive() + user_input.upper())
                calc = 190 / 25
                print("Time: " + str(calc) + " HRS")
                print("Distance: 130KM")
                print("")
                print("")
                print(menu_and_travel.get_stop() + user_input.upper())
            # Delivers to Island D.
            elif user_input in "island d":
                island_d.append(*dhoaniItemName)

```

```

        island_d.append(*dhoaniItemAmount)
    print(menu_and_travel.get_drive() + user_input.upper())
    calc = 230 / 25
    print("Time: " + str(calc) + " HRS")
    print("Distance: 230KM")
    print("")
    print("")
    print(menu_and_travel.get_stop() + user_input.upper())
    # Exits to console menu.
    elif user_input in "quit":
        menu_and_travel.consoleMenu

# This function will print all of the lists and their amounts.
def printItems():
    # Dhoani inventory.
    print("")
    print("")
    print("")
    print("Dhoani Inventory")
    print("-----")
    print("Items: ", *dhoaniItemName)
    print("Amount:", *dhoaniItemAmount)
    print("-----")

    # Island A inventory.
    print("")
    print("Supply Island A Inventory")
    print("-----")
    print("All Items: ", *island_a)
    #print("Items: ", islandA_ItemName)
    #print("Amount:", islandA_ItemAmount)
    print("-----")

    # Island B inventory.
    print("")
    print("Supply Island B Inventory")
    print("-----")
    print("All Items: ", *island_b)
    #print("Items: ", islandB_ItemName)
    #print("Amount:", islandB_ItemAmount)

```

```

print("-----")

# Island C inventory.
print("")
print("Supply Island C Inventory")
print("-----")
print("All Items: ", *island_c)
#print("Items: ", islandC_ItemName)
#print("Amount:", islandC_ItemAmount)
print("-----")

# Island D Inventory.
print("")
print("Supply Island D Inventory")
print("-----")
print("All Items: ", *island_d)
#print("Items: ", islandD_ItemName)
#print("Amount:", islandD_ItemAmount)
print("-----")

# Asking user if they wish to continue or quit.
user_input = int(input("Continue (6) or Quit (7): "))
if user_input == 6:
    menu_and_travel.consoleMenu()
else:
    exit()

#### ----FUNCTIONS---- ####

# Calling the function globally.
# Displays main console menu.
menu_and_travel.consoleMenu()

```



# Menus

---

Below are various menus that are present in the program.

## **Main Menu (Console Menu)**

Use one of the each 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                        |  
-----
```