Fundamentals Of Computing

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1. Introduction

Programming is the process of providing a machine with a set of instructions that describes how to execute a program. The computer understands these languages and gives an output. Many programming languages are used all around the world. A few programming languages are Java, Python, C/C++, PHP etc

1.1 About Python

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics used for server-side web development, software development, mathematics, and system scripting.

1.2 Tools Used

VS-Code:

Visual Studio Code (famously known as VS Code) is a free open-source text editor by Microsoft. VS Code is available for Windows, Linux, and macOS. Although the editor is relatively lightweight, it includes some powerful features (vs-code, 2023)

Draw.io:

draw.io is a online diagramming tool that allows users to create various types **IF** diagrams, flowcharts, and visual representations. It offers a user-friendly interface and supports collaboration, making it ideal for creating visually appealing and informative diagrams.

MS Word:

Microsoft Word is a widely used word processing software that enables users to create, edit, and format documents. It provides a range of text and formatting features, templates, and tools for efficient document creation, whether for personal, educational, or professional purposes. (wiki, n.d.)

1.3 Goal

The goal of the program is to develop an application that efficiently manages the equipment rental operations i.e., renting and returning items for an Event Equipment Rental shop.

The program should achieve the following objectives:

1. **Equipment Information Management:**

   Read and write a text file containing information about the available equipment. Each equipment entry includes the customers’ name, number, serial number of the item and the quantity of the item.

2. **Display Available Equipmen**t:

   Display a list of all available equipment, providing details such as equipment name, brand, rental price, and quantity in stock.

3. **Rental Transactions:**

   Handle rental transactions, generating a note/invoice for the customer. This note should include the equipment's name, brand, customer's name, rental date and time, and the total amount to be paid for the rented equipment.

4. **Stock Management:**

   Update the stock **of** equipment after each successful rental transaction. Decrease the quantity of the rented equipment by the appropriate amount and increase it **if** the item is returned.

5. **Fine Calculation:**

   Calculate fines for late returns (more than 5 days) on a daily basis **and** include this information in the return note/invoice.

6. **File Management:**

   Maintain a system to generate unique note/invoice files for each transaction, ensuring organized record-keeping. Each file should have a unique name to avoid conflicts.

2. Algorithm

Step 1: Start

Step 2: IMPORT necessary files

Step 3: Display welcome message and menu options.

- **PRINT** store information and design.

Step 4: Run a loop for user interaction.

- Ask the user to select an option (1, 2, or 3).

- **IF** the user selects 1, go to Step 5.

- **IF** the user selects 2, go to Step 17.

- **IF** the user selects 3, go to Step 27.

- **IF** the user selects an invalid option, display an error and return to Step 4.

Step 5: Call the rent function to initiate the rental process.

- ask for the customer's name, contact number, items and quantity of those items to be rented

Step 6: Call the function for bill of rent to generate and display the rental invoice.

- Display customer details.

- Display rented items with the name IF item, brand name, quantity, and price, and total cost.

Step 7: Display a thank-you message for renting and return to step 4

Step 8: IF the user selects 2, go to Step 17.

Step 9: IF the user selects 3, display a thank-you message and terminate the program.

Step 10: IF the user selects an invalid option, display an error and return to Step 4.

Step 17: Call the function for returning for the return process.

- ask customer name, contact number, returned items and the number of days the item was kept

Step 18: Call the function for the bill generation after the return process and display the return invoice.

- Display customer details.

- Display returned items with quantity, and price, total cost, rented days, and fine.

- Display the total fine and grand total.

Step 19: Display a thank-you message for returning and return to step 4

Step 20: IF the user selects 1, go to Step 5.

Step 21: IF the user selects 3, display a thank-you message and terminate the program.

Step 22: IF the user selects an invalid option, display an error and return to Step 4.

Step 27: Display a thank-you message for using the Equipment Rental System.

Step 28: END the program.

.

3. Pseudocode

Pseudocode is a simplified, high-level, no-syntax representation of a programming solution. It stresses logic and the approaches required to resolve a problem, making concepts easier to understand and articulate. Pseudocode is a crucial planning **and** visualization tool for algorithms before they are really programmed, despite the fact that it cannot be performed. It mixes orders from the computer with logical thought.

3.1 Main.py

```
IMPORT required items
DEFINE main function:
   PRINT the design for the rental shop
   WHILE
      GET the Input from the user
      IF input from the user is 1
         CALL rent function,
         CALL bill function
      ELSE IF the input is 2
         CALL returning function
         CALL returnBill function
      ELSE IF the input is 3
         SET loop to False
      ELSE:
         PRINT Invalid option
      END IF
   END WHILE
```

3.2 Operation.py

```
IMPORT read module
IMPORT datetime library

DEFINE function for returning
   INITIALIZE variables using myDict
   WHILE TRY:
      TRY:
         INPUT contact Number from the user
         IF contact Number is not an integer
            RAISE a ValueError
         ELSE:
            BREAK the loop
      EXCEPT
            PRINT value error
   OPEN "item.txt" file in read mode as file
   SET sn to 1
   FOR each line in the file
      INCREMENT sn by 1
   CLOSE the file
   SET more to TRY
   WHILE more is TRY
      WHILE TRY:
         TRY:
            INPUT id_Item from the user as "Provide the id IF the item you want to return
            IF id_Item is less than or equal to 0 or id_Item is greater than the length
               RAISE a ValueError
            ELSE:
               WHILE TRY:
```

```
TRY:
    INPUT from the user for the quantity IF tiem
    IF quantity_item is less than or equal to 0
        RAISE a ValueError
    ELSE:
        INCREMENT my_Dict[id_Item
        OPEN "item.txt" file in write mode as file
        FOR each values in my_Dict.value
            WRITE a newline character to the file
        CLOSE the file
        WHILE TRY:
            TRY:
                INPUT the number IF days you rented
                IF the days rented is less than 1
                    RAISE a ValueError
                ELSE:
                    IF days_rented is less than or equal to 5
                        SET fine to 0
                    ELSE IF
                        SET fine to end
                    ELSE:
                        SET fine to (days_rented - 5)

                    SET total_fine to total_fine + fine

                    APPEND brand_Name, quantity_selected, END_PRINT
                    INPUT to exit or to continue

                    IF exits:
                        SET more to TRY
```

```
                      ELSE:
                        SET more to False

                      SET grand_Total to 0
                      IF rent_exit is "Y"
                        SET more to TRY
                      ELSE:
                        SET total to 0
                        FOR each i in items_purchased
                        SET grand_Total to total
                        SET date_time to current date END time
                      BREAK
                  EXCEPT ValueError:
                    PRINT "Enter valid number IF days."
                    PRINT ""
                BREAK
            EXCEPT ValueError:
              PRINT "Invalid quantity!! Please enter a valid quantity."
              PRINT ""
          BREAK
      EXCEPT ValueError:
  RETURN name, contact_Number, items_purchased, date_time, grand_Total, fine, total_fine
DEFINE function function_for_rent:
  INITIALIZE my_Dict using funtion_for_read()
  INITIALIZ an empty list items_purchased
  INITIALIZE date_time as None
  INPUT name from the user as "Please enter your name: "
```

```
WHILE TRY:
    TRY:
        INPUT contact_Number from the user
        IF contact_Number is not an integer or contact_Number is less than or equal to
            RAISE a ValueError
        ELSE:
            BREAK the loop
    EXCEPT ValueError:
        PRINT Please enter a valid number
OPEN "item.txt" file in read mode as file
SET sn to 1
FOR each line in the file:
    PRINT sn
    INCREMENT sn by 1
CLOSE the file
SET more to TRY
WHILE more is TRY:
    WHILE TRY:
        TRY:
            INPUT id_Item from the user as "Provide the S.N IF the item that you want
            IF id_Item is less than or equal to 0 or id_Item is greater than the length IF
                RAISE a ValueError
            ELSE:
                WHILE TRY:
                    TRY:
                        INPUT quantity_item from the user as
                        SET quantity_selected to my_Dict[id_Item][3]

                            RAISE a ValueError
                        ELSE:
```

```
                    DECREMENT my_Dict[id_Item][3] by quantity_item
                    OPEN "item.txt" file in write mode as file
                    FOR each values in my_Dict.values():
                        WRITE a newline character to the file
                    CLOSE the file
                    IF rent_exit is "C":
                        SET more to TRY
                    ELSE:
                        SET more to False
                    APPEND Name, quantity_selected, and number
                    SET grand_Total to 0
                    IF rent_exit is "Y":
                        SET more to TRY
                    ELSE:
                        SET total to 0
                        FOR each i in items_purchased
                        SET grand_Total to total
                         date_time to current date END time
                    END IF
                    END IF
                    BREAK
            EXCEPT ValueError:
                PRINT Please enter a valid quantity
        BREAK
 EXCEPT ValueError
END IF
END WHILE
```

3.3 Read.py

```
IMPORT operation


DEFINE function_for_read function:
    OPEN 'item.txt' file in read mode
    INITIALIZE item_id as 1
    INITIALIZE my_Dict as an empty dictionary


    FOR  line in the file:
        INCREMENT item_id by 1
    END FOR
    CLOSE the file
    RETURN my_Dict
```

3.4 Write.py

```
IMPORT operation
IMPORT datetime library

DEFINE bill_for_returning function with parameters: name, contact_Number, items_purchased, date_time, grand_Total, fine, total_fine
   PRINT the design END information
   FOR each item in items_purchased:
      PRINT the information after renting the item
      CREATE  a text file END PRINT  the information there
   FOR each item in items_purchased:
      WRITE the item to the file
      CLOSE the file

DEFINE bill_for_renting function with parameters: name, contact_Number, items_purchased
   PRINT "Pratik Rentals Rent Bill"
   FOR each item in items_purchased:
      PRINT items in file
   OPEN a file with name + contact_Number + ".txt" in write mode as file
   WRITE "Pratik Rentals Rent Bill" to the file
   FOR each item in items_purchased:
      WRITE items in file
   CLOSE the file
```

4. Flowchart

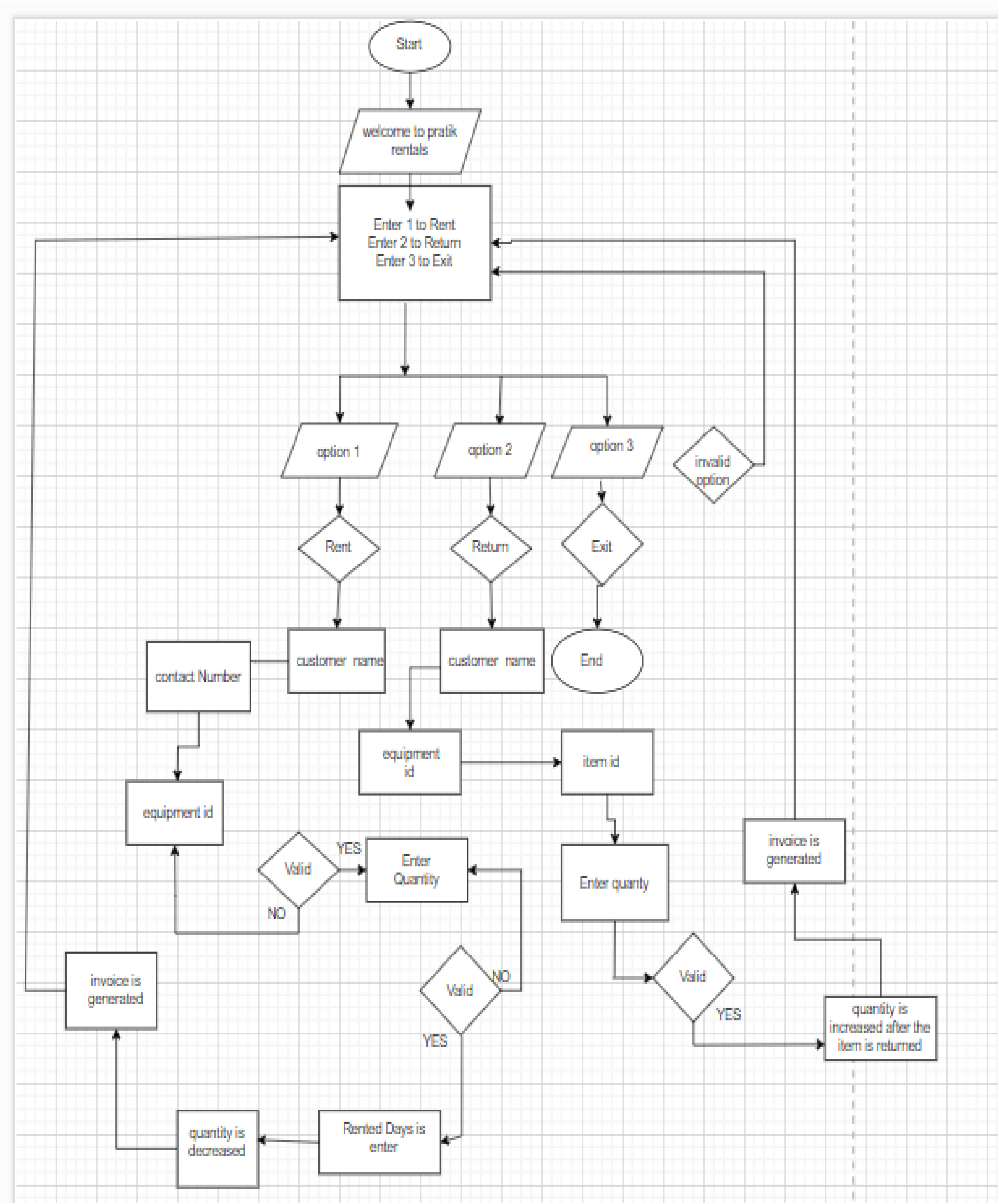


Figure 1: flow chart showing the flow of this program

5. Data Structures

Collection data types are used extensively in this project for input/output and data storage in Python. Data types include integer, string, Boolean and float. etc. It was necessary to make use of certain data types and data structures when composing the. as well as perform various operations on them.

The program uses the following data types and structures:

Integer:

Zero, positive or negative whole numbers with no fractional part end unlimited precision are known as integers in Python, such as 0, 100, or -10. These are valid Python integer literals. They can take on binary, hexadecimal, or octal values as while as decimal.

It is class that contains all integer literals end variables. Type () while return the class name.

Float:

Numbers that have a fractional part (float) are positive and negative real numbers in Python. using either the letter e (or the scientific notation E) or the number 1234.56, is the example. The underscore (_) can be used to separate floats. According to your system, floats have a maximum size. Oversized floats are often abbreviated with the abbreviations 'inf', 'infinity', or "infinity". For most systems, float 2e400 **will** be interpreted as infinity. String, and float can all be converted using the floating-point function float ().

Dictionary:

In a dictionary, key-value pairs are separated by commas **end** enclosed in curly brackets. Using a dictionary when the key is known makes it easier to retrieve values. It is impossible for the same key to appear multiple times in a collection. However, if you see the key more than once, only the last one will be kept in your memory. Data of any type can be used as the value. More than one key can be assigned the same value, and vice versa. IF a value cannot be accessed by using an index, a key must be specified in square brackets instead.

String:

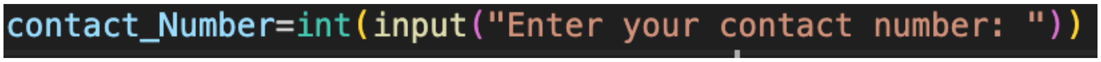
The sequence of characters in the quotation marks can be used to describe the string. A string can be defined in Python using single, double, or triple quotes.

Strings are immutable sequence data types in Python. There are three types of single, double, and triple quotes that surround a Unicode character sequence. For example, single quotes should be used for string literals that require double quotes. Double quotes should be used when a string contains a single quote.

List:

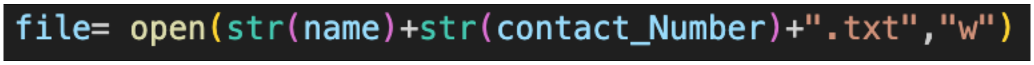
Lists are mutable sequence types in Python. One or more items of different data types are enclosed in square brackets [separated by a comma in the list object.

With a zero-based index in square brackets, you can access list items. Items are indexed starting at zero, increasing by one. This error occurs when trying to access an item with a large index compared to the total number of items. In Python, all list objects are instances of the list class. In order to convert tuple, dictionary and string to list, use the list () constructor.



```
contact_Number=int(input("Enter your contact number: "))
```

Figure 2: use of integer datatype



```
file= open(str(name)+str(contact_Number)+".txt","w")
```

Figure 3: use of string datatype

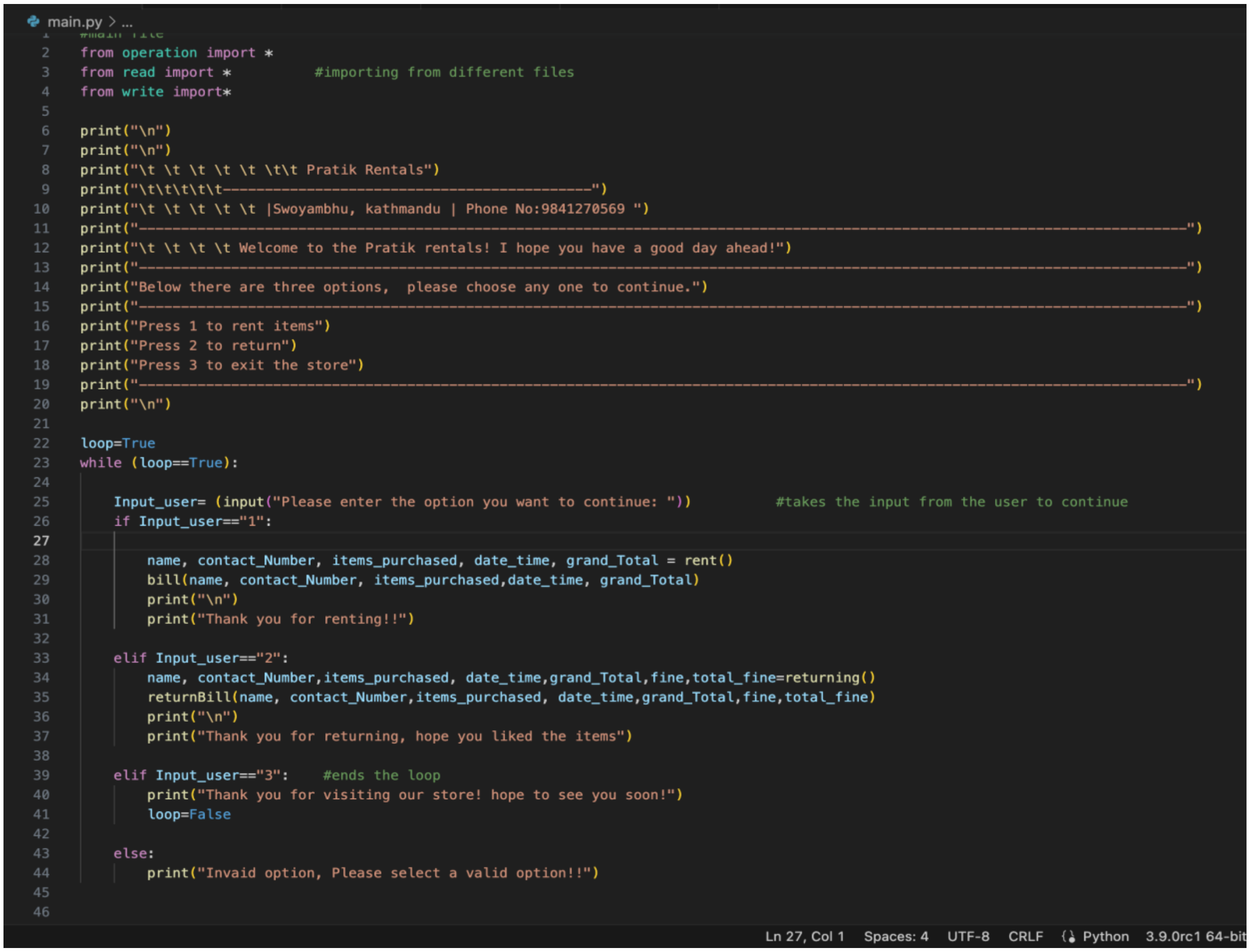
6. Program

1. Correctness: The program runs without any errors and performs as intended. Errors happened. While developing the application, and all of those issues have been resolved as a result. google. It has features for renting and returning equipment as well as displaying relevant information. Data and each of these capabilities operate as intended, as confirmed by testing.

2. Application: Since each activity is carried out, the program code exhibits significant modularity. using a function. I have built different documents for renting, returning items, and writing invoices. functions for each to make the code more readable and enable easy update. It is neater thanks to the uniform indentation.

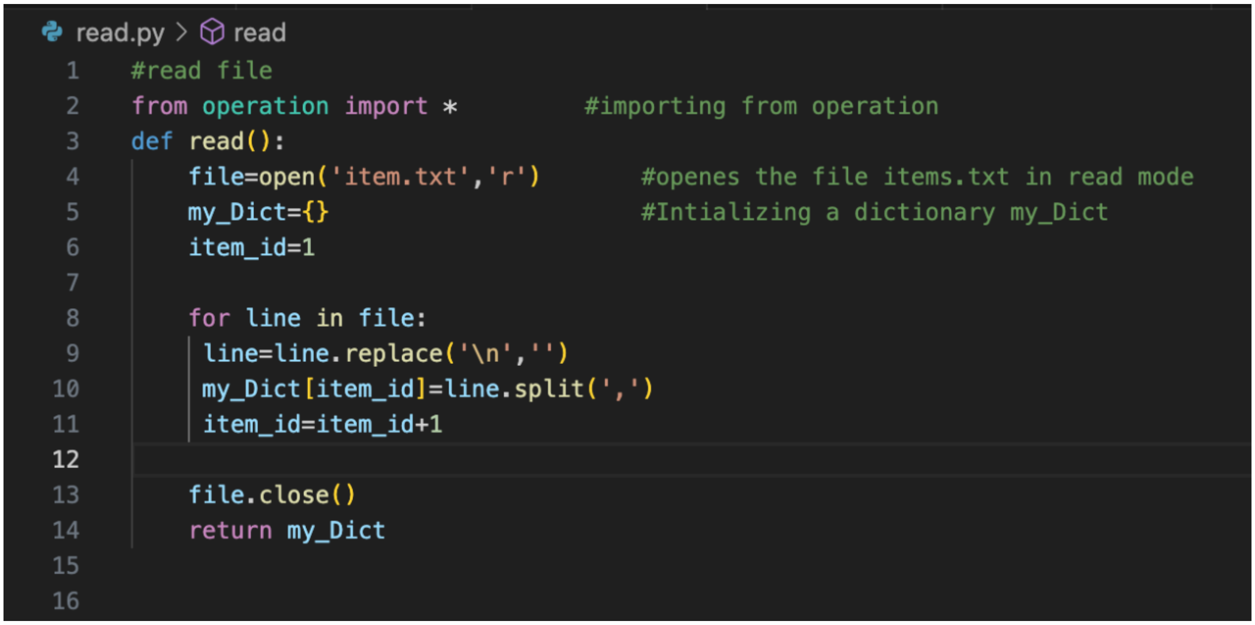
3. Programming approach: Due to the code's high modularity and newly constructed variable names, We may infer from their names that the code is clearly organized and simple to understand. along. The code's programming style also demonstrates an orderly and practical approach. approach. Clarity is aided by significant variable and job names, although dependable space maintains a transparent line of command. The code also makes use of comments. to demonstrate the complicated reasoning behind capacity. However, please provide your help. Some IF the pieces' clarity may be enhanced with documentation. The script proceeds as planned strategy by dividing tasks and separate capabilities, promoting reuse a viable future. A user-friendly interface is combined with specially created displays and input prompts, developing a good client relationship.

4. Exception handling: Exception handling is provided in numerous parts of the code, such as when we attempt to rent equipment that is unavailable or in excess IF the allowed amount. available amount. However, when we attempt to return the Exception, it does so. thing that we haven't even leased yet, or we try to return more than one item. amount of rent. Interface with users, the software offers a user-friendly interface with gaps that are kept to keep the terminal clean. The invoices are produced as tables, making them simpler to comprehend. A user-friendly interface with clear instructions ends prompts is offered by the application for a variety IF operations, such as renting end returning equipment. When a user enters an incorrect value, the application graciously resolves the situation and provides feedback. It also walks the user through the rental and return procedures.



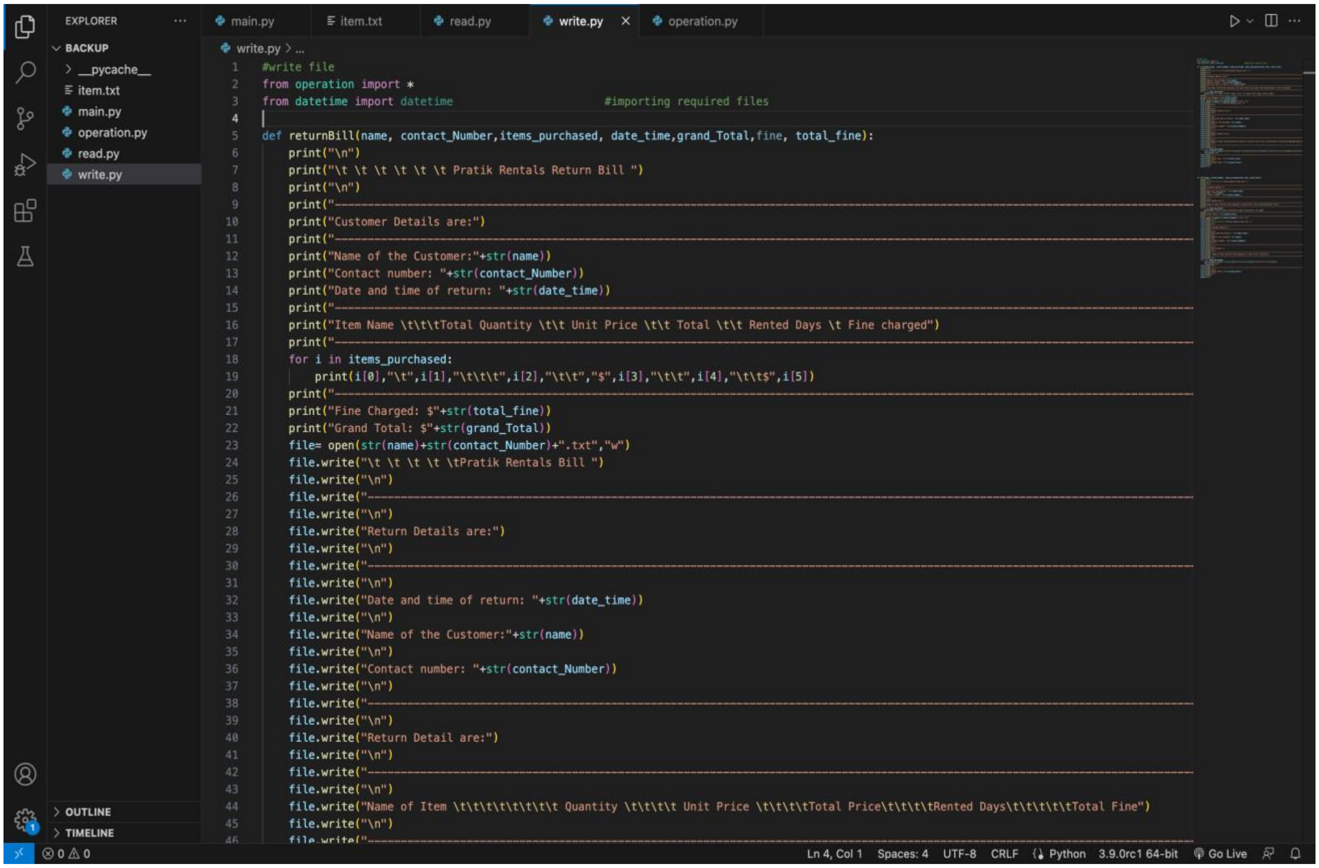
```python
#main file
from operation import *
from read import *          #importing from different files
from write import*

print("\n")
print("\n")
print("\t \t \t \t \t \t\t Pratik Rentals")
print("\t\t\t\t\t----------------------------------------------")
print("\t \t \t \t \t |Swoyambhu, kathmandu | Phone No:9841270569 ")
print("------------------------------------------------------------------------------------------------------------------------")
print("\t \t \t \t Welcome to the Pratik rentals! I hope you have a good day ahead!")
print("------------------------------------------------------------------------------------------------------------------------")
print("Below there are three options,  please choose any one to continue.")
print("------------------------------------------------------------------------------------------------------------------------")
print("Press 1 to rent items")
print("Press 2 to return")
print("Press 3 to exit the store")
print("------------------------------------------------------------------------------------------------------------------------")
print("\n")

loop=True
while (loop==True):

    Input_user= (input("Please enter the option you want to continue: "))         #takes the input from the user to continue
    if Input_user=="1":

        name, contact_Number, items_purchased, date_time, grand_Total = rent()
        bill(name, contact_Number, items_purchased,date_time, grand_Total)
        print("\n")
        print("Thank you for renting!!")

    elif Input_user=="2":
        name, contact_Number,items_purchased, date_time,grand_Total,fine,total_fine=returning()
        returnBill(name, contact_Number,items_purchased, date_time,grand_Total,fine,total_fine)
        print("\n")
        print("Thank you for returning, hope you liked the items")

    elif Input_user=="3":    #ends the loop
        print("Thank you for visiting our store! hope to see you soon!")
        loop=False

    else:
        print("Invaid option, Please select a valid option!!")
```

Figure 4: Screenshot of main.py



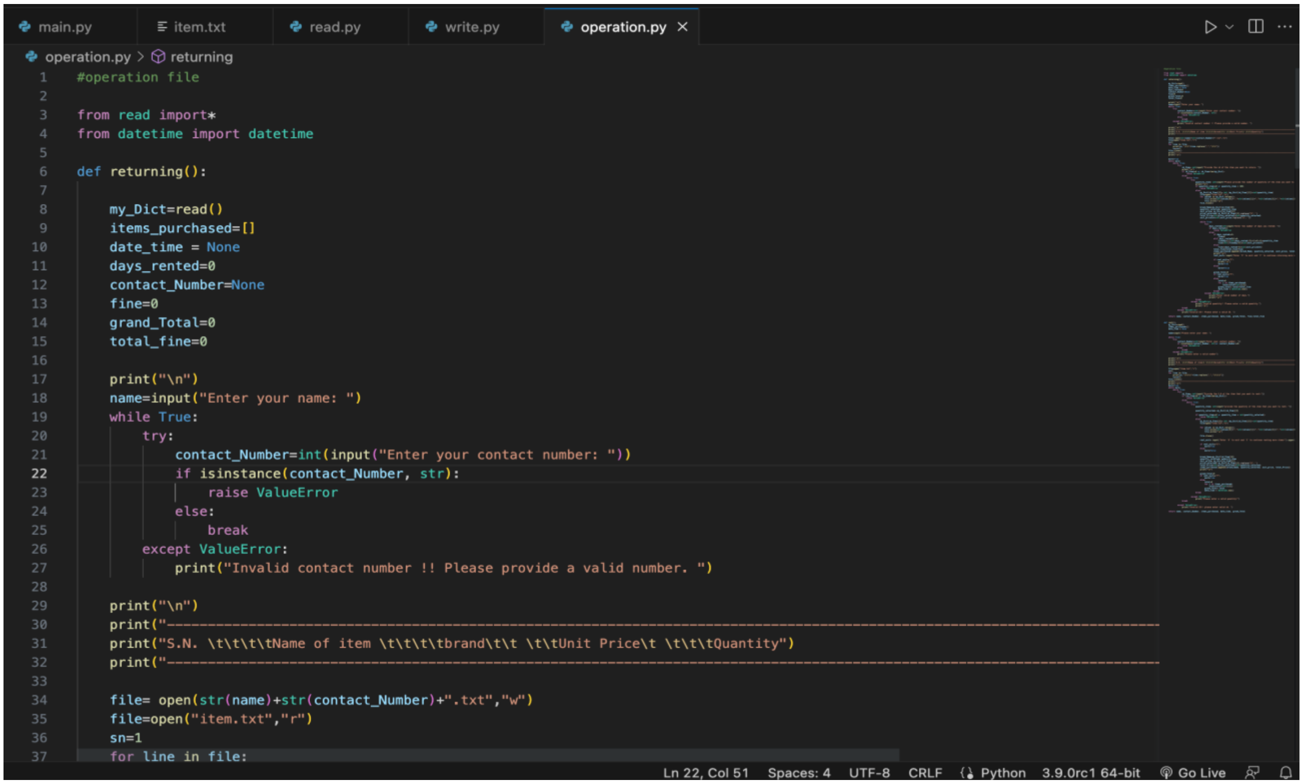
```python
#read file
from operation import *          #importing from operation
def read():
    file=open('item.txt','r')         #openes the file items.txt in read mode
    my_Dict={}                        #Intializing a dictionary my_Dict
    item_id=1

    for line in file:
        line=line.replace('\n','')
        my_Dict[item_id]=line.split(',')
        item_id=item_id+1

    file.close()
    return my_Dict
```

Figure 5: screenshot of read file

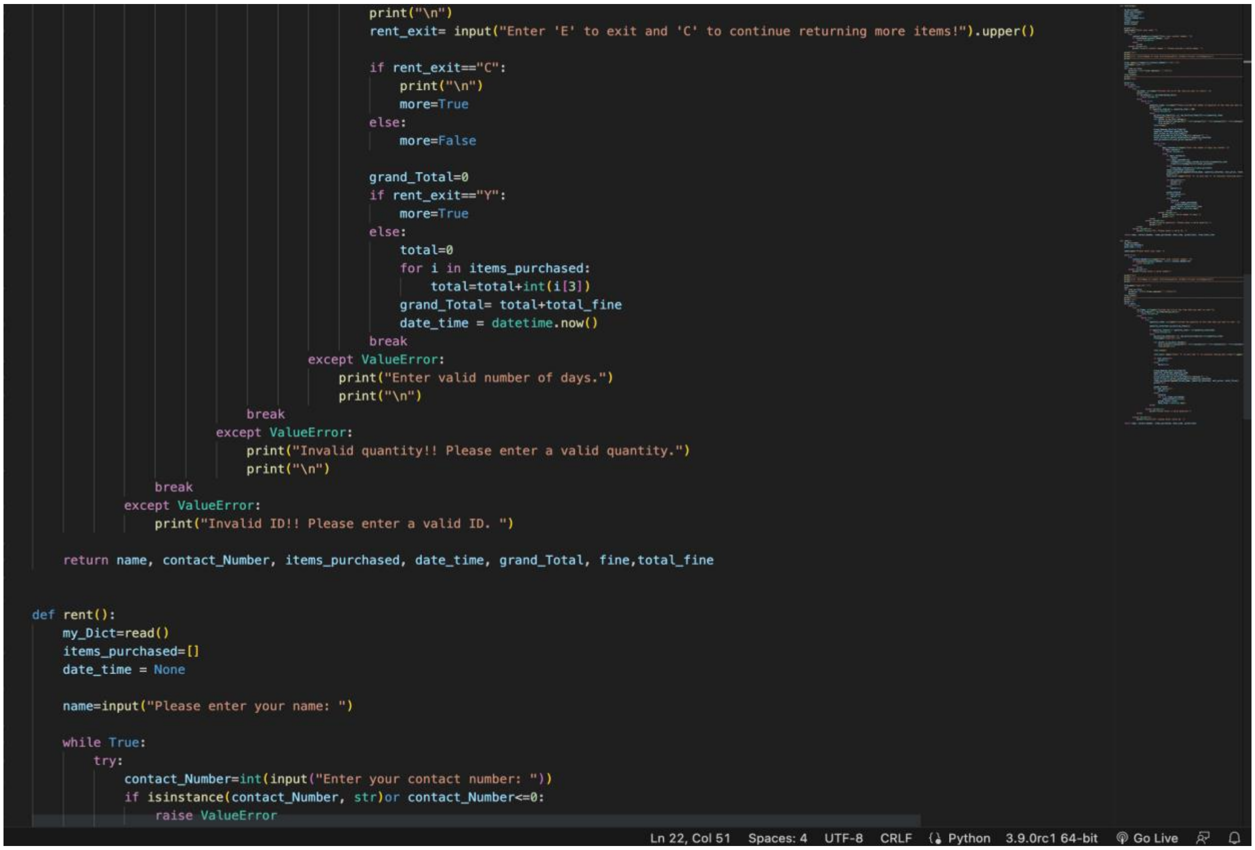


```python
#write file
from operation import *
from datetime import datetime                    #importing required files

def returnBill(name, contact_Number,items_purchased, date_time,grand_Total,fine, total_fine):
    print("\n")
    print("\t \t \t \t \t \t Pratik Rentals Return Bill ")
    print("\n")
    print("---------------------------------------------------------------------------------------------------------------------------------------------
    print("Customer Details are:")
    print("---------------------------------------------------------------------------------------------------------------------------------------------
    print("Name of the Customer:"+str(name))
    print("Contact number: "+str(contact_Number))
    print("Date and time of return: "+str(date_time))
    print("---------------------------------------------------------------------------------------------------------------------------------------------
    print("Item Name \t\t\tTotal Quantity \t\t Unit Price \t\t Total \t\t Rented Days \t Fine charged")
    print("---------------------------------------------------------------------------------------------------------------------------------------------
    for i in items_purchased:
        print(i[0],"\t",i[1],"\t\t\t",i[2],"\t\t","$",i[3],"\t\t",i[4],"\t\t$",i[5])
    print("---------------------------------------------------------------------------------------------------------------------------------------------
    print("Fine Charged: $"+str(total_fine))
    print("Grand Total: $"+str(grand_Total))
    file= open(str(name)+str(contact_Number)+".txt","w")
    file.write("\t \t \t \t \tPratik Rentals Bill ")
    file.write("\n")
    file.write("------------------------------------------------------------------------------------------------------------------------------------------
    file.write("\n")
    file.write("Return Details are:")
    file.write("\n")
    file.write("------------------------------------------------------------------------------------------------------------------------------------------
    file.write("\n")
    file.write("Date and time of return: "+str(date_time))
    file.write("\n")
    file.write("Name of the Customer:"+str(name))
    file.write("\n")
    file.write("Contact number: "+str(contact_Number))
    file.write("\n")
    file.write("------------------------------------------------------------------------------------------------------------------------------------------
    file.write("\n")
    file.write("Return Detail are:")
    file.write("\n")
    file.write("------------------------------------------------------------------------------------------------------------------------------------------
    file.write("\n")
    file.write("Name of Item \t\t\t\t\t\t\t\t Quantity \t\t\t\t Unit Price \t\t\t\tTotal Price\t\t\t\tRented Days\t\t\t\t\tTotal Fine")
    file.write("\n")
    file.write("------------------------------------------------------------------------------------------------------------------------------------------
```

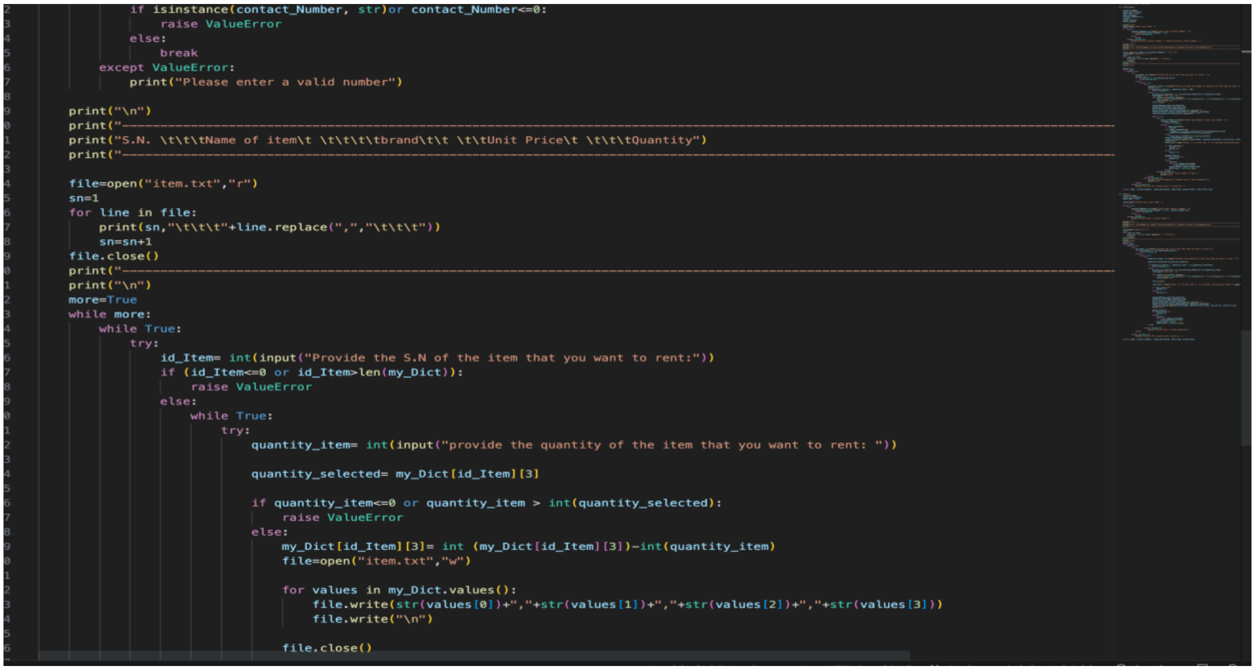
Figure 6: screenshot of write file



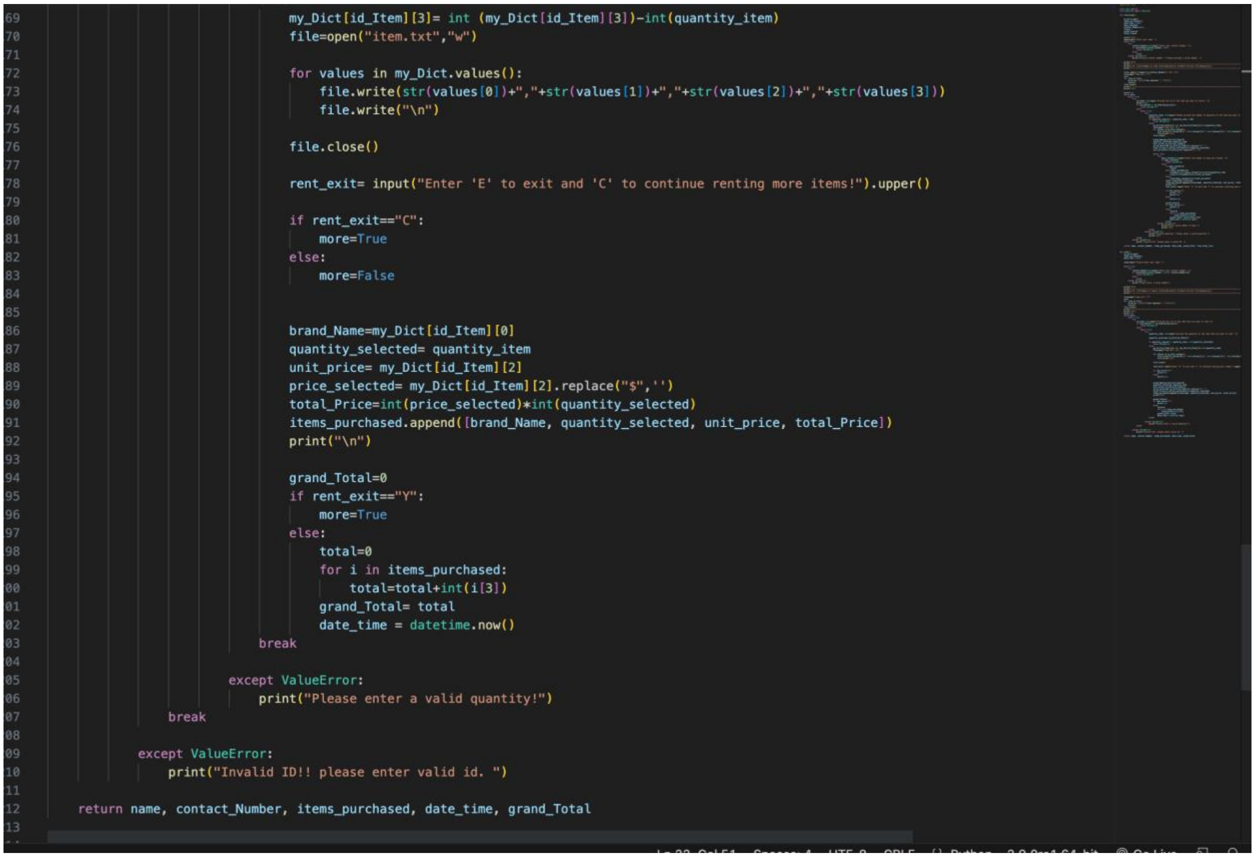
```python
#operation file

from read import*
from datetime import datetime

def returning():

    my_Dict=read()
    items_purchased=[]
    date_time = None
    days_rented=0
    contact_Number=None
    fine=0
    grand_Total=0
    total_fine=0

    print("\n")
    name=input("Enter your name: ")
    while True:
        try:
            contact_Number=int(input("Enter your contact number: "))
            if isinstance(contact_Number, str):
                raise ValueError
            else:
                break
        except ValueError:
            print("Invalid contact number !! Please provide a valid number. ")

    print("\n")
    print("---------------------------------------------------------------------------------------------------------------------------
    print("S.N. \t\t\t\tName of item \t\t\t\tbrand\t\t \t\tUnit Price\t \t\t\tQuantity")
    print("---------------------------------------------------------------------------------------------------------------------------

    file= open(str(name)+str(contact_Number)+".txt","w")
    file=open("item.txt","r")
    sn=1
    for line in file:
```



```python
                                            print("\n")
                                            rent_exit= input("Enter 'E' to exit and 'C' to continue returning more items!").upper()

                                            if rent_exit=="C":
                                                print("\n")
                                                more=True
                                            else:
                                                more=False

                                            grand_Total=0
                                            if rent_exit=="Y":
                                                more=True
                                            else:
                                                total=0
                                                for i in items_purchased:
                                                    total=total+int(i[3])
                                                grand_Total= total+total_fine
                                                date_time = datetime.now()
                                            break
                                    except ValueError:
                                        print("Enter valid number of days.")
                                        print("\n")
                            break
                        except ValueError:
                            print("Invalid quantity!! Please enter a valid quantity.")
                            print("\n")
                break
            except ValueError:
                print("Invalid ID!! Please enter a valid ID. ")

    return name, contact_Number, items_purchased, date_time, grand_Total, fine,total_fine


def rent():
    my_Dict=read()
    items_purchased=[]
    date_time = None

    name=input("Please enter your name: ")

    while True:
        try:
            contact_Number=int(input("Enter your contact number: "))
            if isinstance(contact_Number, str)or contact_Number<=0:
                raise ValueError
```



```
            if isinstance(contact_Number, str)or contact_Number<=0:
                raise ValueError
            else:
                break
        except ValueError:
            print("Please enter a valid number")

    print("\n")
    print("--------------------------------------------------------------------------------------------------------------------------------
    print("S.N. \t\t\tName of item\t \t\t\t\tbrand\t\t \t\tUnit Price\t \t\t\tQuantity")
    print("--------------------------------------------------------------------------------------------------------------------------------

    file=open("item.txt","r")
    sn=1
    for line in file:
        print(sn,"\t\t\t"+line.replace(",","\t\t\t"))
        sn=sn+1
    file.close()
    print("--------------------------------------------------------------------------------------------------------------------------------
    print("\n")
    more=True
    while more:
        while True:
            try:
                id_Item= int(input("Provide the S.N of the item that you want to rent:"))
                if (id_Item<=0 or id_Item>len(my_Dict)):
                    raise ValueError
                else:
                    while True:
                        try:
                            quantity_item= int(input("provide the quantity of the item that you want to rent: "))

                            quantity_selected= my_Dict[id_Item][3]

                            if quantity_item<=0 or quantity_item > int(quantity_selected):
                                raise ValueError
                            else:
                                my_Dict[id_Item][3]= int (my_Dict[id_Item][3])-int(quantity_item)
                                file=open("item.txt","w")

                                for values in my_Dict.values():
                                    file.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
                                    file.write("\n")

                                file.close()
```



```
                                my_Dict[id_Item][3]= int (my_Dict[id_Item][3])-int(quantity_item)
                                file=open("item.txt","w")

                                for values in my_Dict.values():
                                    file.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
                                    file.write("\n")

                                file.close()

                                rent_exit= input("Enter 'E' to exit and 'C' to continue renting more items!").upper()

                                if rent_exit=="C":
                                    more=True
                                else:
                                    more=False


                                brand_Name=my_Dict[id_Item][0]
                                quantity_selected= quantity_item
                                unit_price= my_Dict[id_Item][2]
                                price_selected= my_Dict[id_Item][2].replace("$",'')
                                total_Price=int(price_selected)*int(quantity_selected)
                                items_purchased.append([brand_Name, quantity_selected, unit_price, total_Price])
                                print("\n")

                                grand_Total=0
                                if rent_exit=="Y":
                                    more=True
                                else:
                                    total=0
                                    for i in items_purchased:
                                        total=total+int(i[3])
                                    grand_Total= total
                                    date_time = datetime.now()
                            break

                        except ValueError:
                            print("Please enter a valid quantity!")
                break

            except ValueError:
                print("Invalid ID!! please enter valid id. ")

    return name, contact_Number, items_purchased, date_time, grand_Total
```

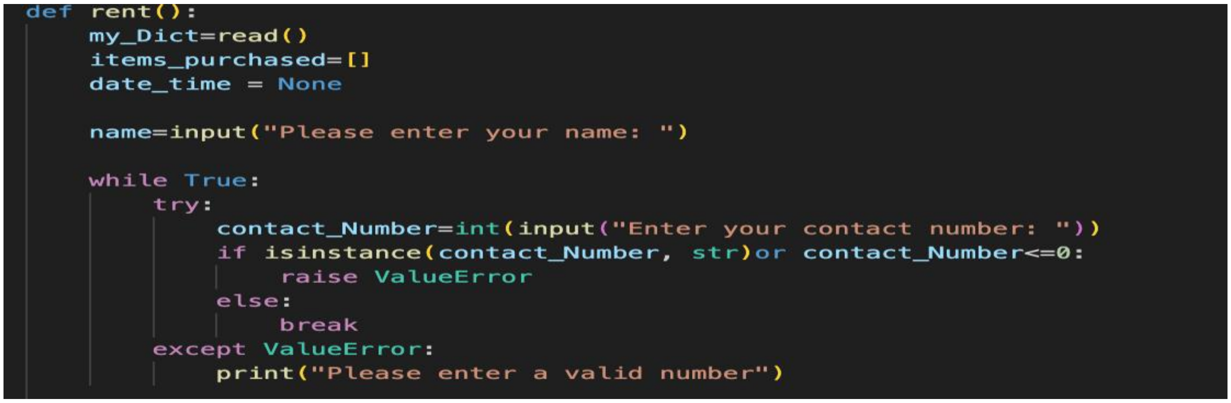
Figure 7: screenshot of operation file

7. Testing

7.1 Test 1

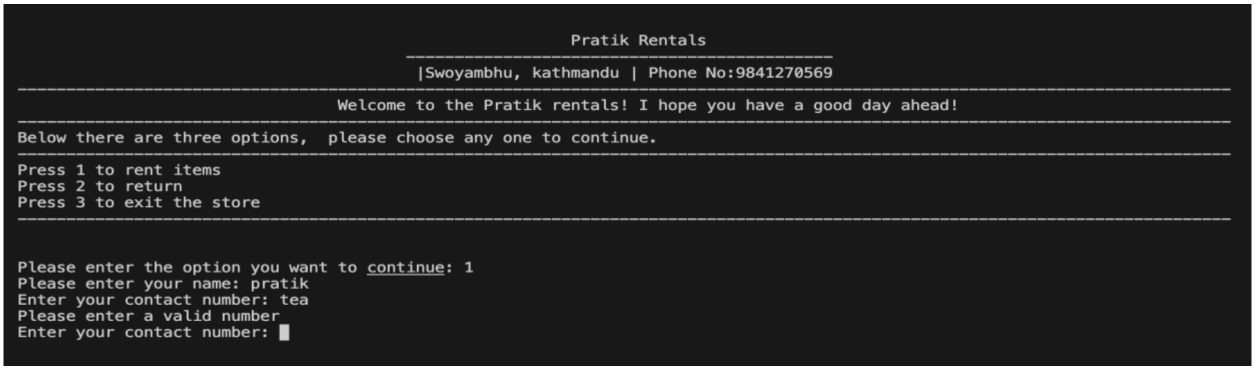
Objective	To show the implementation of try and except method and also test its functionality.
Action	Entering an invalid input to the system: Enter you contact number: tea (invalid input)
Expected result	When you provide invalid input to the user, a message is to be shown with the use of try catch
Actual result	When an invalid input is provided, an error message was displayed showing “Please enter a valid number”
Conclusion	The test was successful.

Table 1: Test 1



```
def rent():
    my_Dict=read()
    items_purchased=[]
    date_time = None

    name=input("Please enter your name: ")

    while True:
        try:
            contact_Number=int(input("Enter your contact number: "))
            if isinstance(contact_Number, str)or contact_Number<=0:
                raise ValueError
            else:
                break
        except ValueError:
            print("Please enter a valid number")
```

Figure 8: use of try and catch in the code



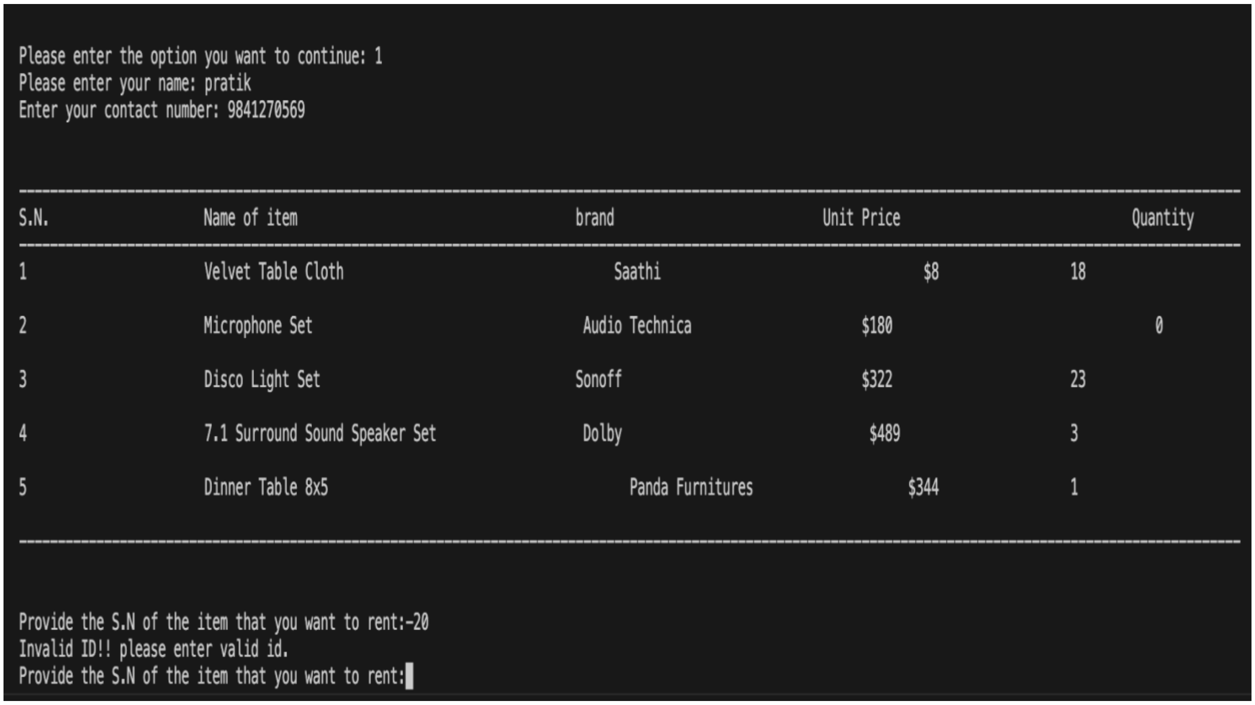
```
                                                         Pratik Rentals
                                        --------------------------------------------
                                         |Swoyambhu, kathmandu | Phone No:9841270569
-----------------------------------------------------------------------------------------------------------------------------
                                 Welcome to the Pratik rentals! I hope you have a good day ahead!
-----------------------------------------------------------------------------------------------------------------------------
Below there are three options,  please choose any one to continue.
-----------------------------------------------------------------------------------------------------------------------------
Press 1 to rent items
Press 2 to return
Press 3 to exit the store
-----------------------------------------------------------------------------------------------------------------------------


Please enter the option you want to continue: 1
Please enter your name: pratik
Enter your contact number: tea
Please enter a valid number
Enter your contact number: █
```

Figure 9: try and catch method functioning when invalid input is provided

7.2 Test 2

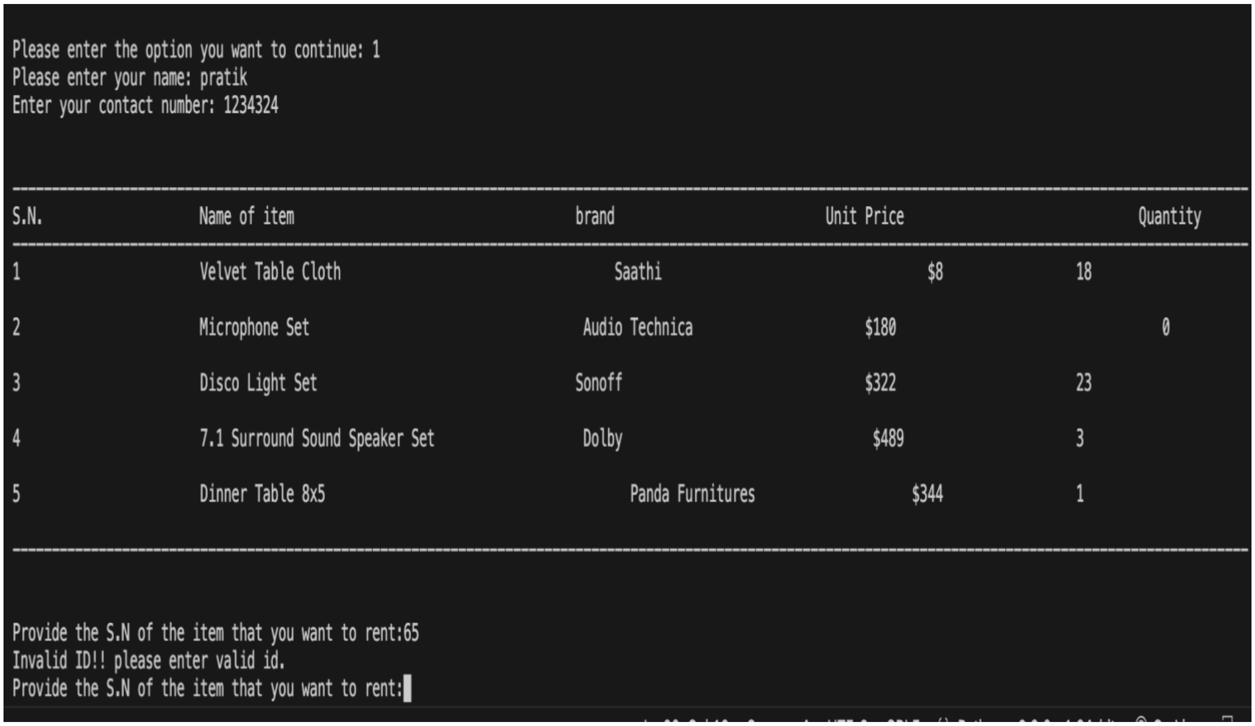
Objective	To check how the program responds when negative and non-existed value of items is given as an input to the program when renting or returning.
Action	I. Provide negative value as input. II. Provide non-existed value as input
Expected result	When an negative and non-existed value is provided as an input an error message should be displayed and the user is aksed to enter the details again.
Actual result	When an negative and non-existed value was provided as an input an error message was displayed and the user was asked to input the details again
Conclusion	The test was successful.

Table 2: test 2



```
Please enter the option you want to continue: 1
Please enter your name: pratik
Enter your contact number: 9841270569


---------------------------------------------------------------------------------------------------------------------
S.N.              Name of item                         brand                   Unit Price                   Quantity
---------------------------------------------------------------------------------------------------------------------
1                 Velvet Table Cloth                      Saathi                         $8              18

2                 Microphone Set                        Audio Technica          $180                            0

3                 Disco Light Set                      Sonoff                   $322                 23

4                 7.1 Surround Sound Speaker Set        Dolby                     $489                3

5                 Dinner Table 8x5                           Panda Furnitures             $344          1

---------------------------------------------------------------------------------------------------------------------


Provide the S.N of the item that you want to rent:-20
Invalid ID!! please enter valid id.
Provide the S.N of the item that you want to rent:
```

Figure 10: giving an input in negative value



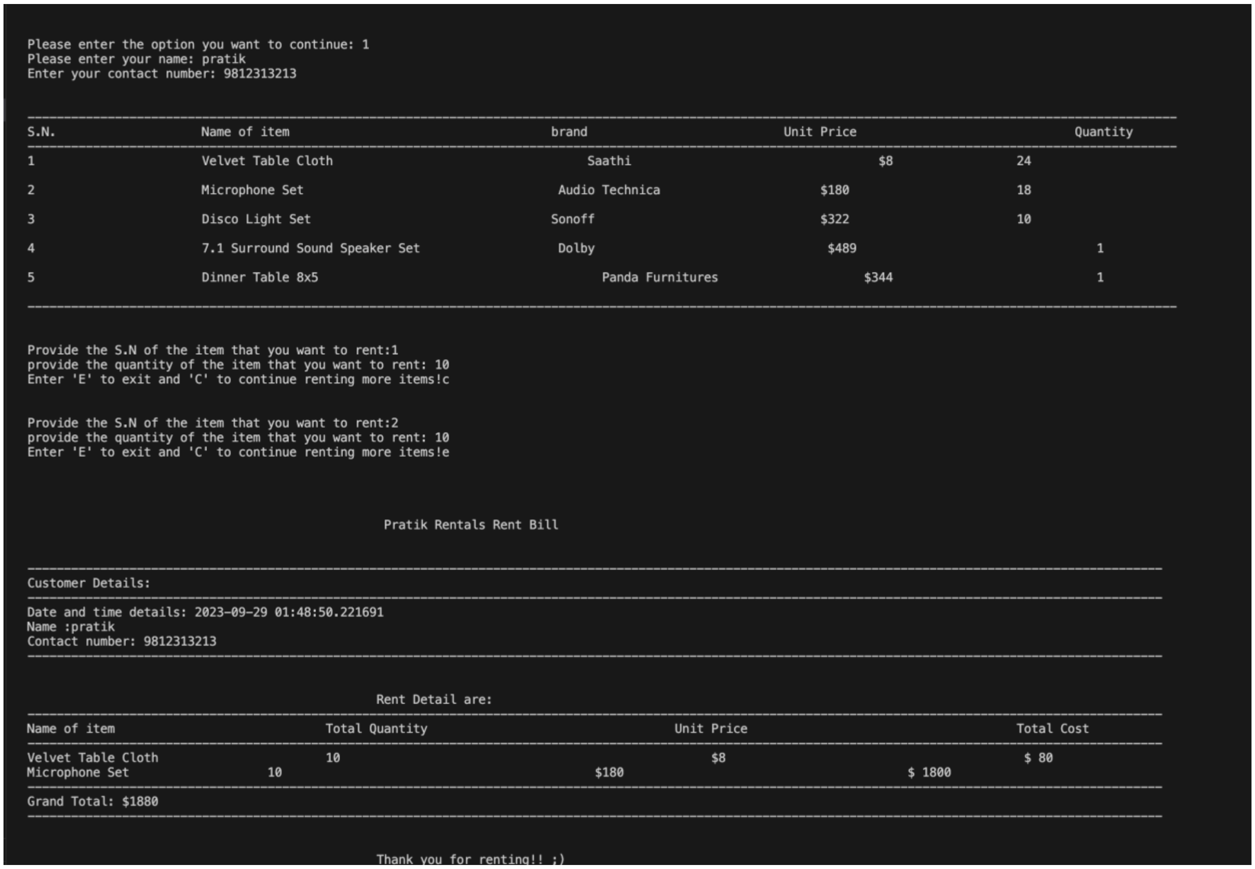
```
Please enter the option you want to continue: 1
Please enter your name: pratik
Enter your contact number: 1234324



--------------------------------------------------------------------------------------------------------------------------------
S.N.                Name of item                            brand                      Unit Price                      Quantity
--------------------------------------------------------------------------------------------------------------------------------
1                   Velvet Table Cloth                          Saathi                              $8              18

2                   Microphone Set                           Audio Technica                   $180                              0

3                   Disco Light Set                         Sonoff                            $322              23

4                   7.1 Surround Sound Speaker Set           Dolby                             $489              3

5                   Dinner Table 8x5                              Panda Furnitures                  $344              1

--------------------------------------------------------------------------------------------------------------------------------



Provide the S.N of the item that you want to rent:65
Invalid ID!! please enter valid id.
Provide the S.N of the item that you want to rent:
```

Figure 11: Input as a non-existing value

7.3 Test 3

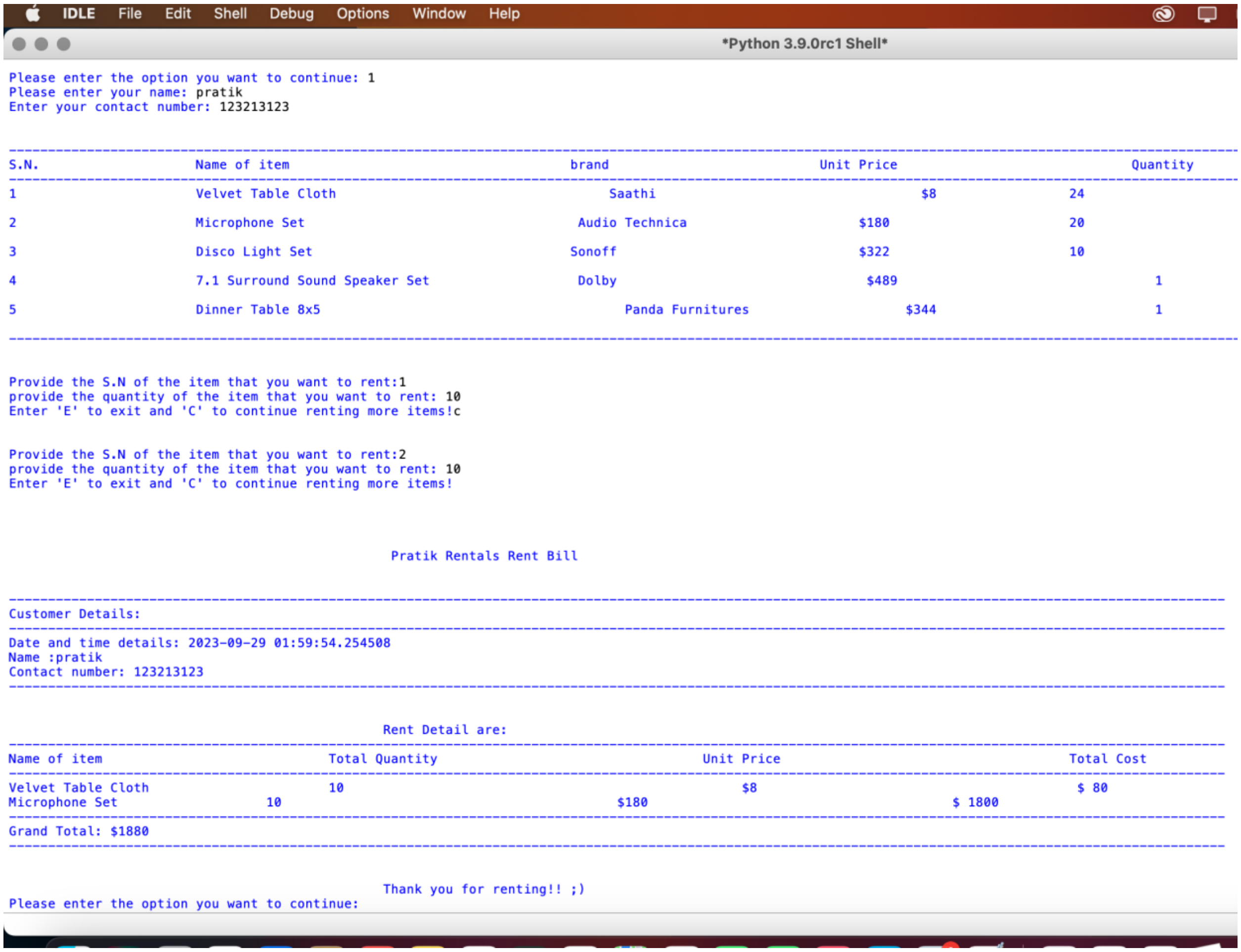
Objective	To show how the file is generated after renting and check if it is running in a shell. Also, a text file must be created with the purchased details.
Action	Rent 10 items of SN 1 Rent 10 items of SN 2
Expected result	When all the details are provided then the items should be purchased **END** an invoice should be generated. It should also run in a shell.
Actual result	When all the details for renting the items was provided to the system a proper bill was generated and the invoice was created. It was also functioning properly in a shell.
Conclusion	The test was successful.

Table 3: Test 3



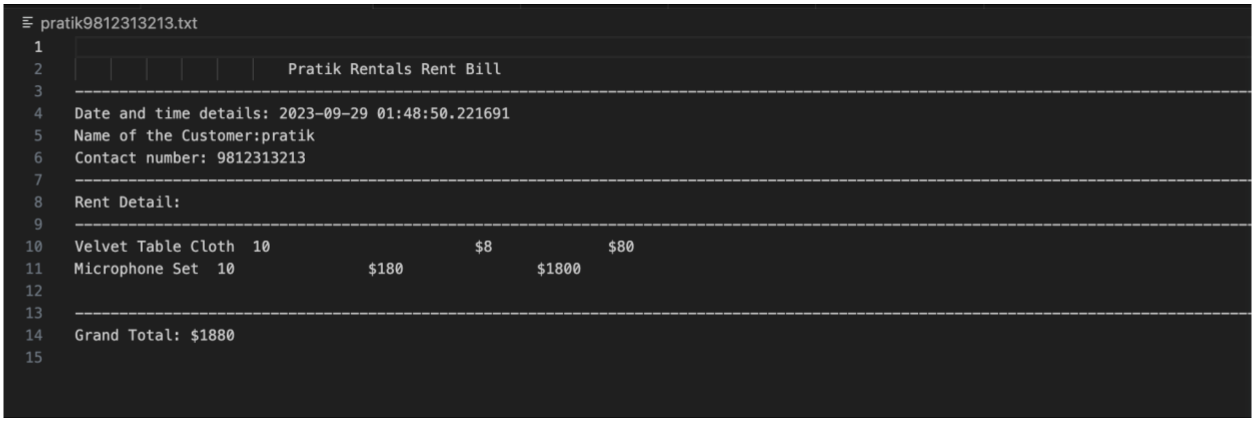
```
Please enter the option you want to continue: 1
Please enter your name: pratik
Enter your contact number: 9812313213


------------------------------------------------------------------------------------------------------------------------------------------------------------
S.N.                    Name of item                                   brand                           Unit Price                             Quantity
------------------------------------------------------------------------------------------------------------------------------------------------------------
1                       Velvet Table Cloth                                  Saathi                                  $8                24

2                       Microphone Set                                  Audio Technica                      $180                      18

3                       Disco Light Set                                Sonoff                               $180                      10

4                       7.1 Surround Sound Speaker Set                  Dolby                                $489                                 1

5                       Dinner Table 8x5                                      Panda Furnitures                    $344                            1
------------------------------------------------------------------------------------------------------------------------------------------------------------


Provide the S.N of the item that you want to rent:1
provide the quantity of the item that you want to rent: 10
Enter 'E' to exit and 'C' to continue renting more items!c


Provide the S.N of the item that you want to rent:2
provide the quantity of the item that you want to rent: 10
Enter 'E' to exit and 'C' to continue renting more items!e




                                                 Pratik Rentals Rent Bill


----------------------------------------------------------------------------------------------------------------------------------------------------------
Customer Details:
----------------------------------------------------------------------------------------------------------------------------------------------------------
Date and time details: 2023-09-29 01:48:50.221691
Name :pratik
Contact number: 9812313213
----------------------------------------------------------------------------------------------------------------------------------------------------------


                                                Rent Detail are:
----------------------------------------------------------------------------------------------------------------------------------------------------------
Name of item                             Total Quantity                                 Unit Price                                     Total Cost
----------------------------------------------------------------------------------------------------------------------------------------------------------
Velvet Table Cloth                       10                                                  $8                                         $ 80
Microphone Set                   10                                          $180                                       $ 1800
----------------------------------------------------------------------------------------------------------------------------------------------------------
Grand Total: $1880
----------------------------------------------------------------------------------------------------------------------------------------------------------


                                                Thank you for renting!! ;)
```

Figure 12: purchase process of renting



```
Please enter the option you want to continue: 1
Please enter your name: pratik
Enter your contact number: 123213123

--------------------------------------------------------------------------------------------------------------------------------------------------------------------
S.N.                    Name of item                                    brand                           Unit Price                                      Quantity
--------------------------------------------------------------------------------------------------------------------------------------------------------------------
1                       Velvet Table Cloth                                   Saathi                                  $8                   24

2                       Microphone Set                                   Audio Technica                      $180                    20

3                       Disco Light Set                                 Sonoff                              $322                    10

4                       7.1 Surround Sound Speaker Set                   Dolby                                $489                                  1

5                       Dinner Table 8x5                                       Panda Furnitures                    $344                              1

--------------------------------------------------------------------------------------------------------------------------------------------------------------------


Provide the S.N of the item that you want to rent:1
provide the quantity of the item that you want to rent: 10
Enter 'E' to exit and 'C' to continue renting more items!c


Provide the S.N of the item that you want to rent:2
provide the quantity of the item that you want to rent: 10
Enter 'E' to exit and 'C' to continue renting more items!



                                                  Pratik Rentals Rent Bill


--------------------------------------------------------------------------------------------------------------------------------------------------------------
Customer Details:
--------------------------------------------------------------------------------------------------------------------------------------------------------------
Date and time details: 2023-09-29 01:59:54.254508
Name :pratik
Contact number: 123213123
--------------------------------------------------------------------------------------------------------------------------------------------------------------


                                                 Rent Detail are:
--------------------------------------------------------------------------------------------------------------------------------------------------------------
Name of item                             Total Quantity                                          Unit Price                                            Total Cost
--------------------------------------------------------------------------------------------------------------------------------------------------------------
Velvet Table Cloth                       10                                                          $8                                                 $ 80
Microphone Set                   10                                                      $180                         $ 1800
--------------------------------------------------------------------------------------------------------------------------------------------------------------
Grand Total: $1880
--------------------------------------------------------------------------------------------------------------------------------------------------------------


                                                 Thank you for renting!! ;)
Please enter the option you want to continue:
```

Figure 13: running the renting process in a shell



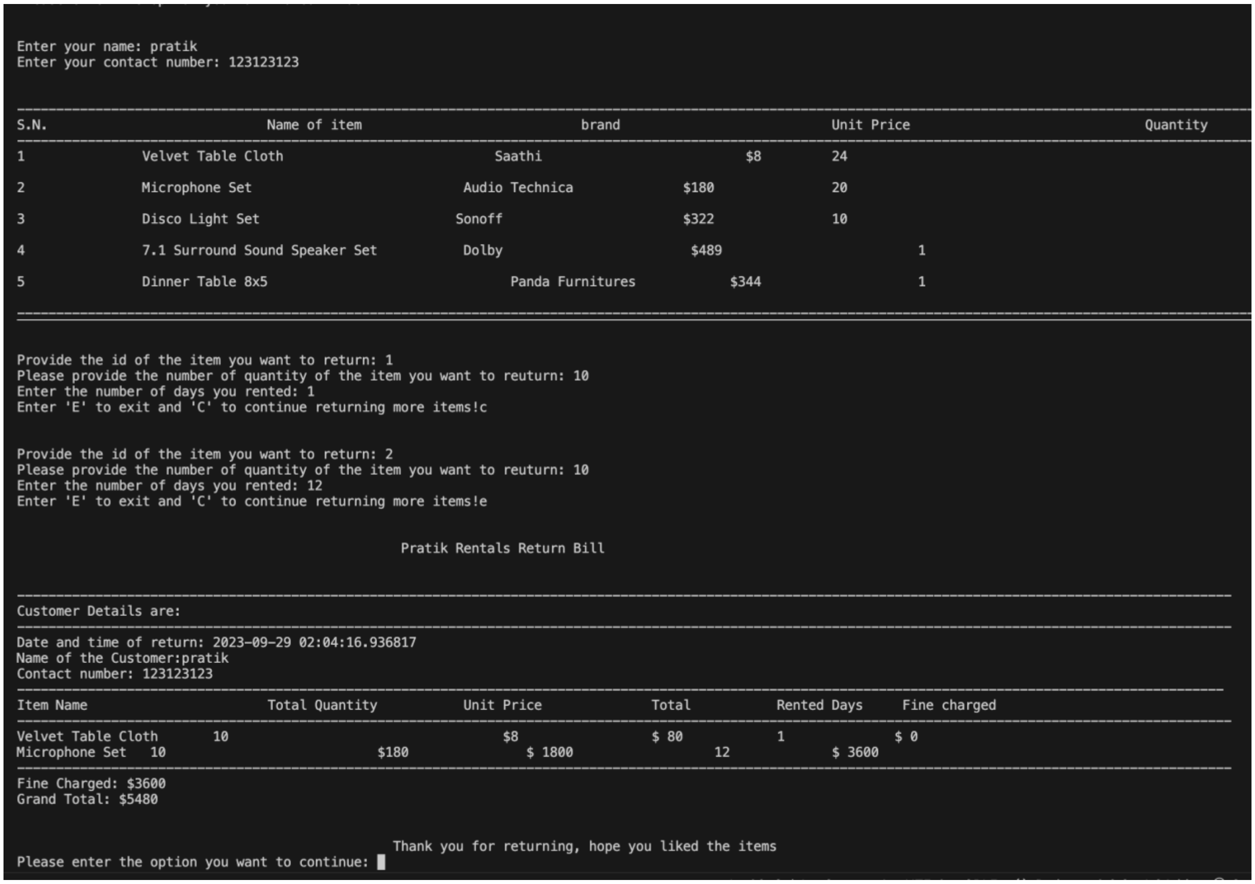
```

                        Pratik Rentals Rent Bill
----------------------------------------------------------------------------------------------------------------------------------------
Date and time details: 2023-09-29 01:48:50.221691
Name of the Customer:pratik
Contact number: 9812313213
----------------------------------------------------------------------------------------------------------------------------------------
Rent Detail:
----------------------------------------------------------------------------------------------------------------------------------------
Velvet Table Cloth  10                          $8               $80
Microphone Set  10              $180              $1800

----------------------------------------------------------------------------------------------------------------------------------------
Grand Total: $1880

```

Figure 14: an invoice being generated in a text file for the items that were purchased.

7.4 Test 4

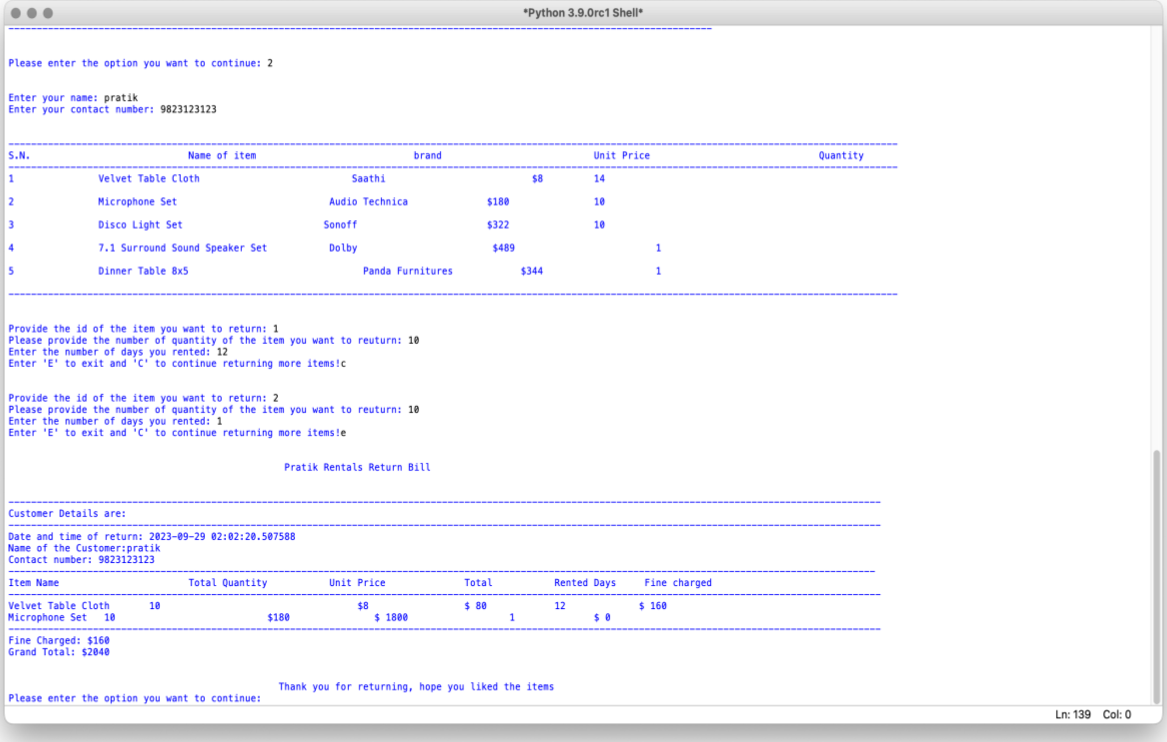
Objective	To show the process when an item is returned and check if it is running in a shell. Also, a text file must be created with the return details.
Action	Return 10 items of Sn 1 Return 10 items of Sn 2
Expected result	The process should run in terminal and shell.
Actual result	The return process was successfully processed in a shell and a terminal
Conclusion	The test was successful.

Table 4: test 4



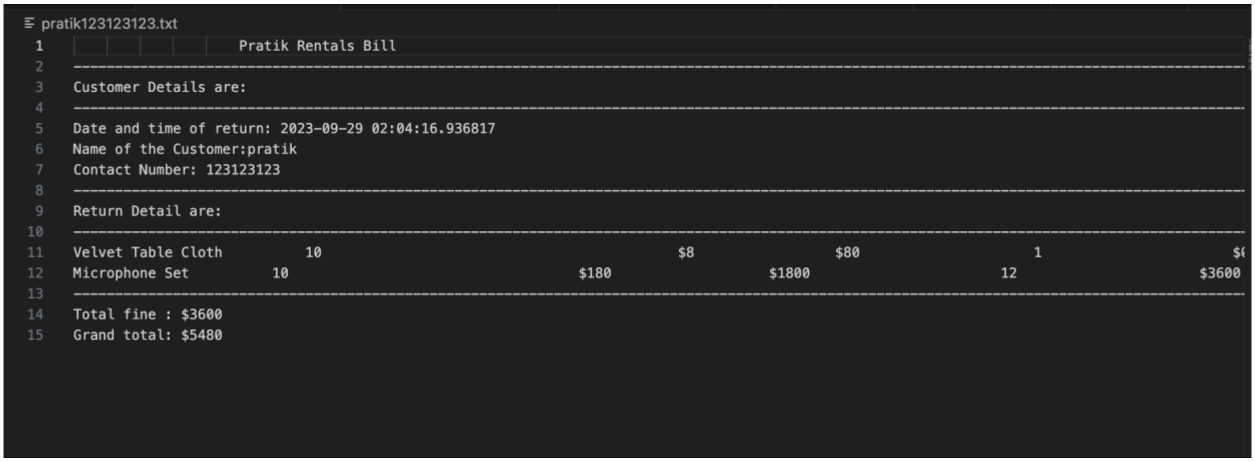
```
Enter your name: pratik
Enter your contact number: 123123123


------------------------------------------------------------------------------------------------------------------------------------------------------
S.N.                            Name of item                            brand                           Unit Price                              Quantity
------------------------------------------------------------------------------------------------------------------------------------------------------
1               Velvet Table Cloth                           Saathi                         $8          24

2               Microphone Set                           Audio Technica             $180                20

3               Disco Light Set                         Sonoff                      $322                10

4               7.1 Surround Sound Speaker Set           Dolby                       $489                          1

5               Dinner Table 8x5                               Panda Furnitures           $344                         1

------------------------------------------------------------------------------------------------------------------------------------------------------
======================================================================================================================================================


Provide the id of the item you want to return: 1
Please provide the number of quantity of the item you want to reuturn: 10
Enter the number of days you rented: 1
Enter 'E' to exit and 'C' to continue returning more items!c


Provide the id of the item you want to return: 2
Please provide the number of quantity of the item you want to reuturn: 10
Enter the number of days you rented: 12
Enter 'E' to exit and 'C' to continue returning more items!e


                                                 Pratik Rentals Return Bill


------------------------------------------------------------------------------------------------------------------------------------------------------
Customer Details are:
------------------------------------------------------------------------------------------------------------------------------------------------------
Date and time of return: 2023-09-29 02:04:16.936817
Name of the Customer:pratik
Contact number: 123123123
------------------------------------------------------------------------------------------------------------------------------------------------------
Item Name                       Total Quantity           Unit Price              Total          Rented Days     Fine charged
------------------------------------------------------------------------------------------------------------------------------------------------------
Velvet Table Cloth       10                                    $8                $ 80            1              $ 0
Microphone Set   10                        $180              $ 1800                 12          $ 3600
------------------------------------------------------------------------------------------------------------------------------------------------------
Fine Charged: $3600
Grand Total: $5480


                                                Thank you for returning, hope you liked the items
Please enter the option you want to continue: █
```

Figure 15: return process in a terminal



```
--------------------------------------------------------------------------------------------------------------------------


Please enter the option you want to continue: 2


Enter your name: pratik
Enter your contact number: 9823123123


-----------------------------------------------------------------------------------------------------------------------------------------------------------
S.N.                           Name of item                           brand                         Unit Price                            Quantity
-----------------------------------------------------------------------------------------------------------------------------------------------------------
1               Velvet Table Cloth                   Saathi                     $8         14

2               Microphone Set                    Audio Technica          $180          10

3               Disco Light Set                  Sonoff                   $322          10

4               7.1 Surround Sound Speaker Set         Dolby                     $489                    1

5               Dinner Table 8x5                            Panda Furnitures           $344                    1

-----------------------------------------------------------------------------------------------------------------------------------------------------------


Provide the id of the item you want to return: 1
Please provide the number of quantity of the item you want to reuturn: 10
Enter the number of days you rented: 12
Enter 'E' to exit and 'C' to continue returning more items!c


Provide the id of the item you want to return: 2
Please provide the number of quantity of the item you want to reuturn: 10
Enter the number of days you rented: 1
Enter 'E' to exit and 'C' to continue returning more items!e


                                                 Pratik Rentals Return Bill


------------------------------------------------------------------------------------------------------------------------------------------------------
Customer Details are:
------------------------------------------------------------------------------------------------------------------------------------------------------
Date and time of return: 2023-09-29 02:02:20.507588
Name of the Customer:pratik
Contact number: 9823123123
-----------------------------------------------------------------------------------------------------------------------------------------------------
Item Name                       Total Quantity            Unit Price              Total           Rented Days     Fine charged
------------------------------------------------------------------------------------------------------------------------------------------------------
Velvet Table Cloth       10                                  $8                $ 80            12             $ 160
Microphone Set   10                          $180              $ 1800                1             $ 0
------------------------------------------------------------------------------------------------------------------------------------------------------
Fine Charged: $160
Grand Total: $2040


                                                Thank you for returning, hope you liked the items
Please enter the option you want to continue:
```

Figure 16: Return process in a shell



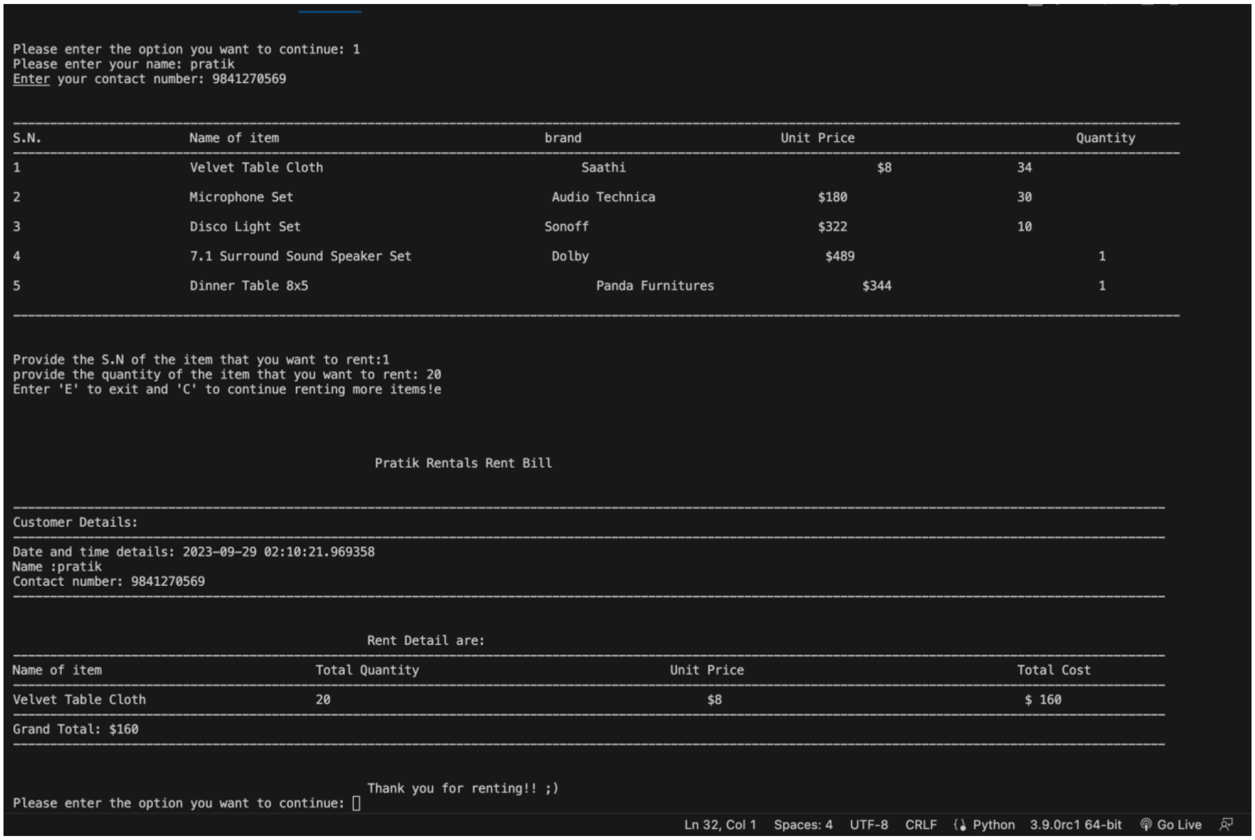
```
                    Pratik Rentals Bill
---------------------------------------------------------------------------------------------------------------------------------------------
Customer Details are:
---------------------------------------------------------------------------------------------------------------------------------------------
Date and time of return: 2023-09-29 02:04:16.936817
Name of the Customer:pratik
Contact Number: 123123123
---------------------------------------------------------------------------------------------------------------------------------------------
Return Detail are:
---------------------------------------------------------------------------------------------------------------------------------------------
Velvet Table Cloth         10                                          $8                  $80                      1                    $
Microphone Set         10                                     $180                 $1800                      12                  $3600
---------------------------------------------------------------------------------------------------------------------------------------------
Total fine : $3600
Grand total: $5480
```

Figure 17: A text file being created

7.5 Test 5

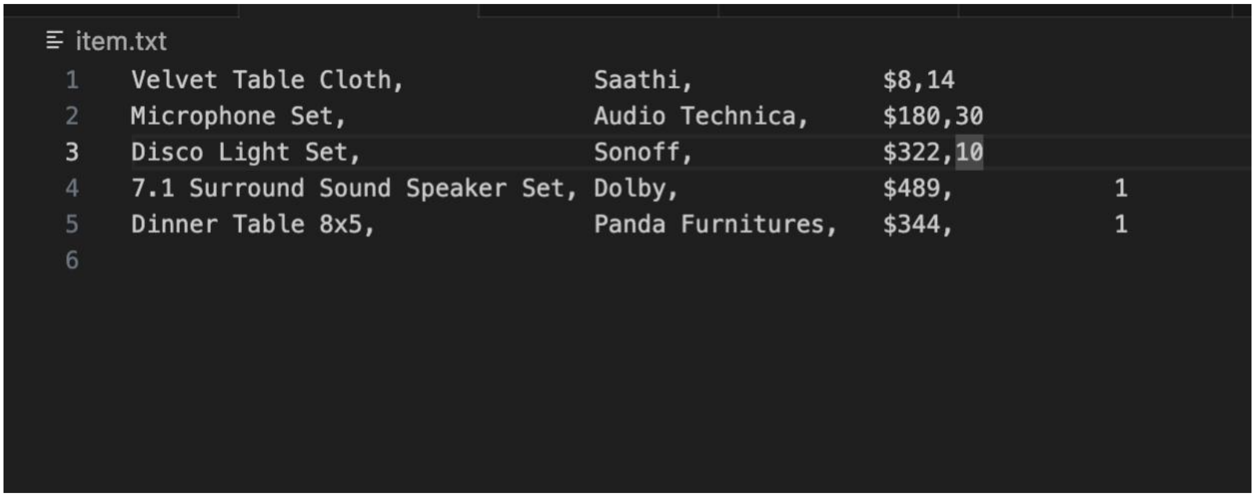
Objective	To check if the quantity of the items in the text file is decreasing and increasing in the process of renting and returning respectively.
Action	i. Rent 10 items of SN 1 ii. Return 10 items of SN2
Expected result	When an item is rented or returned, then the item quantity in the rental shop must decrease. Also, it must be updated in the text file.
Actual result	When an item was rented or returned, then the item quantity in the rental shop must decrease. Also, it was updated in the text file.
Conclusion	The test was successful.

Table 5: test 5



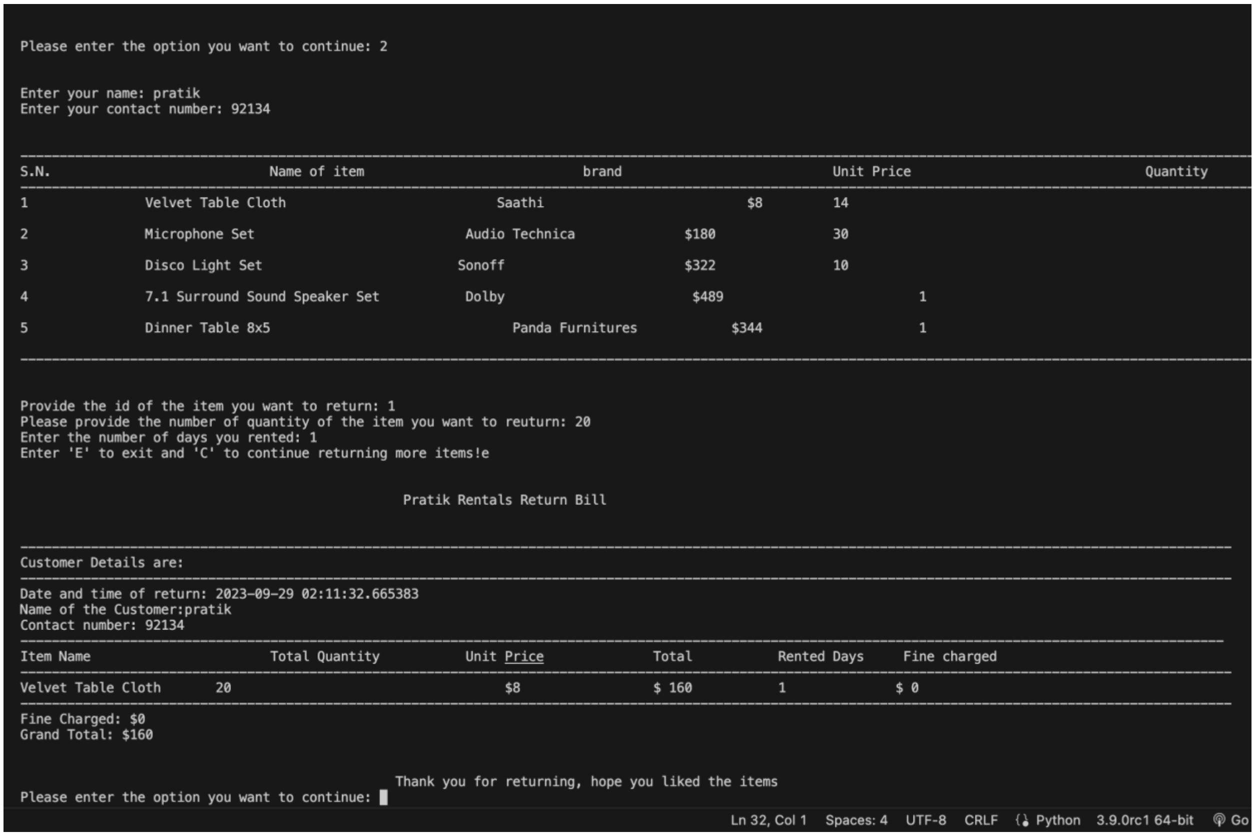
```
Please enter the option you want to continue: 1
Please enter your name: pratik
Enter your contact number: 9841270569


--------------------------------------------------------------------------------------------------------------------------------------------------------------
S.N.                    Name of item                                    brand                           Unit Price                              Quantity
--------------------------------------------------------------------------------------------------------------------------------------------------------------
1                       Velvet Table Cloth                                   Saathi                                 $8                  34

2                       Microphone Set                                   Audio Technica                     $180                30

3                       Disco Light Set                                 Sonoff                              $322                10

4                       7.1 Surround Sound Speaker Set                   Dolby                               $489                                  1

5                       Dinner Table 8x5                                       Panda Furnitures                   $344                                 1

--------------------------------------------------------------------------------------------------------------------------------------------------------------


Provide the S.N of the item that you want to rent:1
provide the quantity of the item that you want to rent: 20
Enter 'E' to exit and 'C' to continue renting more items!e



                                                 Pratik Rentals Rent Bill


------------------------------------------------------------------------------------------------------------------------------------------------------------
Customer Details:
------------------------------------------------------------------------------------------------------------------------------------------------------------
Date and time details: 2023-09-29 02:10:21.969358
Name :pratik
Contact number: 9841270569
------------------------------------------------------------------------------------------------------------------------------------------------------------


                                                Rent Detail are:
------------------------------------------------------------------------------------------------------------------------------------------------------------
Name of item                             Total Quantity                                 Unit Price                                             Total Cost
------------------------------------------------------------------------------------------------------------------------------------------------------------
Velvet Table Cloth                       20                                                  $8                                                 $ 160
------------------------------------------------------------------------------------------------------------------------------------------------------------
Grand Total: $160
------------------------------------------------------------------------------------------------------------------------------------------------------------


                                                Thank you for renting!! ;)
Please enter the option you want to continue: 
```

Figure 18: number of items before renting



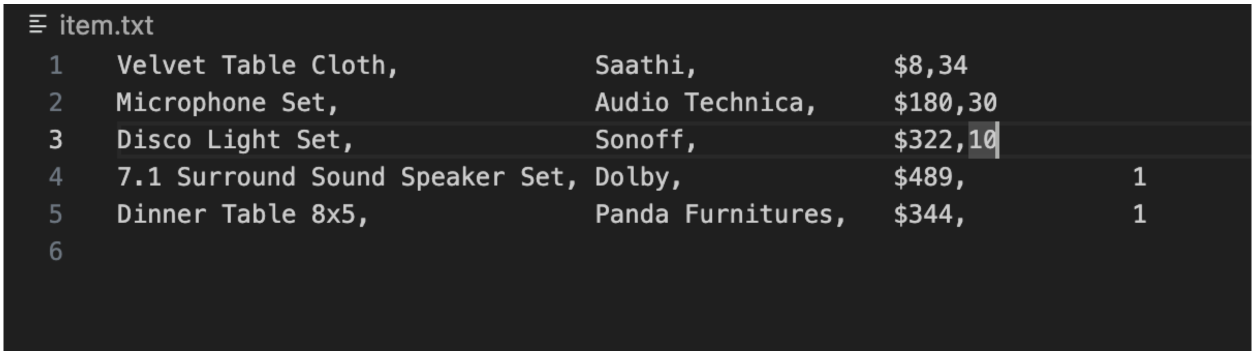
```
Velvet Table Cloth,             Saathi,             $8,14
Microphone Set,                 Audio Technica,     $180,30
Disco Light Set,                Sonoff,             $322,10
7.1 Surround Sound Speaker Set, Dolby,              $489,           1
Dinner Table 8x5,               Panda Furnitures,   $344,           1

```

Figure 19: update in text file



```
Please enter the option you want to continue: 2


Enter your name: pratik
Enter your contact number: 92134


---------------------------------------------------------------------------------------------------------------------------------------------------------------
S.N.                            Name of item                            brand                           Unit Price                              Quantity
---------------------------------------------------------------------------------------------------------------------------------------------------------------
1               Velvet Table Cloth                           Saathi                          $8          14

2               Microphone Set                           Audio Technica              $180            30

3               Disco Light Set                         Sonoff                      $322            10

4               7.1 Surround Sound Speaker Set           Dolby                        $489                      1

5               Dinner Table 8x5                              Panda Furnitures            $344                      1

---------------------------------------------------------------------------------------------------------------------------------------------------------------


Provide the id of the item you want to return: 1
Please provide the number of quantity of the item you want to reuturn: 20
Enter the number of days you rented: 1
Enter 'E' to exit and 'C' to continue returning more items!e


                                                 Pratik Rentals Return Bill


-----------------------------------------------------------------------------------------------------------------------------------------------------------
Customer Details are:
-----------------------------------------------------------------------------------------------------------------------------------------------------------
Date and time of return: 2023-09-29 02:11:32.665383
Name of the Customer:pratik
Contact number: 92134
----------------------------------------------------------------------------------------------------------------------------------------------------------
Item Name                       Total Quantity           Unit Price              Total           Rented Days     Fine charged
-----------------------------------------------------------------------------------------------------------------------------------------------------------
Velvet Table Cloth       20                                    $8                $ 160           1               $ 0
-----------------------------------------------------------------------------------------------------------------------------------------------------------
Fine Charged: $0
Grand Total: $160


                                                Thank you for returning, hope you liked the items
Please enter the option you want to continue: 
```

Figure 20: increase after the item is returned



```
Velvet Table Cloth,             Saathi,             $8,34
Microphone Set,                 Audio Technica,     $180,30
Disco Light Set,                Sonoff,             $322,10
7.1 Surround Sound Speaker Set, Dolby,              $489,           1
Dinner Table 8x5,               Panda Furnitures,   $344,           1

```

Figure 21: update in the text file

8. Conclusion

Using Python, I successfully developed a system that efficiently handles customer and equipment rentals for an event equipment rental business. This application allows us to integrate various data formats, manage files, validate user inputs, and create invoices, meeting all the requirements outlined in our assignment.

This project has provided me with valuable insights into Python's data structures. To effectively manage customer transactions and equipment data, we opted for a dictionary list. This feature simplifies data manipulation and retrieval, enhancing the program's efficiency and ease of maintenance. It also enables us to easily update equipment inventory levels and generate invoices for each transaction.

By integrating the processes of equipment rental, returns, data reading, and bill generation, the system becomes more organized and adaptable for future enhancements. Additionally, we've implemented error-handling strategies to dynamically handle unusual inputs, improving the user experience and preventing crashes.

9. APPENDICES

```
#main file
from operation import *
from read import *          #importing from different files
from write import*


print("\n")
print("\n")
print("\t \t \t \t \t \t\t Pratik Rentals")
print("\t\t\t\t\t------------------------------------------")
print("\t \t \t \t \t |Swoyambhu, kathmandu | Phone No:9841270569 ")
print("------------------------------------------------------------------------------------------------------------------------")
print("\t \t \t \t Welcome to the Pratik rentals! I hope you have a good day ahead!")
print("------------------------------------------------------------------------------------------------------------------------")
print("Below there are three options,  please choose any one to continue.")
print("------------------------------------------------------------------------------------------------------------------------")
print("Press 1 to rent items")
print("Press 2 to return")
print("Press 3 to exit the store")
print("------------------------------------------------------------------------------------------------------------------------")
print("\n")


loop=True
while (loop==True):
    Input_user= (input("Please enter the option you want to continue: "))          #takes the input from the user to continue
    if Input_user=="1":


        name, contact_Number, items_purchased, date_time, grand_Total = function_for_rent()
        bill_for_renting(name, contact_Number, items_purchased,date_time, grand_Total)
        print("\n")
        print("\t\t\t\t\t\tThank you for renting!! ;)")


    elif Input_user=="2":
        name, contact_Number,items_purchased, date_time,grand_Total,fine,total_fine=function_for_returning()
        bill_for_returning(name, contact_Number,items_purchased, date_time,grand_Total,fine,total_fine)
        print("\n")
        print("\t\t\t\t\t\tThank you for returning, hope you liked the items")


    elif Input_user=="3":    #ends the loop
        print("\t\t\t\t\t\tThank you for visiting our store! hope to see you soon!")
        loop=False


    else:
        print("Invaid option, Please select a valid option!!")
```

```
#read file
from operation import *         #importing from operation
def funtion_for_read():
    file=open('item.txt','r')
    item_id=1         #openes the file items.txt in read mode
    my_Dict={}                    #Intializing a dictionary my_Dict

    for line in file:
     line=line.replace('\n','')
     my_Dict[item_id]=line.split(',')
     item_id=item_id+1

    file.close()
    return my_Dict
```

```
#write file
from operation import *
from datetime import datetime                    #importing required files

def bill_for_returning(name, contact_Number,items_purchased, date_time,grand_Total,fine, total_fine):
   print("\n")
   print("\t \t \t \t \t \t Pratik Rentals Return Bill ")
   print("\n")
   print("---------------------------------------------------------------------------------------------------------------------------------------------------------------")
   print("Customer Details are:")
   print("---------------------------------------------------------------------------------------------------------------------------------------------------------------")
   print("Date and time of return: "+str(date_time))
   print("Name of the Customer:"+str(name))
   print("Contact number: "+str(contact_Number))
   print("--------------------------------------------------------------------------------------------------------------------------------------------------------------")
   print("Item Name \t\t\tTotal Quantity \t\t Unit Price \t\t Total \t\t Rented Days \t Fine charged")
   print("---------------------------------------------------------------------------------------------------------------------------------------------------------------")
   for j in items_purchased:
      print(j[0],"\t",j[1],"\t\t\t",j[2],"\t\t","$",j[3],"\t\t",j[4],"\t\t$",j[5])
   print("---------------------------------------------------------------------------------------------------------------------------------------------------------------")
   print("Fine Charged: $"+str(total_fine))
   print("Grand Total: $"+str(grand_Total))
```

```
    file= open(str(name)+str(contact_Number)+".txt","w")
    file.write("\t \t \t \t \tPratik Rentals Bill ")
    file.write("\n")
    file.write("-------------------------------------------------------------------------------------------------
------------------------------------------------")
    file.write("\n")
    file.write("Customer Details are:")
    file.write("\n")
    file.write("-------------------------------------------------------------------------------------------------
--------------------------------------------------")
    file.write("\n")
    file.write("Date and time of return: "+str(date_time))
    file.write("\n")
    file.write("Name of the Customer:"+str(name))
    file.write("\n")
    file.write("Contact Number: "+str(contact_Number))
    file.write("\n")
    file.write("-------------------------------------------------------------------------------------------------
------------------------------------------------")
    file.write("\n")
    file.write("Return Detail are:")
    file.write("\n")
    file.write("-------------------------------------------------------------------------------------------------
---------------------------------------------------")
    file.write("Name of Item\t\t\t\t\t\t\t\tQuantity\t\t\t\tUnit Price\t\t\t\tTotal Price\t\t\t\tRented
Days\t\t\t\t\tTotal Fine")
    file.write("-------------------------------------------------------------------------------------------------
-------------------------------------------------")
    file.write("\n")
    for j in items_purchased:
```

```
file.write(str(j[0])+"\t\t\t"+str(j[1])+"\t\t\t\t\t\t\t\t"+str(j[2])+"\t\t\t\t\t"+"$"+str(j[3])+"\t\t\t\t\t\t"+st
r(j[4])+"\t\t\t\t\t\t$"+str(j[5]))
        file.write("\n")
    file.write("--------------------------------------------------------------------------------------------------
------------------------------------------------")
    file.write("\n")
    file.write("Total fine : $"+str(total_fine))
    file.write("\n")
    file.write("Grand total: $"+str(grand_Total))
    file.close()
    more=False


def bill_for_renting(name, contact_Number, items_purchased,date_time, grand_Total):
    print("\n")
    print("\t \t \t \t \t \t Pratik Rentals Rent Bill ")
    print("\n")
    print("-------------------------------------------------------------------------------------------------------
--------------------------------------------------")
    print("Customer Details:")
    print("-------------------------------------------------------------------------------------------------------
--------------------------------------------------")
    print("Date and time details: "+str(date_time))
    print("Name :"+str(name))
    print("Contact number: "+str(contact_Number))
    print("-------------------------------------------------------------------------------------------------------
--------------------------------------------------")
    print("\n")
    print("\t\t\t\t\t\tRent Detail are:")
    print("-------------------------------------------------------------------------------------------------------
--------------------------------------------------")
```

```
    print("Name of item \t\t\t\t Total Quantity \t\t\t\t Unit Price \t\t\t\t\tTotal Cost")
    print("--------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------")
    for j in items_purchased:
        print(j[0],"\t\t\t",j[1],"\t\t\t\t\t",j[2],"\t\t\t\t\t","$",j[3])
    print("--------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------")
    print("Grand total: $"+str(grand_Total))
    print("--------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------")
    file= open(str(name)+str(contact_Number)+".txt","w")
    file.write("\n")
    file.write("\t \t \t \t \t \tPratik Rentals Rent Bill ")
    file.write("\n")
    file.write("--------------------------------------------------------------------------------------------------------------
-------------------------------------------------------")
    file.write("Customer Details:")
    file.write("--------------------------------------------------------------------------------------------------------------
-------------------------------------------------------")
    file.write("\n")
    file.write("Date and time details: "+str(date_time))
    file.write("\n")
    file.write("Name of the Customer:"+str(name))
    file.write("\n")
    file.write("Contact number: "+str(contact_Number))
    file.write("\n")
    file.write("--------------------------------------------------------------------------------------------------------------
------------------------------------------------------")
    file.write("\n")
    file.write("Rent Detail:")
    file.write("\n")
    file.write("-----------------------------------------------------------------------------------------------------------------------------------------------------")
    file.write(" Name of Item \t\t\t\t Total Quantity \t Unit Price \t\tTotal")
    file.write("-----------------------------------------------------------------------------------------------------------------------------------------------------")
    file.write("\n")
    for j in items_purchased:
        file.write(str(j[0])+"\t"+str(j[1])+"\t\t\t"+str(j[2])+"\t\t\t\t"+"$"+str(j[3]))
        file.write("\n")
    file.write("\n")
    file.write("------------------------------------------------------------------------------------------------------------------------------------------------------")
    file.write("\n")
    file.write("Grand Total: $"+str(grand_Total))
    file.write("\n")
    file.close()
    more=False
```

```
#operation file

from read import*
from datetime import datetime

def function_for_returning():

    my_Dict=funtion_for_read()
    items_purchased=[]
    date_time = None
    days_rented=0
    contact_Number=None
    fine=0
    grand_Total=0
    total_fine=0

    print("\n")
    name=input("Enter your name: ")
    while True:
        try:
            contact_Number=int(input("Enter your contact number: "))
            if isinstance(contact_Number, str):
                raise ValueError
            else:
                break
        except ValueError:
            print("Invalid contact number !! Please provide a valid number. ")
    print("\n")
    print("------------------------------------------------------------------------------------------------------------------------------------------------------")
    print("S.N. \t\t\t\tName of item \t\t\t\tbrand\t\t \t\tUnit Price\t \t\t\tQuantity")
    print("------------------------------------------------------------------------------------------------------------------------------------------------------")

    file= open(str(name)+str(contact_Number)+".txt","w")
    file=open("item.txt","r")
    sn=1
    for line in file:
        print(sn,"\t\t"+line.replace(",","\t\t"))
        sn=sn+1
    file.close()
    print("------------------------------------------------------------------------------------------------------------------------------------------------------")
    print("\n")

    more=True
    while more:
        while True:
            try:
                id_Item= int(input("Provide the id of the item you want to return: "))

                if id_Item<=0 or id_Item>len(my_Dict):
                    raise ValueError
                else:
                    while True:
                        try:
                            quantity_item= int(input("Please provide the number of quantity of the
item you want to reuturn: "))


                            if quantity_item<=0 or quantity_item > 100:
                                raise ValueError
                            else:
                                my_Dict[id_Item][3]= int (my_Dict[id_Item][3])+int(quantity_item)
                                file=open("item.txt","w")
                                for values in my_Dict.values():

file.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
                                    file.write("\n")
                                file.close()


                                brand_Name=my_Dict[id_Item][0]
                                quantity_selected= quantity_item
                                unit_price= my_Dict[id_Item][2]
                                price_selected= my_Dict[id_Item][2].replace("$",'')
                                total_Price=int(price_selected)*int(quantity_selected)
                                unit_priceInt=int(unit_price.replace("$",''))


                                while True:
                                    try:
                                        days_rented=int(input("Enter the number of days you rented:
"))
                                        if days_rented<1:
                                            raise ValueError
                                        else:
```

```
if days_rented<=5:
    fine=0
elif days_rented%5!=0:
    fineday=(((int(days_rented//5)+1)*5)-5)*quantity_item
    fine=int((fineday/5))*int(unit_priceInt)
else:
    fine=(days_rented-5)*int(unit_priceInt)
total_fine=total_fine+fine
items_purchased.append([brand_Name, quantity_selected, unit_price, total_Price,days_rented,fine,total_fine])#adds to the list

rent_exit= input("Enter 'E' to exit and 'C' to continue returning more items!").upper()

if rent_exit=="C":
    print("\n")
    more=True
else:
    more=False

grand_Total=0
if rent_exit=="Y":
    more=True
else:
    total=0
    for i in items_purchased:
        total=total+int(i[3])
    grand_Total= total+total_fine
    date_time = datetime.now()
```

```
                                            break
                                    except ValueError:
                                        print("Enter valid number of days.")
                                        print("\n")
                            break
                        except ValueError:
                            print("Invalid quantity!! Please enter a valid quantity.")
                            print("\n")
                break
            except ValueError:
                print("Invalid ID!! Please enter a valid ID. ")

    return name, contact_Number, items_purchased, date_time, grand_Total,
fine,total_fine



def function_for_rent():
    my_Dict=funtion_for_read()
    items_purchased=[]
    date_time = None

    name=input("Please enter your name: ")

    while True:
        try:
            contact_Number=int(input("Enter your contact number: "))
            if isinstance(contact_Number, str)or contact_Number<=0:
                raise ValueError
            else:
                break
        except ValueError:
            print("Please enter a valid number")


    print("\n")
    print("---------------------------------------------------------------------------------------------------
--------------------------------------------------")
    print("S.N. \t\t\tName of item\t \t\t\t\tbrand\t\t \t\tUnit Price\t \t\t\tQuantity")
    print("---------------------------------------------------------------------------------------------------
--------------------------------------------------")


    file=open("item.txt","r")
    sn=1
    for line in file:
        print(sn,"\t\t\t"+line.replace(",","\t\t\t"))
        sn=sn+1
    file.close()
    print("---------------------------------------------------------------------------------------------------
--------------------------------------------------")
    print("\n")
    more=True
    while more:
        while True:
            try:
                id_Item= int(input("Provide the S.N of the item that you want to rent:"))
                if (id_Item<=0 or id_Item>len(my_Dict)):
                    raise ValueError
                else:
                    while True:
                        try:
                            quantity_item= int(input("provide the quantity of the item that you want to rent: "))

                            quantity_selected= my_Dict[id_Item][3]

                            if quantity_item<=0 or quantity_item > int(quantity_selected):
                                raise ValueError
                            else:
                                my_Dict[id_Item][3]= int (my_Dict[id_Item][3])-int(quantity_item)
                                file=open("item.txt","w")

                                for values in my_Dict.values():
file.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
                                    file.write("\n")

                                file.close()

                                rent_exit= input("Enter 'E' to exit and 'C' to continue renting more items!").upper()

                                if rent_exit=="C":
                                    more=True
                                else:
                                    more=False



                                brand_Name=my_Dict[id_Item][0]
                                quantity_selected= quantity_item
                                unit_price= my_Dict[id_Item][2]
                                price_selected= my_Dict[id_Item][2].replace("$",'')
                                total_Price=int(price_selected)*int(quantity_selected)
                                items_purchased.append([brand_Name, quantity_selected, unit_price, total_Price])
                                print("\n")


                                grand_Total=0
                                if rent_exit=="Y":
                                    more=True
                                else:
                                    total=0
                                    for i in items_purchased:
                                        total=total+int(i[3])
                                    grand_Total= total
                                    date_time = datetime.now()
                            break


                        except ValueError:
                            print("Please enter a valid quantity!")
                break


            except ValueError:
                print("Invalid ID!! please enter valid id. ")


    return name, contact_Number, items_purchased, date_time, grand_Total
```