CS4051NI Fundamentals of Computing

60% Individual Coursework

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I confirm that I understand my coursework needs to be submitted online via MySecondTeacher under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

Table of Contents

Table of Figure

1.Introduction

Computer languages have so far been of the ‘interpreted’ or the ‘compiled’ type. Compiled languages (like ‘C’) have been more common. A program is created, debugged, saved, and called for execution when necessary. The compiler compiles the entire program before it runs. When you issue a command in an interpreted version (such as basic), it is executed immediately (Dawson, 2010).

Python is a two-form language that operates mostly in interpreter mode. Written and operational “modules” and “functions” can be called upon to join the interpreted sequence as needed. One of the simplest yet powerful uses of Python is to do calculations just like a calculator. The major goal of any programming language is to bridge the gap between the programmer’s brain and the computer which is the reason for python to get so popular now a days.

Python has all the power you’d expect from a modern programming language. It is also powerful enough to attract developers from around the world as well as different companies around the globe. Companies like Google, IBM, Industrial Light + Magic, Microsoft, NASA, Red Hat, Verizon, Xerox, and Yahoo etc. Has adapted the python language in their software’s. Python can be also used as a tool by professional game programmers. Here are also very popular companies like Electronic Arts, 2K Games, and the Disney Interactive Media Group all publish games that incorporate Python language in it (Padmanabhan, 2016).

Python can be integrated with other languages such as C, C++ and java. This means that a programmer can take full advantage of work which is already done in another language while they are using python.

Moreover, Python is free we can install it on our computer and never pay a penny.

1.2 Integrated Development and Learning Environment (IDLE)

An Integrated Development and Learning Environment, sometimes abbreviated as IDLE or even IDE, is inclined with every Python installation. These are a group of programs designed to make code writing more productive. Although there are a lot of IDEs available, Python DLE is the most basic, making it an ideal tool for a beginner coder (Neary, 2012-2024).
For Windows and Mac its installation contains python IDLE. If anyone uses Linux, they should be able to utilize their package manager to locate and download Python IDLE. After installation, Python IDLE can be used as a file editor pr as an interactive interpreter (foundation, 2001-2024).

The interactive interpreter, sometimes referred to as a shell, is the ideal location to experiment with python code. A simple (REPL) meaning Read Eval Print Loop is used in the shell. It reads a Python command, assesses the outcome, and outputs the outcome to the screen. It then goes back to reading the following statement. A great area to explore with short code snippets is the python shell. It is accessible via your computer's terminal or command line application. Python's IDLE which launches as Python shell right away when you open it, helps to streamline your workflow.

IDLE is an editor of files text files must be editable and able to be saved by any programmer. Because of Idle every programmer needs to be able to edit and save there python program text files.

2.Algorithm

The essential blocks of computer science and programming are algorithms. They are crucial in domains like business and mathematics because they offer a methodical approach to solving challenging issues. An algorithm is a collection of instructions designed to solve a particular problem or complete a certain activity. It is the systematic approach of solving challenging issues. It is the methodical process of organizing problem- solving techniques to achieve desired results. They can be stated in a variety of ways some people write them in a natural language and some may write them in pseudocode format or actual programming coded format. Algorithm includes step by step approach to solve the problems; the algorithm must end at some point they cannot run endlessly into an infinite loop (Gillis, 1999-2024).

Step by Step process is given below:

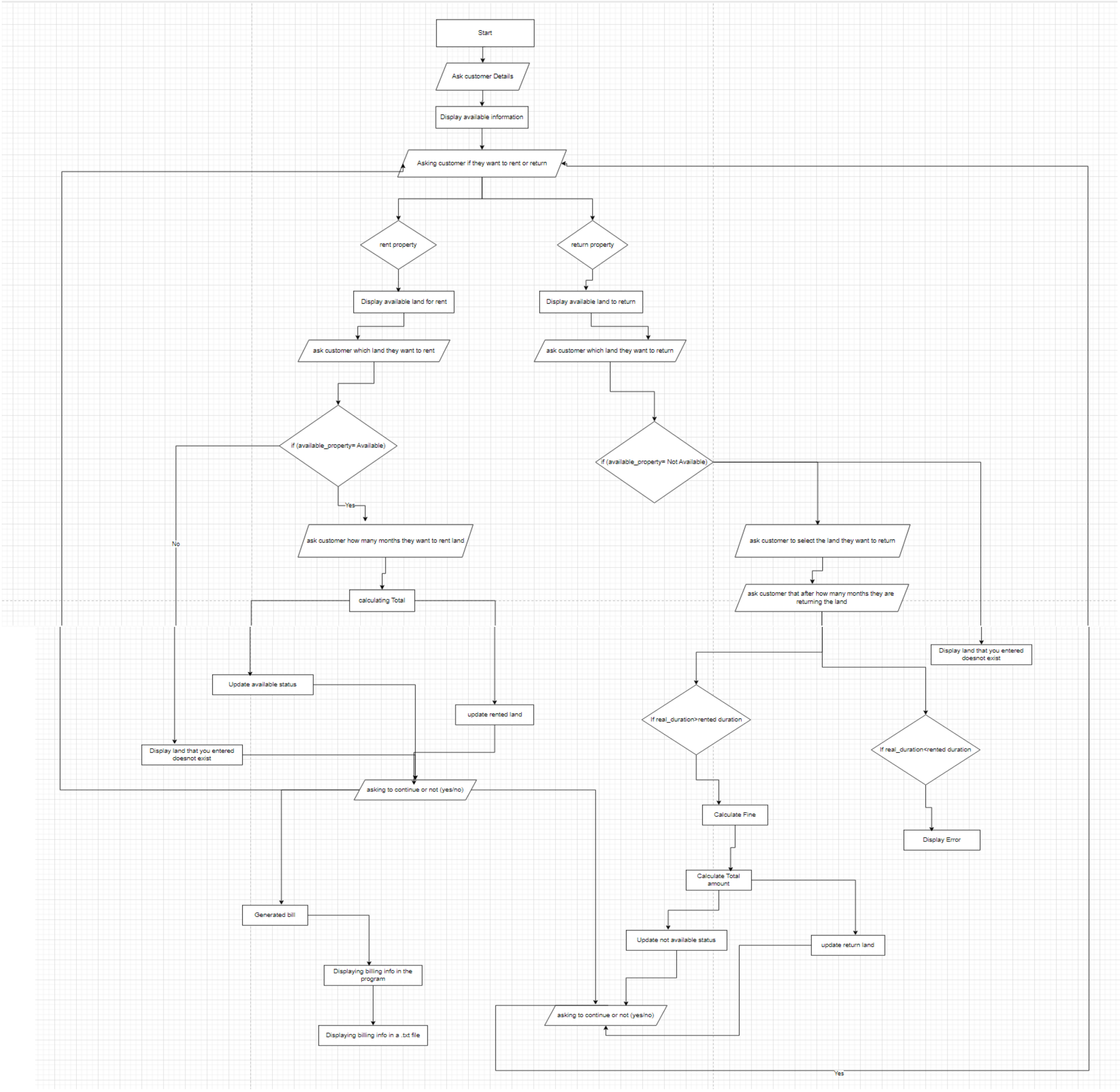
- Step 1: Start
- Step 2: importing all the required modules
- Step 3: define function in our case its hero
- Step 4: display a series of new line character
- Step 5: input customer name, address, phone number convert it to uppercase using the upper method
- Step 6: display horizontal line to make our output better
- Step 7: display company name, string, address, email, contact information
- Step 8: display horizontal line to make our output better
- Step 9: display data in header including
    - Kitta, city, direction, anna, price, availability (according to the question)
- Step 10: display horizontal line
- Step 11: create a dictionary named dic to store property details
- Step 12: input all the custom land information in dictionary dic
- Step 13: for each key value pair in dictionary iterate over
- Step 14: Display kitta number including its details in a proper format
- Step 15: display horizontal line
- Step 17: display message to customer to ask them to rent or return
- Step 18: create empty dictionary named to_rent_lands
- Step 19: create empty dictionary named to_return_lands
- Step 20: initialize Boolean variable next to true
- Step 21: start while loop as long as next is true
    - Ask the user what action they want to perform
    - Read user input and convert it into lowercase using .lower method
- Step 22: try:

    - If user input is none i:e final_choice is none then display What do you want to do, rent or return?
    - If reason is rent then call function to_rent_lands and display dic dictionary
    - If reason is return then call function to_return_lands and display dic dictionary
  - Else
      - Invalid input!
  - Except
    - Catch exception if user enters values other then rent and return and shows error
- Step 23: if while is true
  - Try
    - Ans= input would you like to continue (yes/no)
- Step 24: if condition entered by user is not yes then loop stops
  - If condition entered by is yes then shows the according dictionary
- Step 26: If and elif condition to check if user entered words other then yes or no
- Step 27: Displays error according to step 24
- Step 28: display company information as header including company name, address,contact, email address
- Step 29: generate date and time form date and time module
- Step 30: display current date and time
- Step 31: generate bill with rent land or returned land
- Step 32: display customer information after generating bill
- Step 33: define function write file. This function generate bill according to user choices in txt format in the folder that we have the hero.py file
- Step 34: display Above is the invoice for the land(s) you recently inquired about.
- Step 35: read file named land_details.txt
- Step 36: check if current module is main module (hero)
  - Write hero() to Run display module
- Step 37: End

(python with mosh, 2024)

3. Flow Chart

An algorithm is diagrammatically represented by a flow chart. Creating a flow chart begins with a symbol that denotes the process starts. Creating flow charts before writing actual code had several benefits. Initially, they offer a visual depiction of the procedure that simplifies intricate algorithms for comprehension. They play a crucial role in ensuring that non-IT team members are properly informed about what is happening with the code. Moreover, flow charts serv as useful documentation tools and programmer reference materials.



Start
Ask customer Details
Display available information
Asking customer if they want to rent or return
rent property
return property
Display available land for rent
Display available land to return
ask customer which land they want to rent
ask customer which land they want to return
if (available_property= Available)
if (available_property= Not Available)
Yes
No
ask customer how many months they want to rent land
ask customer to select the land they want to return
ask customer that after how many months they are returning the land
calculating Total
Display land that you entered doesnot exist
Update available status
update rented land
If real_duration>rented duration
If real_duration<rented duration
Display land that you entered doesnot exist
asking to continue or not (yes/no)
Calculate Fine
Display Error
Calculate Total amount
Generated bill
Update not available status
update return land
Displaying billing info in the program
asking to continue or not (yes/no)
Displaying billing info in a .txt file
Yes

4. Pseudocode

4.1 Hero.py

```
IMPORT the datetime module
IMPORT the functions from process module
IMPORT the functions from read
IMPORT the functions from write module

DEFINE a function that makes the user to input their name contact and address and
    displays heading information about the company
    INPUT name of customer
    INPUT address of customer
    INPUT contact number of customer

    PRINT WELCOME!!!
    PRINT Techno Property Nepal
    PRINT Location: Kathmandu, Nepal
    PRINT Address: Kathmandu, Nepal
    PRINT Contact No: 071-59999"
    PRINT Email:NepalTechnoProperty12@gmail.com
    PRINT ------------------------------------------------------------------------------------------
    PRINT Kitta     |   City          |Direction    | Anna    | Price   | Availability
    PRINT ------------------------------------------------------------------------------------------

    DEFINE a dictionary dic containing custom information about property
        FOR key and value in dictionary
            PRINT each value of string using F string formatting
                -   Print kitta, city , direction, anna, price, availability in a
                    specific order
        END loop
    PRINT ------------------------------------------------------------------------------------------
    PRINT To rent a land, Please input 'rent

    PRINT To return a land, please input'return

   INITIALIZE empty dictionaries to store rented and returned lands

   INITIALIZE to_rent_lands as an empty dictionary

   INITIALIZE to_return_lands as an empty dictionary

   INITIALIZE Loop to handle user interactions

   INITIALIZE a variable for the first choice as next
```

```
        INITIALIZE a variable for the last choice as final_choice

WHILE next
        IF final_choice is none meaning user input is none then display What do you
want to  do, rent or return?
            TRY:
                IF customer reason is rent
                    CALL function to_rent_lands to display rent information
                        ELIF customer reason is return
                CALL function to_return_lands to display return information

                        ELSE
                            PRINT Your input is invalid
                EXCEPT
                        PRINT Error
 WHILE true:
        TRY :
            User input is yes display message would you like to continue (yes/no)
            IF ans user input is yes display dictionary related to the above input\
             BREAK
           ELIF and user input is no break the loop
             BREAK
            ELSE
                PRINT please enter yes or no
            EXCEPT
                PRINT an error occurred

    IF User input is rent or return check it and displays the bill accordingly
        TRY:
                PRINT Techno Property Nepal
                PRINT Location: Kathmandu, Nepal
                PRINT Address: Kathmandu, Nepal
                PRINT Contact No: 071-59999"
                PRINT Email:NepalTechnoProperty12@gmail.com
                GENERATE year from date and time module
                GENERATE month form date and time module
                GENERATE day from date and time module
                GENERATE hour from date and time module
                PRINT Date: ", year, "/", month, "/", day,"/", hour "
                CALL generate_bill function which displays (to_rent_lands
                , to_return_lands)

                    PRINT bill ID
                    PRINT customer name for bill
                    PRINT Address of customer
        **PRINT** Customer contact
        **FUNCTION** create file using  name, address, contact ,
        to_rent_lands,  to_return_lands
        **PRINT** Above is the invoice for the land(s) you recently
        inquired about
        **EXCEPT:**
              **PRINT** an error occurred
        **ELSE:**
               **PRINT** No lands have been rented or returned, so no
               bill is generated
        **READ** land_dic_details.txt
**RUN** display function hero()
```

4.2 process.py

```
IMPORT the datetime module

DEFINE for_rent_land function with lands and to_rent_lands paremeter
    INITALIZE a variable named available_property to filter available lands

    FOR a, b in lands
        IF availability is true
            SHOW keys of land whose availability is available
            DISPLAY available_property
            PRINT which land are u interested in? and provided a input ans
        IF user chooses the property make the user input the duration
            PRINT How long do you want to rent the land in months
        EXCEPT
            PRINT Please enter valid duration in months
        ELSE
            PRINT Kitta number that you have entered is not available or does
            not exist")

DEFINE for_return_land function with lands and to_return_lands paremeter

    FOR a, b in lands
        IF availability is false
            SHOW keys of land whose availability is Not Available
            DISPLAY to_rent_lands
                PRINT Do you remember which land did u rent?and
            provided a input ans

        IF land choosed  by user in to_return_lands  function

            PRINT Could you please specify the months you rented the land for

        EXCEPT
            PRINT Please enter valid duration in months
        ELSE
            PRINT Kitta number that you have entered is not available or does
            not exist")
            INPUT ask customer tell the time they rented land
            IF real_duration > duration
            TRY:

                CALCULATE  land returned time = real_duration – duration
                INPUT cost of land per month
                CALCULATE totalcost landreturned * costpermonth

            IF returned duration is more than time they rented land
```

```
                CALCULATE fine_per_month = 0.15 * per_month_cost
                CALCULATE total  = finepermonth * back
                UPDATE totalcost

                PRINT  You  must pay a fine for each month you have exceeded: NPR
                PRINT Total cost for renting kitta {ans} with/without fine is: NPR
                UPDATE to_return_lands dictionary using key
                ASSIGN city of land to key city
                ASSIGN rental_cost of land to key
                ASSIGN duration of land to key price
                ASSIGN fine of to key  fine
                ASSIGN price of land to key price
                ASSIGN cost of land to key total
                ASSIGN totalcost of land to key totalcost
            EXCEPT value error:
                PRINT Invalid input. Please enter valid duration in months

            ELSE:
                PRINT The kitta number you entered is not rented or does not exist.




DEFINE display function to display the lands details
        PRINT -----------------------------------------------------------------
        PRINT Kitta\t|\t\tCity\t|\t\t\tDirection\t|\tAnna\t|\t\tPrice\t|\t\tAvailability")
        PRINT-------------------------------------------------------------------------
        FOR key and value in lands
            PRINT each value of a, b string using F string formatting.
            PRINT----------------------------------------------------------------------
```

```
DEFINE generatebill function with for_rent_landand and to_return_lands as paremeter
    INITALIZE total = 0
    PRINT ---------------------------------------------------------------------------------
    PRINT Kitta | City | Price | Status | duration | Cost
    PRINT ---------------------------------------------------------------------------------

    FOR a and b in for_rent_land
        UPDATE duration from directory
        UPDATE cost form directory
        UPDATE totalcost
        PRINT each value of string using F string formatting
             Print city, price, rented , duration, cost with specific order

    FOR a and b in for_return_lands
        UPDATE duration from directory
        UPDATE rentalcost form directory
        UPDATE fine
        CALCULATE returncost= rentcost+ fine
        UPDATE total += returncost
            PRINT each value of string using f string formatting city, price,
            rented, duration,rentcost with specific order

            PRINT Fine =by calculating it
            PRINT Total = by calculating it

    RETURN total
```

4.3 write.py

```
IMPORT datetime module


DEFINE for_writting_bill function with name, address, contact, to_rent_lands, to_return_lands   paremeters


    INITALIZE date with datetime module
    UPDATE year
    UPDATE month
    UPDATE day
    UPDATE hour
    UPDATE minute

    UPDATE id_ = year,month,day,hour,minute

    GENERATE filen_ame = name entered by user, id_ into .txt

    OPEN file_name  as w file



        WRITE Techno Property Nepal
                  Address: Kathmandu, Nepal
                  Email: NepalTechnoProperty12@gmail.com



        WRITE bill id
        WRITE Customer Name
        WRITE Customer address
        WRITE Customer contact

        INITALIZE total = 0
```

```
WRITE Kitta | City | Price | Status | duration | Cost
FOR a and b in to_rent_lands
        UPDATE duration from directory
        UPDATE cost form directory
        UPDATE total
        WRITE each value of string using F string formatting
                Print City, Price, Rented , duration, Cost with specific order



FOR a and b in to_return_lands
        UPDATE duration from directory
        UPDATE rent_cost form directory
        UPDATE fine from directory
        CALCULATE rentcost = rentalcost + fine
        UPDATE total
        WRITE each value of string using F string formatting
         Print city, price, rented , duration, returned cost with specific order
         WRITE -----------------------------------------------------------
        WRITE calculated fine

        WRITE calculated total
        WRITE -----------------------------------------------------------
```

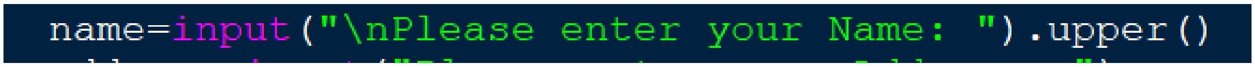
4.3 read.py

```
DEFINE for_writting_file function with filename and lands as parameters
    OPEN filename.txt as file

        WRITE  Kitta |City | Direction | Anna | Price | Availability
        WRITE --------------------------------------------------------------------------------

    FOR key and values in land
        WRITE each value of string using F string formatting
            Print kitta, city , direction, anna, price, availability with specific
            order
    END loop
```

5.Data Structure

1. **String**

   - Character sequences are called strings. In which Letters, words, numerals, and other characters are all possible. These are among the basic datatypes used in the Python programming language. They can use the str or "" keyword to initialize.



```
name=input("\nPlease enter your Name:  ").upper()
```

Figure 1 data structure

2. **Integer**

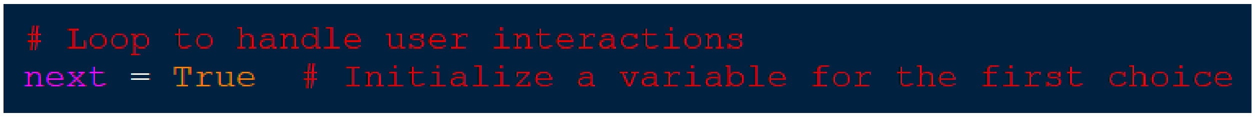
   -One of the basic datatypes in Python is an integer. All they are entire numbers. Positive or negative integers are possible. In Python, integers are mostly used for mathematical calculations. In python, an integer is denoted by int.
   Eg
   Int = 24

3. **Float**

   - Float are just decimal or fractional numbers. They exhibit greater accuracy than integers.
   Eg Float = 10.67

4. **Boolean**

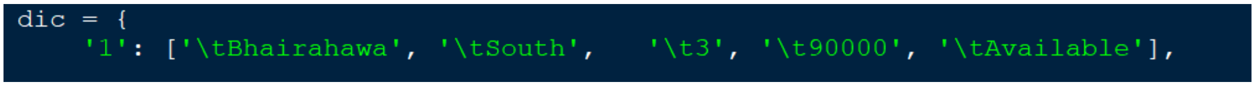
   - True or False values are Boolean. Boolean expressions are frequently used in Python programming to provide logical arguments.



```
# Loop to handle user interactions
next = True  # Initialize a variable for the first choice
```

Figure 2 boolean

5. **Dictionary**
   - A dictionary is an unordered set of keys and values that are paired with distinct keys. They can have their values altered since they are malleable dictionary keys cannot be the same if new data is input because it will be overwritten.
   Eg



```
dic = {
    '1': ['\tBhairahawa', '\tSouth',   '\t3', '\t90000', '\tAvailable'],
```

Figure 3 dictionary

6. **Tuples**
   - Lists and tuples are similar. They are ordered and indexable component, but once they are put into practice, they cannot be altered.
   Eg
   Tuples = (1.0, 9.9, 10)

7. **List**
   - Lists are structured, indexable collections of data. These are adaptable Python data structures that are frequently used to store a variety of data that may be updated, removed, or added to after they are formed.
   Eg List = [6,7,8,9,4]

6. Program

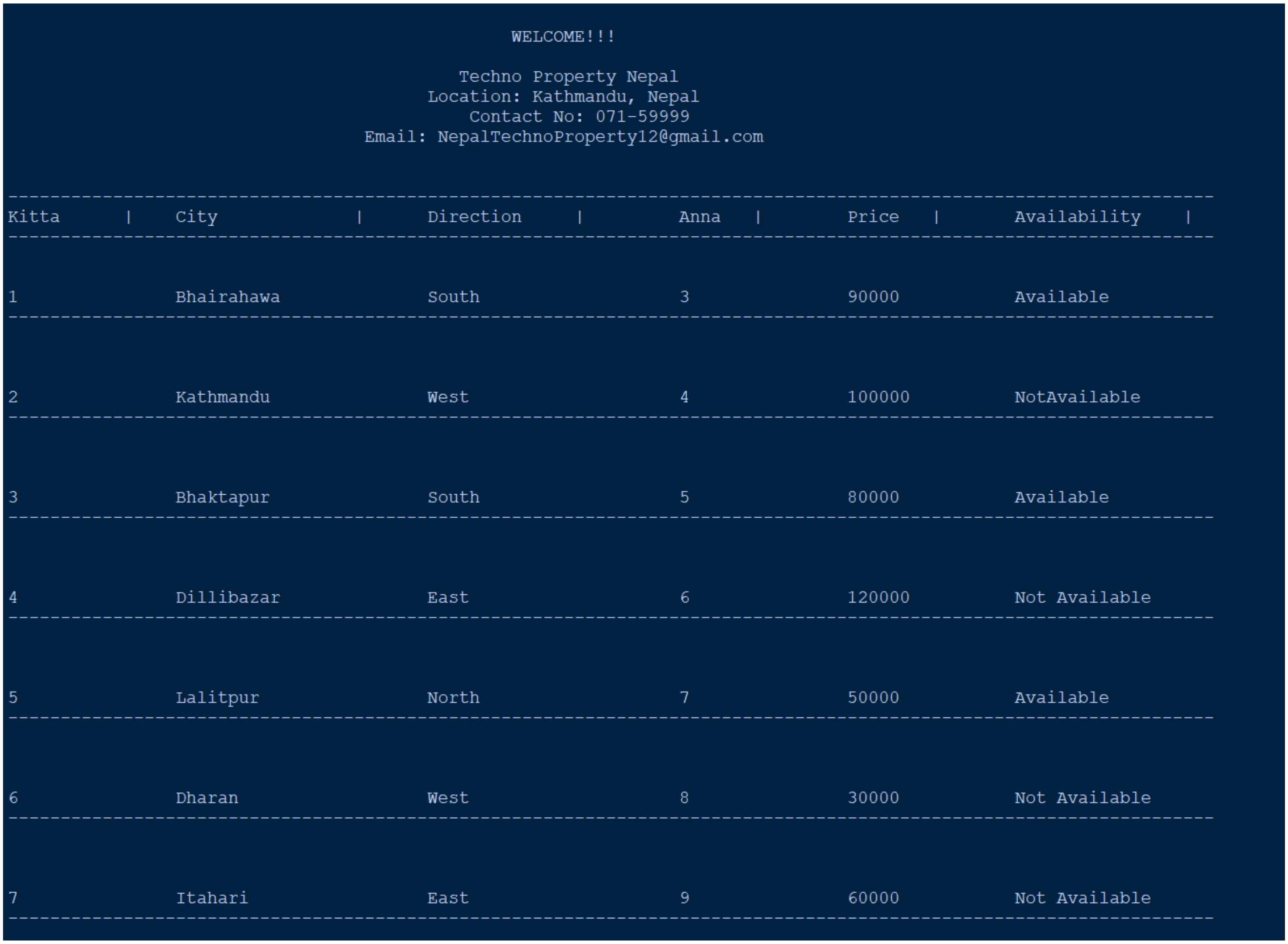
I had to write a program for a rental company that could calculate the cost of renting and returning land as part of my coursework. This program has numerous functions, each of which carries out a certain duty.

When the application is executed, it gives the user a list of all the products and prompts them to fill out some information. Once they have done so, they can select between the options for “Rent”, “Return” and company. If the user selects “rent”, the program shows all the land that is available for rent, asks the user to select the land they want to rent, and then asks the user to rent. If the consumer selects rent, the application asks them to make a bill and comes a text file as well.

The application asks the user which land they wish to return after displaying all the land that needs to be returned when the customer enters return, following the customers selection of the desired return land. The software inquires as to how long the client rented the space. Ask the consumer how many months they plan to return the land when they enter the duration program one more. The program prepares a bill and prints another bill in a txt file after it has all the information it needs to decide whether to fine the customer.

The application creates information about the company data when the customer selects it. When everything is finished the program asks the user whether they would like to end it, and if they do, the application ends.

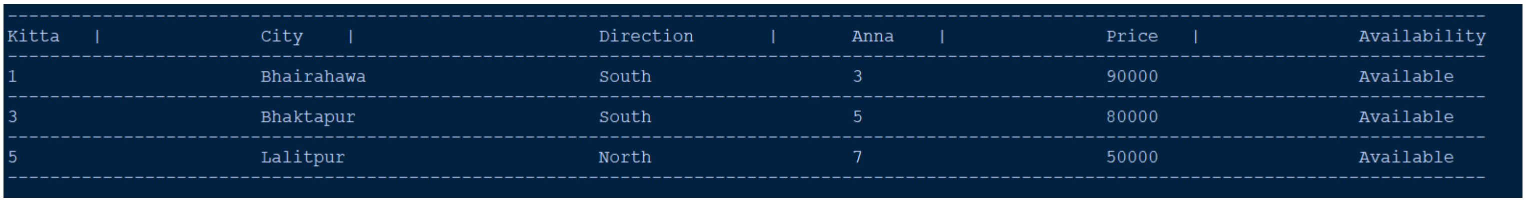
6.1 Displaying dictionary with rent and return lands both.



```
                                                WELCOME!!!

                                           Techno Property Nepal
                                        Location: Kathmandu, Nepal
                                            Contact No: 071-59999
                                  Email: NepalTechnoProperty12@gmail.com


-------------------------------------------------------------------------------------------------------------------
Kitta      |    City               |      Direction     |         Anna    |        Price    |       Availability     |
-------------------------------------------------------------------------------------------------------------------


1               Bhairahawa              South                   3               90000           Available
-------------------------------------------------------------------------------------------------------------------



2               Kathmandu               West                    4               100000          NotAvailable
-------------------------------------------------------------------------------------------------------------------



3               Bhaktapur               South                   5               80000           Available
-------------------------------------------------------------------------------------------------------------------



4               Dillibazar              East                    6               120000          Not Available
-------------------------------------------------------------------------------------------------------------------



5               Lalitpur                North                   7               50000           Available
-------------------------------------------------------------------------------------------------------------------



6               Dharan                  West                    8               30000           Not Available
-------------------------------------------------------------------------------------------------------------------



7               Itahari                 East                    9               60000           Not Available
-------------------------------------------------------------------------------------------------------------------
```

Figure 4 ***rent and return lands both***

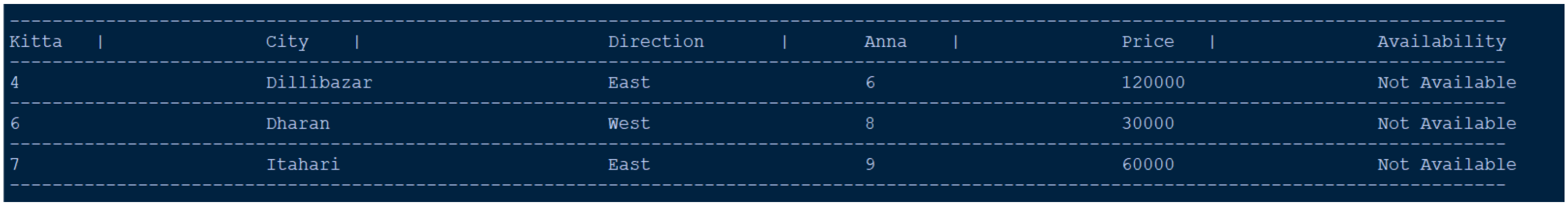
6.2 Displaying available land (for rent).



```
-----------------------------------------------------------------------------------------------------------------------------------------------
Kitta    |                City     |                         Direction         |       Anna     |                Price    |                Availability
-----------------------------------------------------------------------------------------------------------------------------------------------
1                         Bhairahawa                         South                     3                         90000                      Available
-----------------------------------------------------------------------------------------------------------------------------------------------
3                         Bhaktapur                          South                     5                         80000                      Available
-----------------------------------------------------------------------------------------------------------------------------------------------
5                         Lalitpur                           North                     7                         50000                      Available
-----------------------------------------------------------------------------------------------------------------------------------------------
```

Figure 5 rent only (available lands)

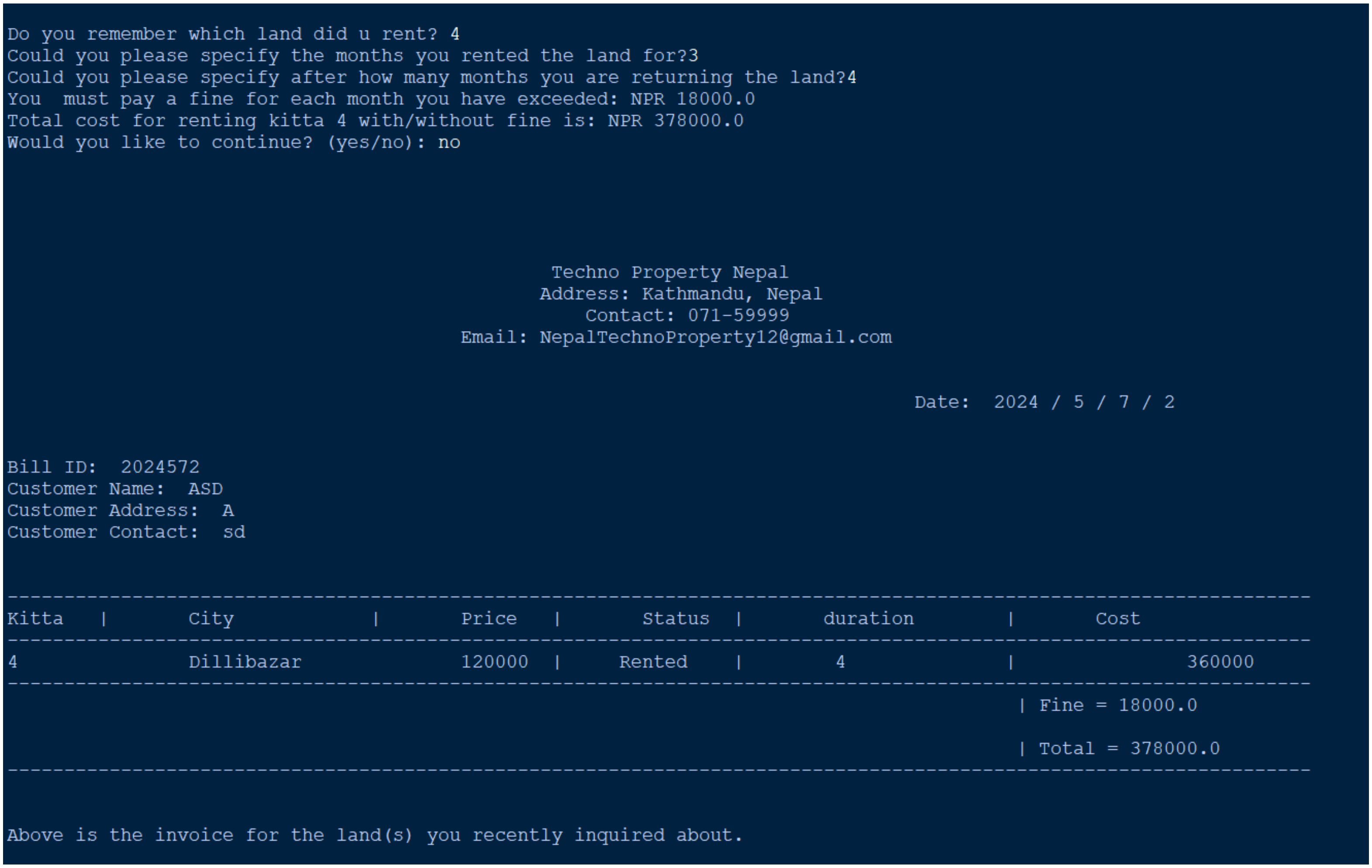
6.3 Displaying not available land (for return).



```
-----------------------------------------------------------------------------------------------------------------------------------------------
Kitta    |                City     |                         Direction         |       Anna     |                Price    |                Availability
-----------------------------------------------------------------------------------------------------------------------------------------------
4                         Dillibazar                         East                      6                         120000                     Not Available
-----------------------------------------------------------------------------------------------------------------------------------------------
6                         Dharan                             West                      8                         30000                      Not Available
-----------------------------------------------------------------------------------------------------------------------------------------------
7                         Itahari                            East                      9                         60000                      Not Available
-----------------------------------------------------------------------------------------------------------------------------------------------
```

Figure 6 return only (not available land)

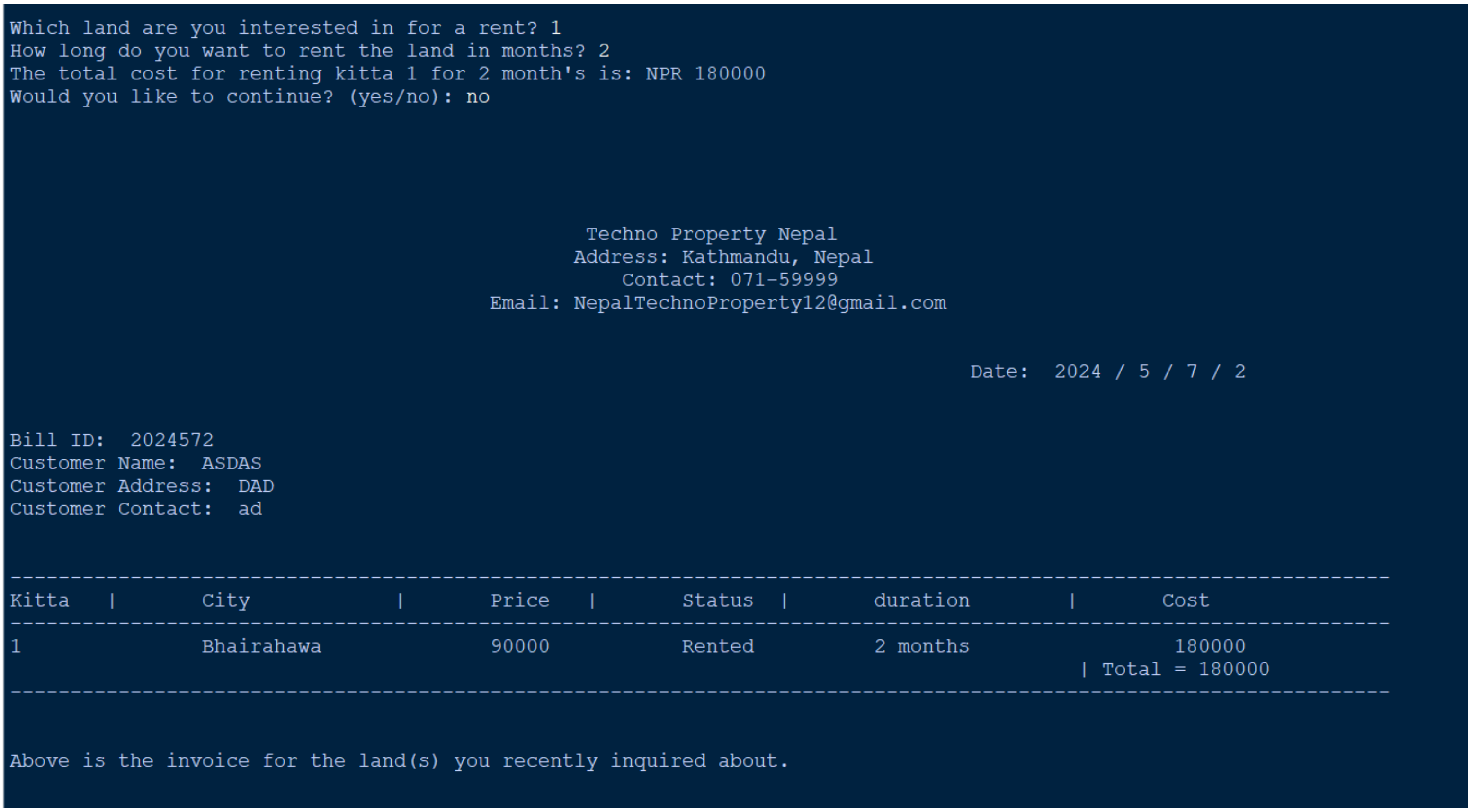
6.4 Bill after returning land with fine added to it.



```
Do you remember which land did u rent? 4
Could you please specify the months you rented the land for?3
Could you please specify after how many months you are returning the land?4
You  must pay a fine for each month you have exceeded: NPR 18000.0
Total cost for renting kitta 4 with/without fine is: NPR 378000.0
Would you like to continue? (yes/no): no




                                                Techno Property Nepal
                                               Address: Kathmandu, Nepal
                                                   Contact: 071-59999
                                        Email: NepalTechnoProperty12@gmail.com


                                                                                Date:  2024 / 5 / 7 / 2


Bill ID:  2024572
Customer Name:  ASD
Customer Address:  A
Customer Contact:  sd


-------------------------------------------------------------------------------------------------------------------
Kitta   |       City            |       Price   |       Status  |       duration        |       Cost
-------------------------------------------------------------------------------------------------------------------
4               Dillibazar              120000  |     Rented    |        4              |               360000
-------------------------------------------------------------------------------------------------------------------
                                                                                         | Fine = 18000.0

                                                                                         | Total = 378000.0
-------------------------------------------------------------------------------------------------------------------


Above is the invoice for the land(s) you recently inquired about.
```

Figure 7 Bill after returning land with fine added to it.

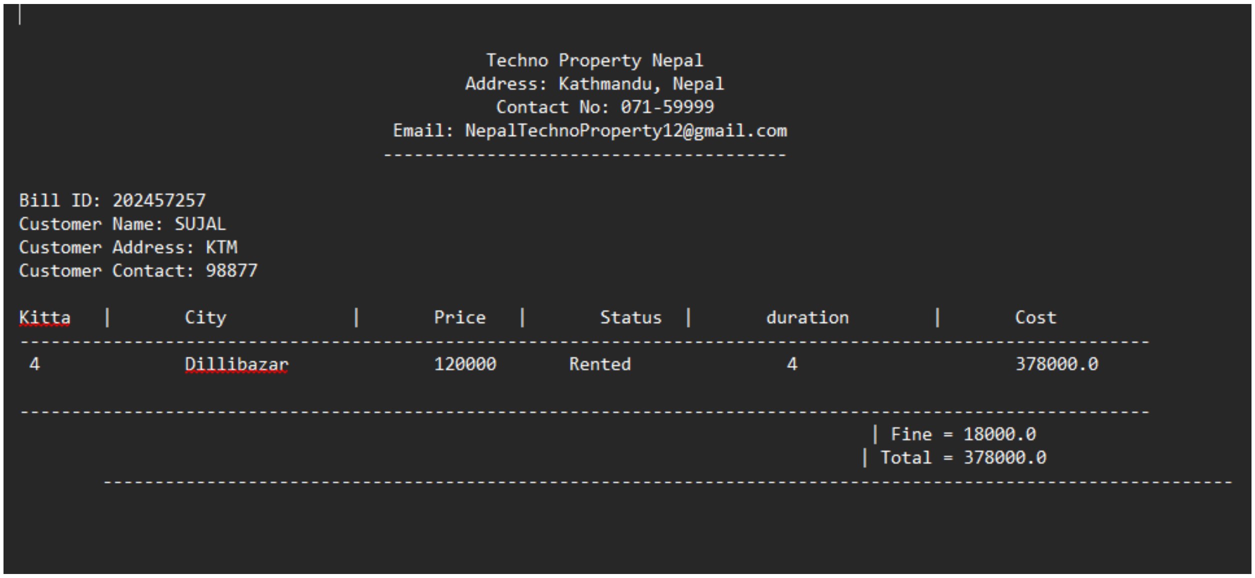
6.5 Bill after renting land



```
Which land are you interested in for a rent? 1
How long do you want to rent the land in months? 2
The total cost for renting kitta 1 for 2 month's is: NPR 180000
Would you like to continue? (yes/no): no




                                                Techno Property Nepal
                                               Address: Kathmandu, Nepal
                                                   Contact: 071-59999
                                        Email: NepalTechnoProperty12@gmail.com


                                                                                Date:  2024 / 5 / 7 / 2


Bill ID:  2024572
Customer Name:  ASDAS
Customer Address:  DAD
Customer Contact:  ad


-------------------------------------------------------------------------------------------------------------------
Kitta   |       City            |       Price   |       Status  |       duration        |       Cost
-------------------------------------------------------------------------------------------------------------------
1               Bhairahawa              90000           Rented          2 months                        180000
                                                                                         | Total = 180000
-------------------------------------------------------------------------------------------------------------------


Above is the invoice for the land(s) you recently inquired about.
```

Figure 8 Bill after renting land.

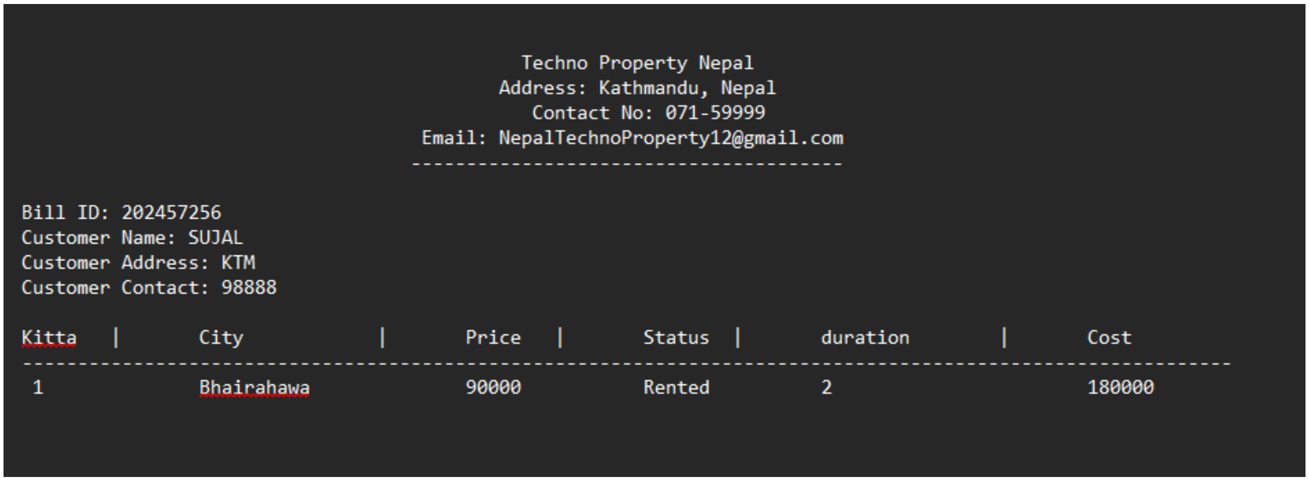
6.6 Bill after renting land into txt



```
                                Techno Property Nepal
                              Address: Kathmandu, Nepal
                                 Contact No: 071-59999
                         Email: NepalTechnoProperty12@gmail.com
                        ---------------------------------------

Bill ID: 202457257
Customer Name: SUJAL
Customer Address: KTM
Customer Contact: 98877

Kitta   |        City            |        Price   |        Status  |        duration         |        Cost
--------------------------------------------------------------------------------------------------------------
 4              Dillibazar               120000       Rented              4                       378000.0

--------------------------------------------------------------------------------------------------------------
                                                                                  | Fine = 18000.0
                                                                                 | Total = 378000.0
        --------------------------------------------------------------------------------------------------------------
```

Figure 9 txt file after renting

6.7 Bill after returning land into txt



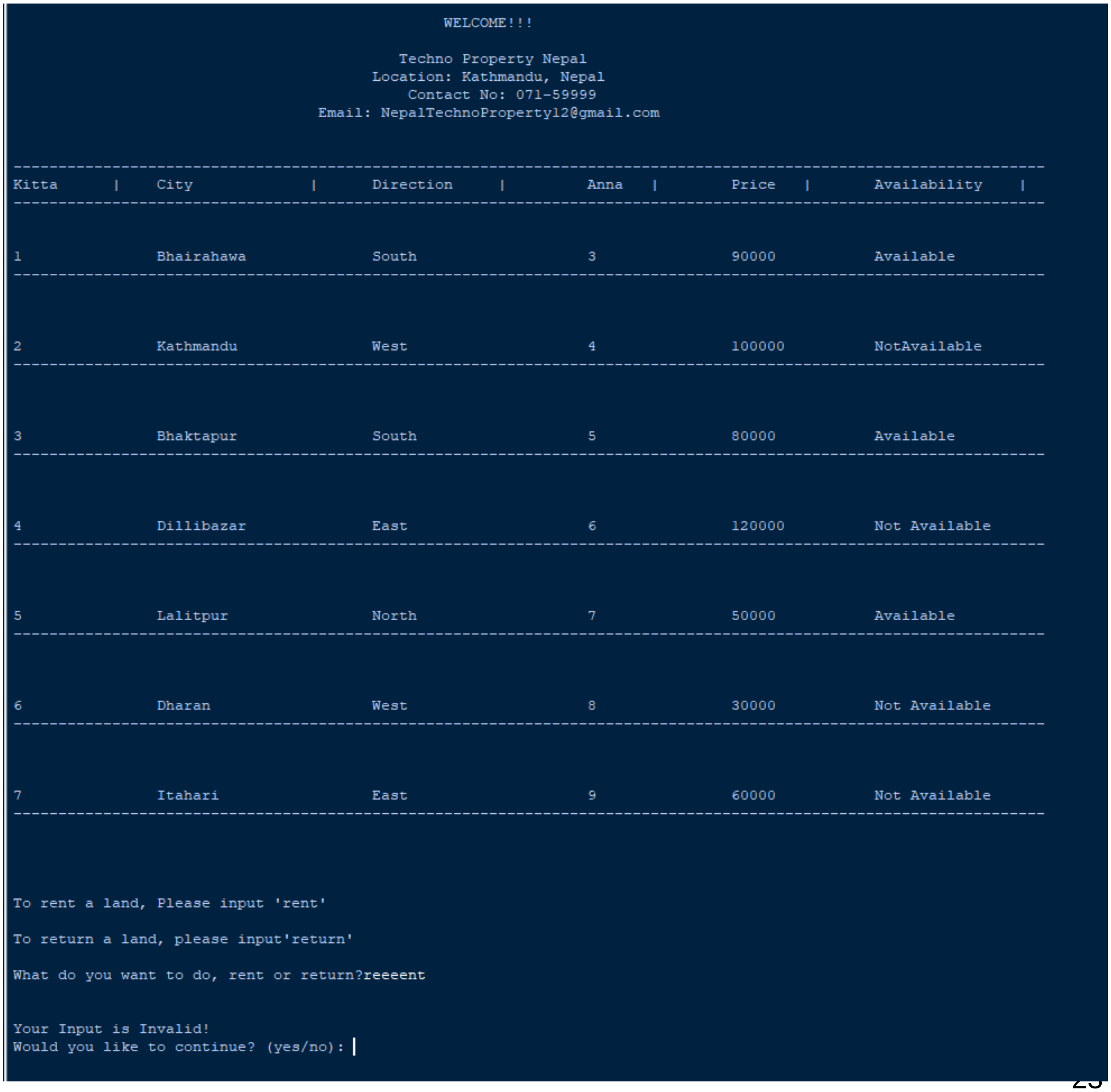
```
                                Techno Property Nepal
                              Address: Kathmandu, Nepal
                                 Contact No: 071-59999
                         Email: NepalTechnoProperty12@gmail.com
                        ---------------------------------------

Bill ID: 202457256
Customer Name: SUJAL
Customer Address: KTM
Customer Contact: 98888

Kitta   |        City            |        Price   |        Status  |        duration         |        Cost
--------------------------------------------------------------------------------------------------------------
 1              Bhairahawa               90000         Rented          2                         180000
```

Figure 10 txt file after returning

7.Testing

7.1 Testing of try and except method

Objective	Checking of Try Except method
Action	In hero.py rent and return should be written instead of choosing other words
Expected Result	While entering other words such as no error message should pop up
Actual Result	Error is handled when something else is written except rent/return
Conclusion	Successful

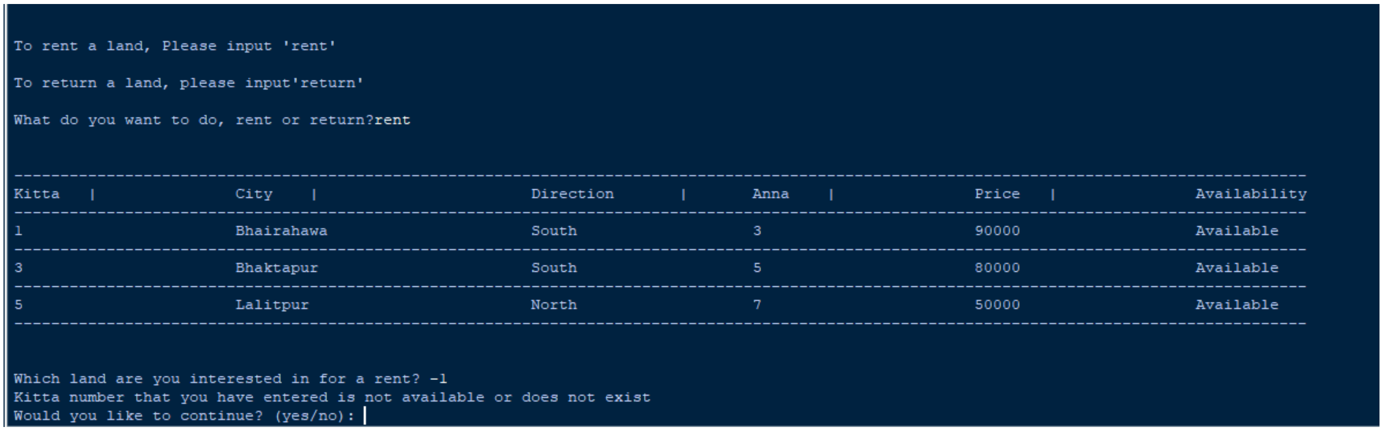


```
                                                 WELCOME!!!

                                            Techno Property Nepal
                                         Location: Kathmandu, Nepal
                                             Contact No: 071-59999
                                   Email: NepalTechnoProperty12@gmail.com


-------------------------------------------------------------------------------------------------------------------------------
Kitta      |     City                |      Direction     |         Anna    |        Price    |       Availability    |
-------------------------------------------------------------------------------------------------------------------------------


1                Bhairahawa               South                     3               90000           Available
-------------------------------------------------------------------------------------------------------------------------------



2                Kathmandu                West                      4               100000          NotAvailable
-------------------------------------------------------------------------------------------------------------------------------



3                Bhaktapur                South                     5               80000           Available
-------------------------------------------------------------------------------------------------------------------------------



4                Dillibazar               East                      6               120000          Not Available
-------------------------------------------------------------------------------------------------------------------------------



5                Lalitpur                 North                     7               50000           Available
-------------------------------------------------------------------------------------------------------------------------------



6                Dharan                   West                      8               30000           Not Available
-------------------------------------------------------------------------------------------------------------------------------



7                Itahari                  East                      9               60000           Not Available
-------------------------------------------------------------------------------------------------------------------------------




To rent a land, Please input 'rent'

To return a land, please input'return'

What do you want to do, rent or return?reeeent


Your Input is Invalid!
Would you like to continue? (yes/no):
```

Figure 11 testing try except

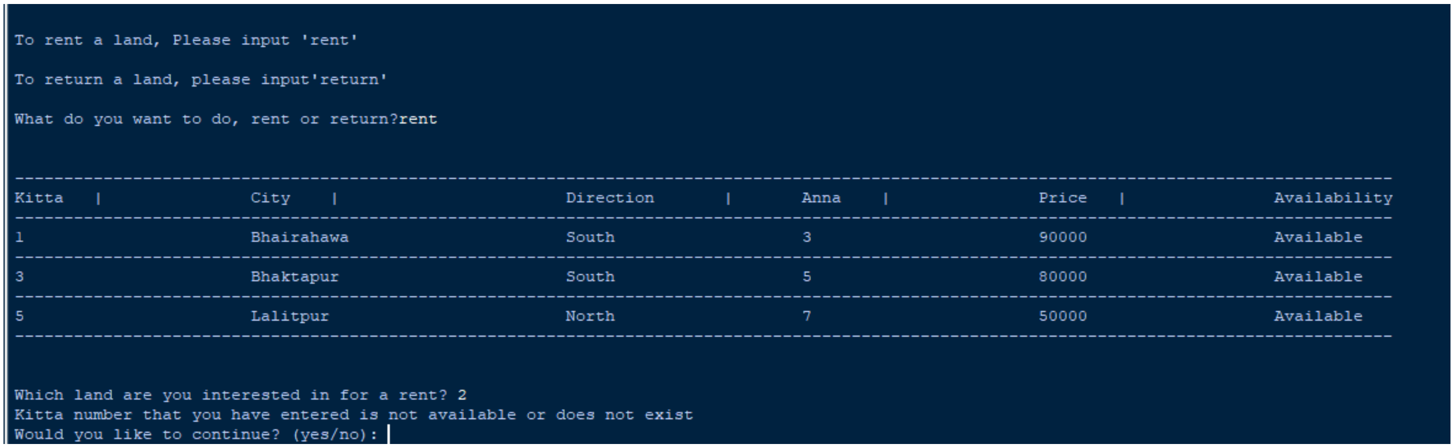
7.2 Testing of selection rent and return land

Objective	Selection rent and return of lands
Action	Enter negative or non-existed value as an input
Expected Result	Error message should be displayed
Actual Result	Error message is displayed
Conclusion	successful



```
To rent a land, Please input 'rent'

To return a land, please input'return'

What do you want to do, rent or return?rent


--------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                       Direction       |       Anna    |               Price   |               Availability
--------------------------------------------------------------------------------------------------------------------------------------------
1                       Bhairahawa                      South                   3                       90000                   Available
--------------------------------------------------------------------------------------------------------------------------------------------
3                       Bhaktapur                       South                   5                       80000                   Available
--------------------------------------------------------------------------------------------------------------------------------------------
5                       Lalitpur                        North                   7                       50000                   Available
--------------------------------------------------------------------------------------------------------------------------------------------


Which land are you interested in for a rent? -1
Kitta number that you have entered is not available or does not exist
Would you like to continue? (yes/no):
```

Figure 12 Testing of selection of land by typing negative number

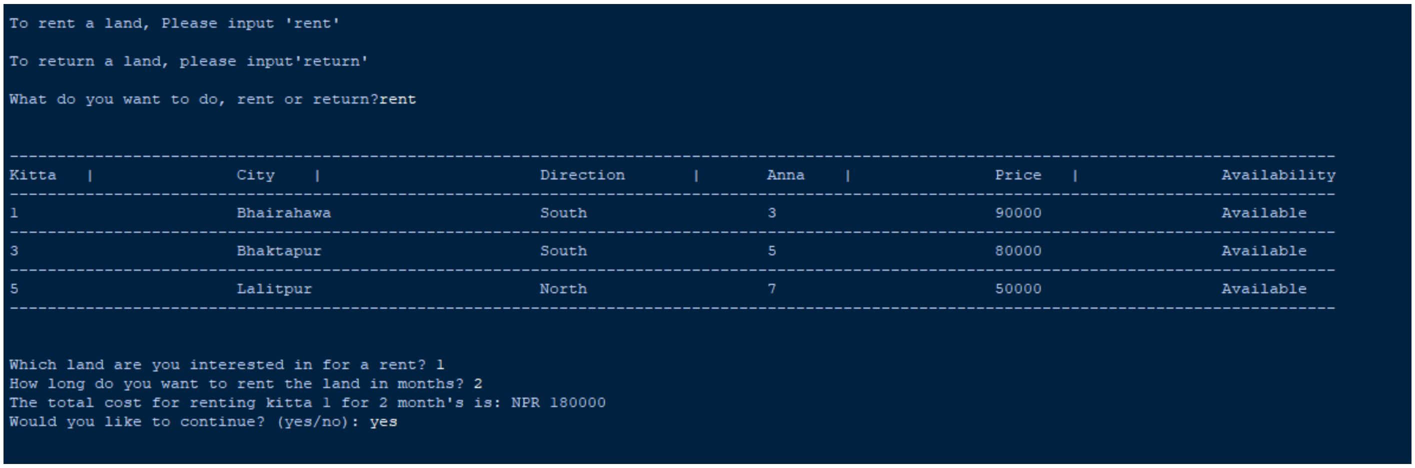


```
To rent a land, Please input 'rent'

To return a land, please input'return'

What do you want to do, rent or return?rent


--------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                       Direction       |       Anna    |               Price   |               Availability
--------------------------------------------------------------------------------------------------------------------------------------------
1                       Bhairahawa                      South                   3                       90000                   Available
--------------------------------------------------------------------------------------------------------------------------------------------
3                       Bhaktapur                       South                   5                       80000                   Available
--------------------------------------------------------------------------------------------------------------------------------------------
5                       Lalitpur                        North                   7                       50000                   Available
--------------------------------------------------------------------------------------------------------------------------------------------


Which land are you interested in for a rent? 2
Kitta number that you have entered is not available or does not exist
Would you like to continue? (yes/no):
```

Figure 13 Testing of selection of land by typing non existing number

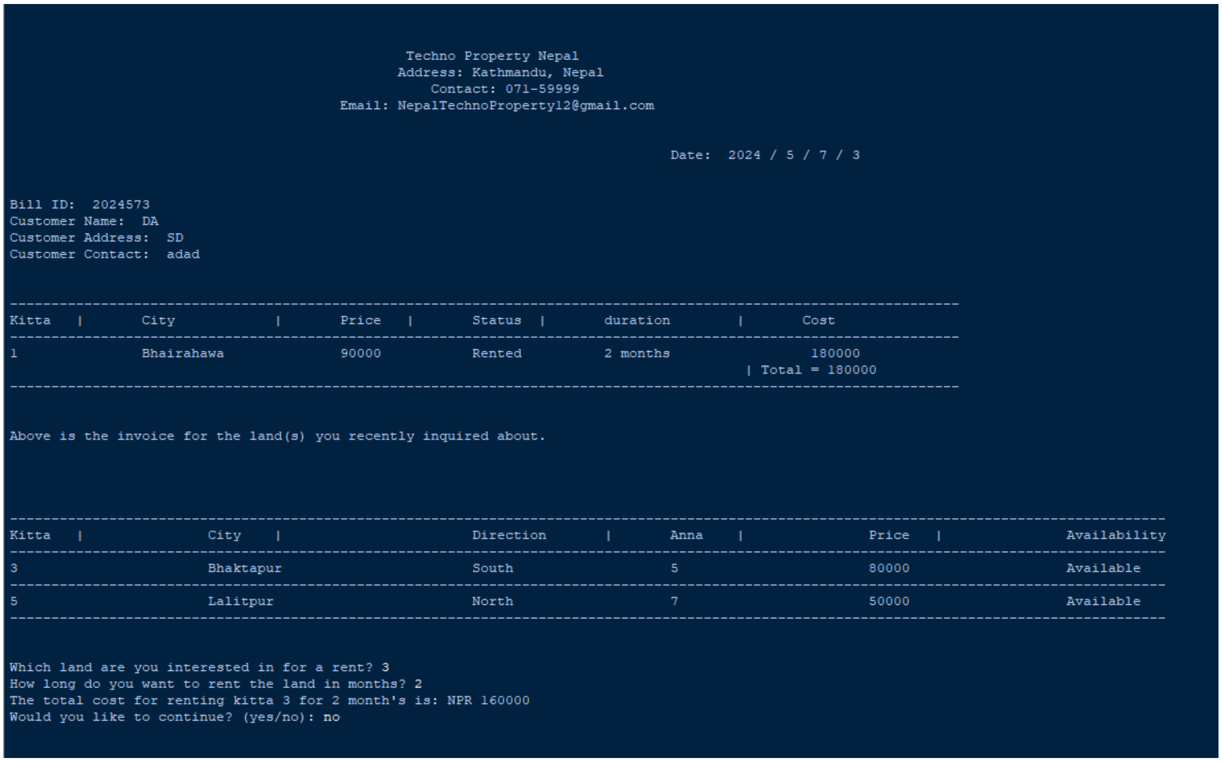
7.3 Testing file generation of multiple items (rent)

Objective	To generate file for renting lands.
Action	Typing yes after renting one land to add another land
Expected Result	It should display all the information in shell and generate .txt file
Actual Result	It displays all the information in shell and generated a .txt file
Conclusion	Successful



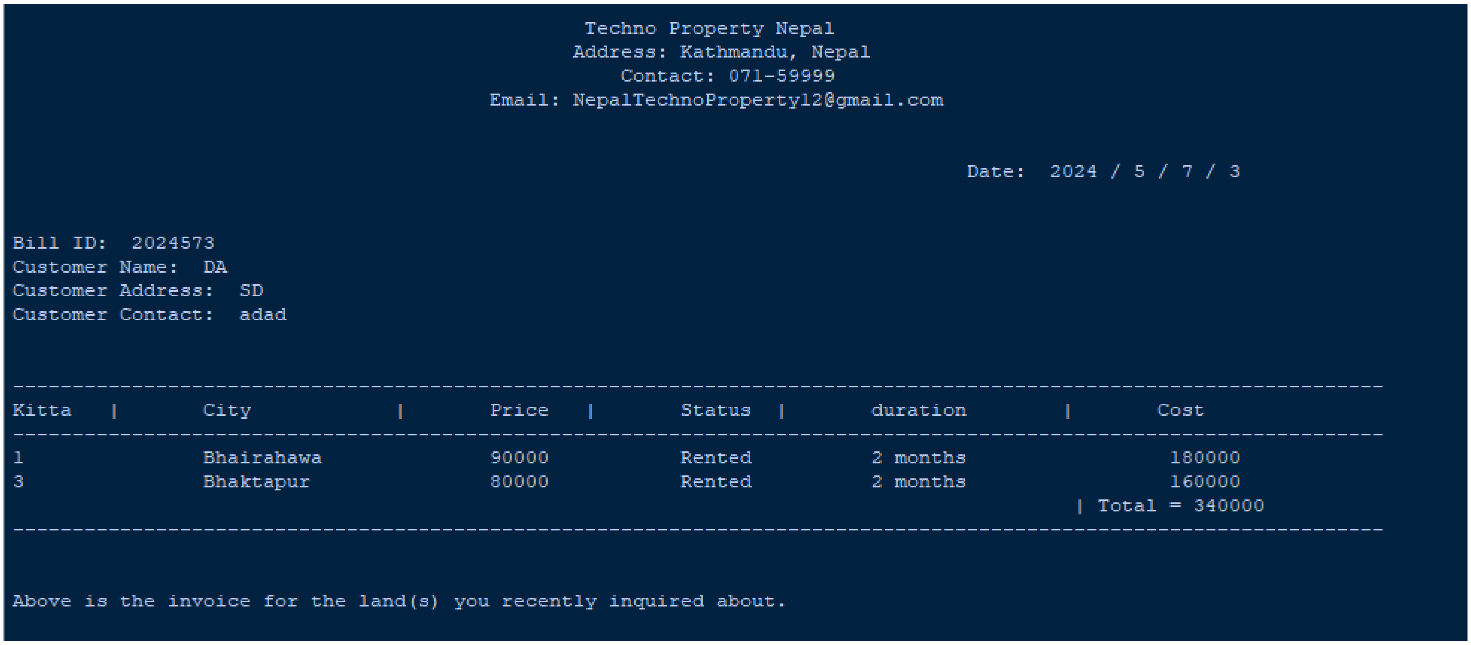
```
To rent a land, Please input 'rent'

To return a land, please input'return'

What do you want to do, rent or return?rent


------------------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |                City    |                         Direction        |        Anna    |                 Price   |                 Availability
------------------------------------------------------------------------------------------------------------------------------------------------------
1                        Bhairahawa                        South                     3                         90000                     Available
------------------------------------------------------------------------------------------------------------------------------------------------------
3                        Bhaktapur                         South                     5                         80000                     Available
------------------------------------------------------------------------------------------------------------------------------------------------------
5                        Lalitpur                          North                     7                         50000                     Available
------------------------------------------------------------------------------------------------------------------------------------------------------


Which land are you interested in for a rent? 1
How long do you want to rent the land in months? 2
The total cost for renting kitta 1 for 2 month's is: NPR 180000
Would you like to continue? (yes/no): yes
```

Figure 14 renting first land



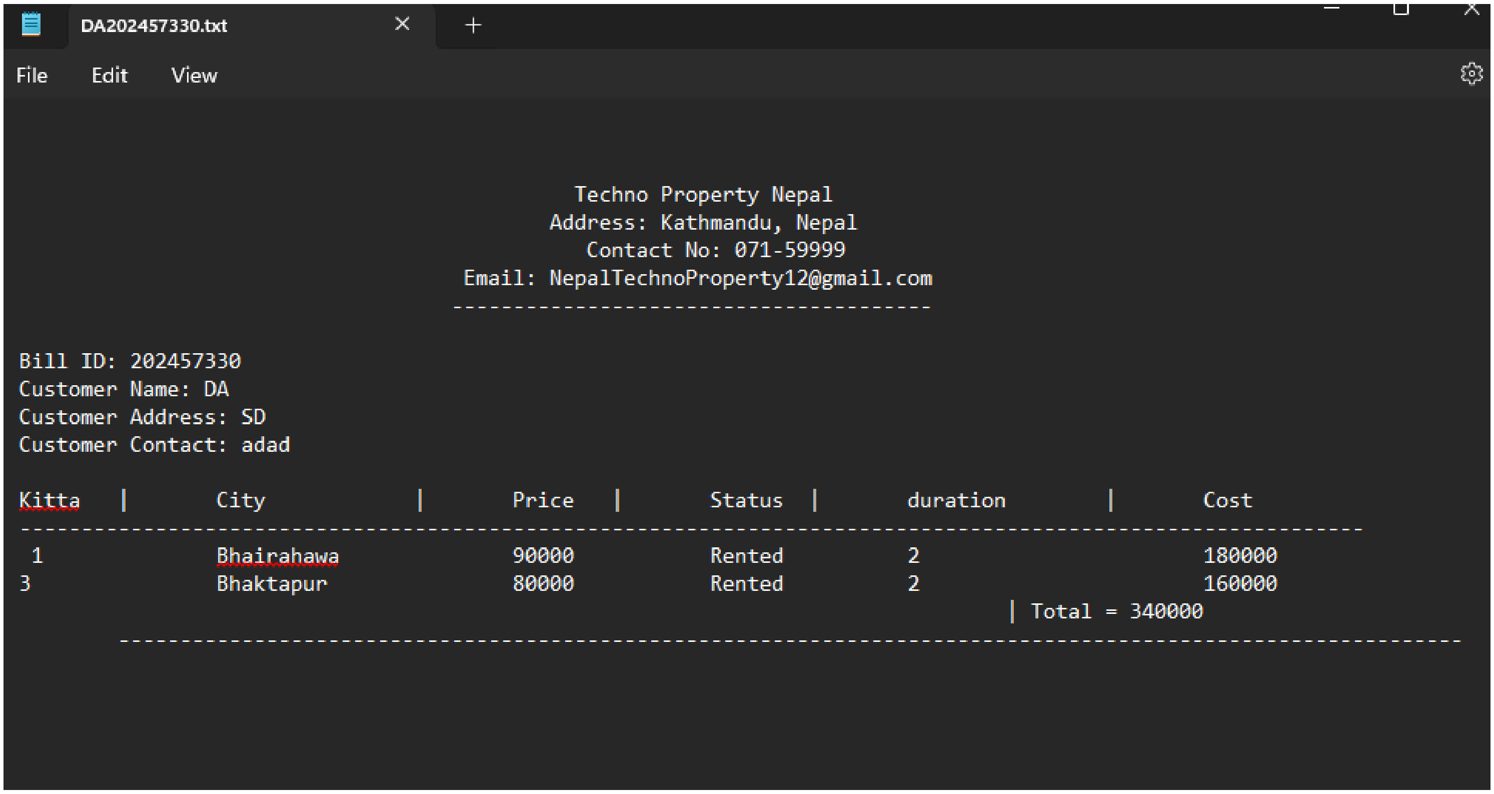
```
                                                  Techno Property Nepal
                                                 Address: Kathmandu, Nepal
                                                    Contact: 071-59999
                                          Email: NepalTechnoProperty12@gmail.com


                                                                                 Date:  2024 / 5 / 7 / 3


Bill ID:  2024573
Customer Name:  DA
Customer Address:  SD
Customer Contact:  adad


------------------------------------------------------------------------------------------------------------------
Kitta   |       City            |       Price   |       Status  |       duration        |       Cost
------------------------------------------------------------------------------------------------------------------
1               Bhairahawa              90000           Rented          2 months                 180000
                                                                                        | Total = 180000
------------------------------------------------------------------------------------------------------------------


Above is the invoice for the land(s) you recently inquired about.



------------------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                         Direction        |        Anna    |                 Price   |                 Availability
------------------------------------------------------------------------------------------------------------------------------------------------------
3                       Bhaktapur                         South                     5                         80000                     Available
------------------------------------------------------------------------------------------------------------------------------------------------------
5                       Lalitpur                          North                     7                         50000                     Available
------------------------------------------------------------------------------------------------------------------------------------------------------


Which land are you interested in for a rent? 3
How long do you want to rent the land in months? 2
The total cost for renting kitta 3 for 2 month's is: NPR 160000
Would you like to continue? (yes/no): no
```

Figure 15 renting second land and generating bill



```
                                                Techno Property Nepal
                                               Address: Kathmandu, Nepal
                                                   Contact: 071-59999
                                        Email: NepalTechnoProperty12@gmail.com



                                                                                Date:  2024 / 5 / 7 / 3



Bill ID:  2024573
Customer Name:  DA
Customer Address:  SD
Customer Contact:  adad



-------------------------------------------------------------------------------------------------------------------
Kitta    |        City            |        Price    |        Status   |        duration        |        Cost
-------------------------------------------------------------------------------------------------------------------
1               Bhairahawa              90000           Rented          2 months                  180000
3               Bhaktapur               80000           Rented          2 months                  160000
                                                                                         | Total = 340000
-------------------------------------------------------------------------------------------------------------------



Above is the invoice for the land(s) you recently inquired about.
```

Figure 16 final bill generated by the program

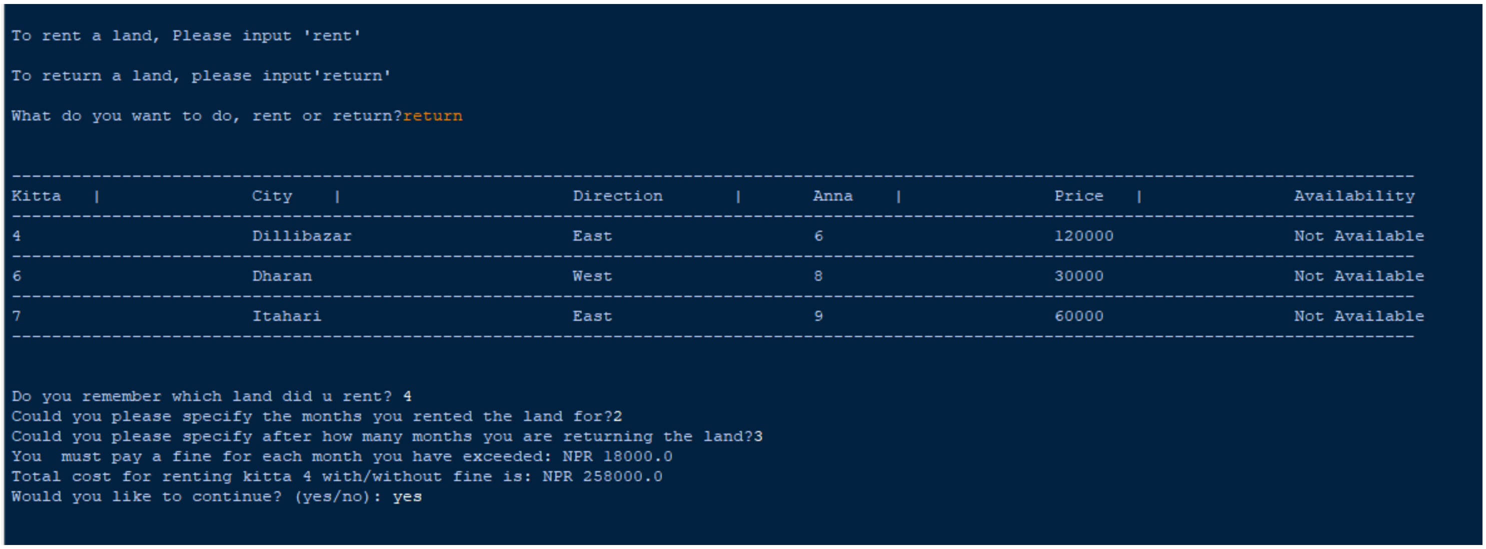


```


                                   Techno Property Nepal
                                 Address: Kathmandu, Nepal
                                    Contact No: 071-59999
                              Email: NepalTechnoProperty12@gmail.com
                             ---------------------------------------

Bill ID: 202457330
Customer Name: DA
Customer Address: SD
Customer Contact: adad

Kitta   |       City            |       Price   |       Status  |       duration        |       Cost
-------------------------------------------------------------------------------------------------------------------
 1              Bhairahawa              90000           Rented          2                               180000
3               Bhaktapur               80000           Rented          2                               160000
                                                                                  | Total = 340000
        -------------------------------------------------------------------------------------------------------------------
```

Figure 17 output bill from a txt file

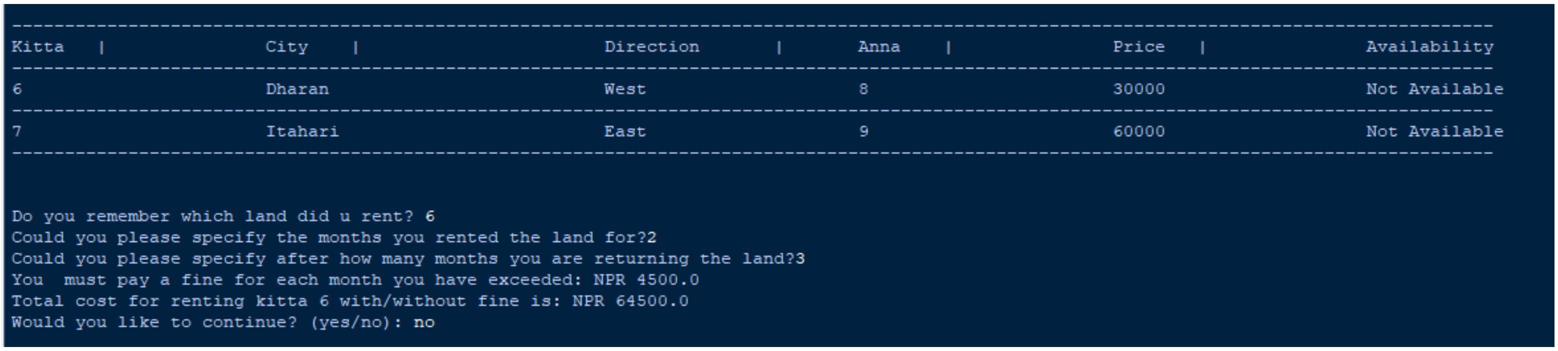
7.4 Testing file generation of multiple items (return)

Objective	To generate file for returning lands.
Action	Typing yes after returning one land to add another land
Expected Result	It should display all the information in shell and generate .txt file
Actual Result	It displays all the information in shell and generated a .txt file
Conclusion	Successful



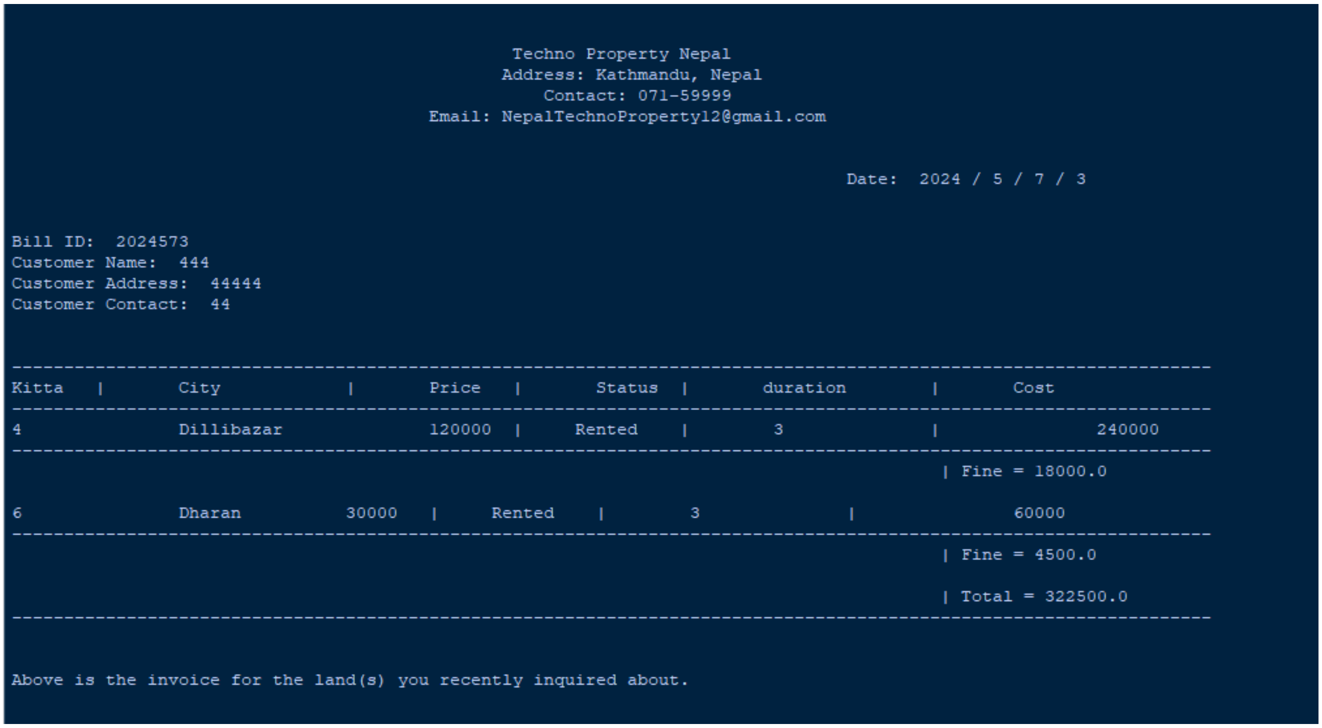
```
To rent a land, Please input 'rent'

To return a land, please input'return'

What do you want to do, rent or return?return


----------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                       Direction       |       Anna    |               Price   |               Availability
----------------------------------------------------------------------------------------------------------------------------------------------
4                       Dillibazar                      East                    6                       120000                  Not Available
----------------------------------------------------------------------------------------------------------------------------------------------
6                       Dharan                          West                    8                       30000                   Not Available
----------------------------------------------------------------------------------------------------------------------------------------------
7                       Itahari                         East                    9                       60000                   Not Available
----------------------------------------------------------------------------------------------------------------------------------------------


Do you remember which land did u rent? 4
Could you please specify the months you rented the land for?2
Could you please specify after how many months you are returning the land?3
You  must pay a fine for each month you have exceeded: NPR 18000.0
Total cost for renting kitta 4 with/without fine is: NPR 258000.0
Would you like to continue? (yes/no): yes
```

Figure 19 returning 1st land



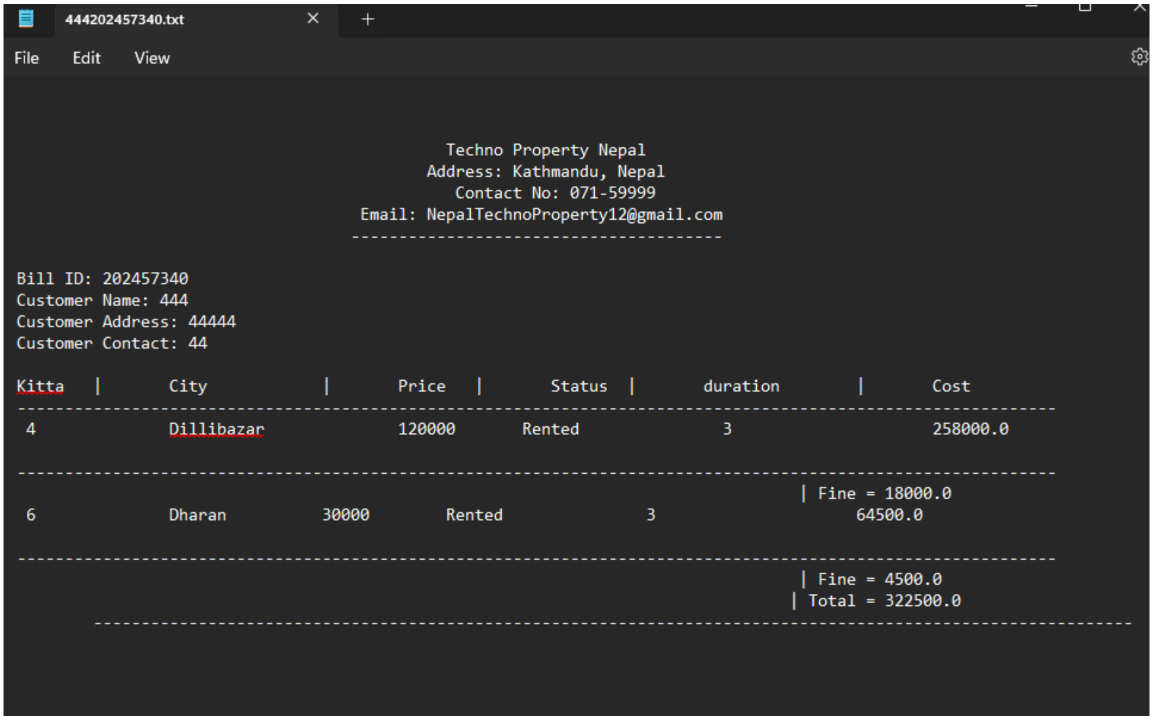
```
----------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                       Direction       |       Anna    |               Price   |               Availability
----------------------------------------------------------------------------------------------------------------------------------------------
6                       Dharan                          West                    8                       30000                   Not Available
----------------------------------------------------------------------------------------------------------------------------------------------
7                       Itahari                         East                    9                       60000                   Not Available
----------------------------------------------------------------------------------------------------------------------------------------------


Do you remember which land did u rent? 6
Could you please specify the months you rented the land for?2
Could you please specify after how many months you are returning the land?3
You  must pay a fine for each month you have exceeded: NPR 4500.0
Total cost for renting kitta 6 with/without fine is: NPR 64500.0
Would you like to continue? (yes/no): no
```

Figure 18 returning 2nd land



```
                                        Techno Property Nepal
                                      Address: Kathmandu, Nepal
                                          Contact: 071-59999
                                  Email: NepalTechnoProperty12@gmail.com


                                                                             Date:  2024 / 5 / 7 / 3


Bill ID:  2024573
Customer Name:  444
Customer Address:  44444
Customer Contact:  44


-------------------------------------------------------------------------------------------------------------------
Kitta   |       City            |       Price   |       Status  |       duration        |       Cost
-------------------------------------------------------------------------------------------------------------------
4               Dillibazar              120000  |     Rented    |        3              |               240000
-------------------------------------------------------------------------------------------------------------------
                                                                                        | Fine = 18000.0

6               Dharan          30000   |     Rented    |        3              |               60000
-------------------------------------------------------------------------------------------------------------------
                                                                                        | Fine = 4500.0

                                                                                        | Total = 322500.0
-------------------------------------------------------------------------------------------------------------------


Above is the invoice for the land(s) you recently inquired about.
```

Figure 20 bill after multiples land returns

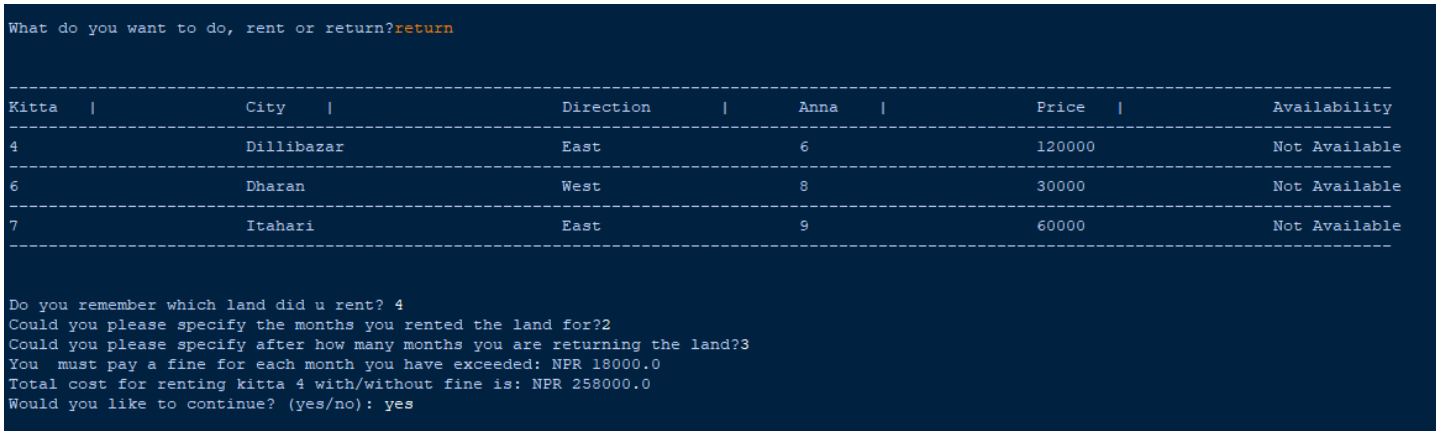


```
                                        Techno Property Nepal
                                      Address: Kathmandu, Nepal
                                         Contact No: 071-59999
                                 Email: NepalTechnoProperty12@gmail.com
                                ---------------------------------------

Bill ID: 202457340
Customer Name: 444
Customer Address: 44444
Customer Contact: 44

Kitta   |       City            |       Price   |       Status  |       duration        |       Cost
-------------------------------------------------------------------------------------------------
 4              Dillibazar              120000       Rented              3                      258000.0

-------------------------------------------------------------------------------------------------
                                                                     | Fine = 18000.0
 6              Dharan          30000        Rented              3                 64500.0

-------------------------------------------------------------------------------------------------
                                                                     | Fine = 4500.0
                                                                    | Total = 322500.0
       -------------------------------------------------------------------------------------------------
```

Figure 21 bill generated in a txt file

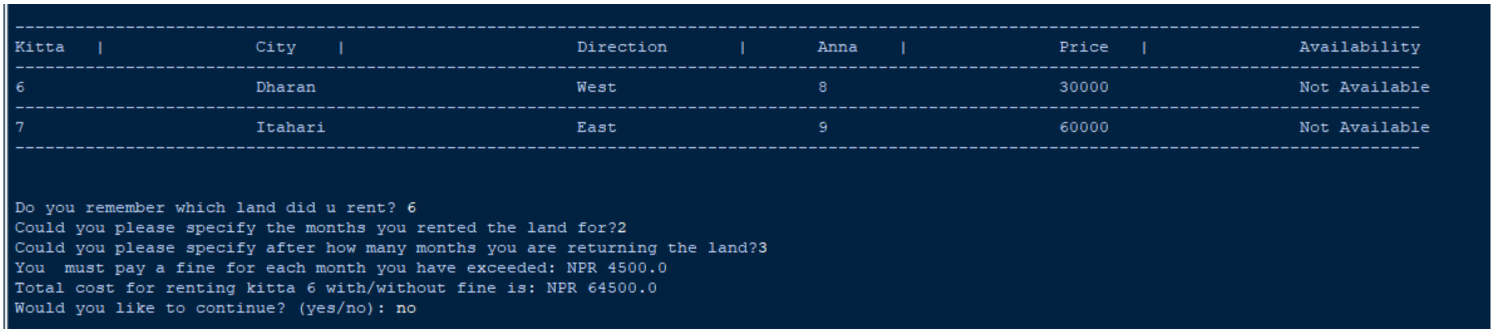
7..5 Testing of updating stock of land

Objective	Update stock of land
Action	Showing complete process of renting and returning property
Expected Result	After renting land that should not be available After returning land that land should be available
Actual Result	After renting land. land should not be available After returning land. land should be available
Conclusion	Test was successful



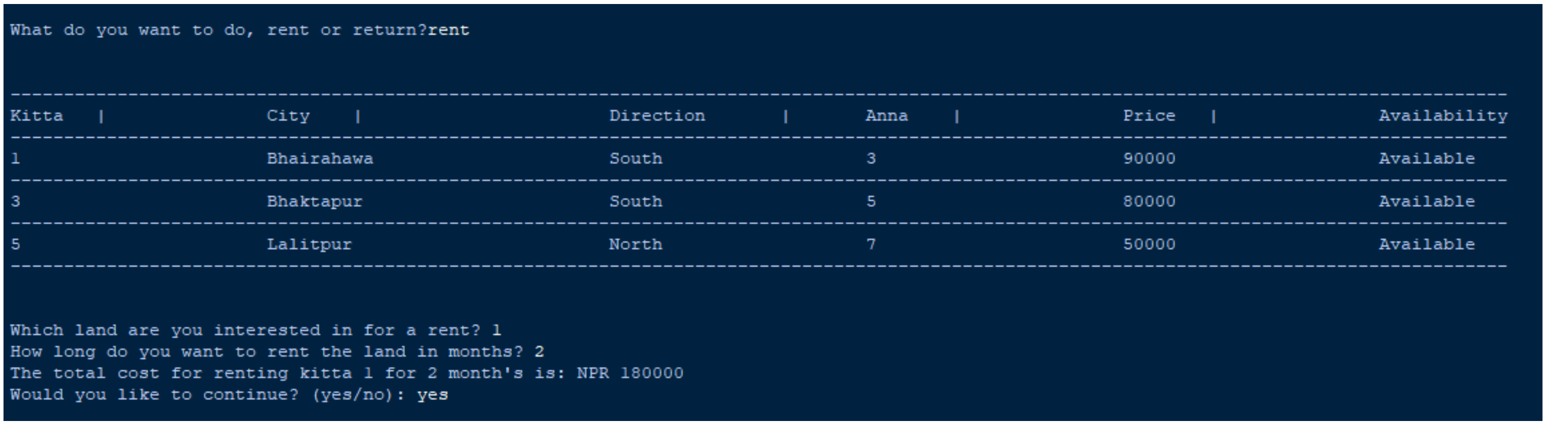
```
What do you want to do, rent or return?return


--------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                       Direction       |       Anna    |               Price   |               Availability
--------------------------------------------------------------------------------------------------------------------------------------------
4                       Dillibazar                      East                    6                       120000                  Not Available
--------------------------------------------------------------------------------------------------------------------------------------------
6                       Dharan                          West                    8                       30000                   Not Available
--------------------------------------------------------------------------------------------------------------------------------------------
7                       Itahari                         East                    9                       60000                   Not Available
--------------------------------------------------------------------------------------------------------------------------------------------


Do you remember which land did u rent? 4
Could you please specify the months you rented the land for?2
Could you please specify after how many months you are returning the land?3
You  must pay a fine for each month you have exceeded: NPR 18000.0
Total cost for renting kitta 4 with/without fine is: NPR 258000.0
Would you like to continue? (yes/no): yes
```

Figure 22 returning kitta no 4 land



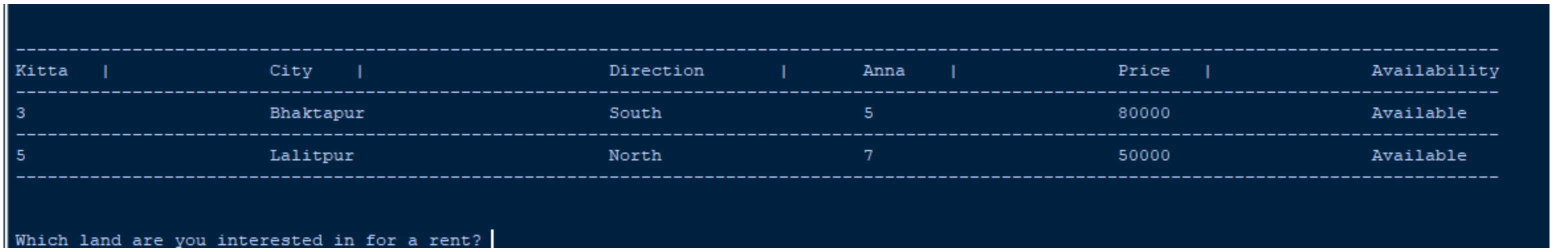
```
--------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                       Direction       |       Anna    |               Price   |               Availability
--------------------------------------------------------------------------------------------------------------------------------------------
6                       Dharan                          West                    8                       30000                   Not Available
--------------------------------------------------------------------------------------------------------------------------------------------
7                       Itahari                         East                    9                       60000                   Not Available
--------------------------------------------------------------------------------------------------------------------------------------------


Do you remember which land did u rent? 6
Could you please specify the months you rented the land for?2
Could you please specify after how many months you are returning the land?3
You  must pay a fine for each month you have exceeded: NPR 4500.0
Total cost for renting kitta 6 with/without fine is: NPR 64500.0
Would you like to continue? (yes/no): no
```

Figure 23 kitta no 4 is now available



```
What do you want to do, rent or return?rent


-------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                       Direction       |      Anna    |               Price   |              Availability
-------------------------------------------------------------------------------------------------------------------------------------------
1                       Bhairahawa                      South                  3                       90000                  Available
-------------------------------------------------------------------------------------------------------------------------------------------
3                       Bhaktapur                       South                  5                       80000                  Available
-------------------------------------------------------------------------------------------------------------------------------------------
5                       Lalitpur                        North                  7                       50000                  Available
-------------------------------------------------------------------------------------------------------------------------------------------


Which land are you interested in for a rent? 1
How long do you want to rent the land in months? 2
The total cost for renting kitta 1 for 2 month's is: NPR 180000
Would you like to continue? (yes/no): yes
```

Figure 24 renting kitta no 1



```

-------------------------------------------------------------------------------------------------------------------------------------------
Kitta   |               City    |                       Direction       |      Anna    |               Price   |              Availability
-------------------------------------------------------------------------------------------------------------------------------------------
3                       Bhaktapur                       South                  5                       80000                  Available
-------------------------------------------------------------------------------------------------------------------------------------------
5                       Lalitpur                        North                  7                       50000                  Available
-------------------------------------------------------------------------------------------------------------------------------------------


Which land are you interested in for a rent?
```

Figure 25 kitta no 1 is Not available now

8 Conclusion

In summary, this coursework has given me a through understanding of the core ideas and characteristics of the Python language. I now have a strong foundation in Python programming, having learned everything from the fundamentals of using the interpreter to more complex subjects like control flow tools and functions. (college, 2024)

I've learnt how to construct Python programs and modules through practical experience and stand-alone examples. I'm now prepared to investigate the different Python library modules that are covered in the python standard library.

I began my explanation by briefly introducing Python and outline its significance as well as its contribution to the programming industry. Since it is essential to programming fields like AI and machine learning etc. Next, I briefly described the tools I utilized to finish my coursework i: e IDLE, which is a text editor that is ideal for beginners and is appropriate for this course's assignments. I finished the flow chart for this coursework using draw.io which was described in the article. Next, I provided a table of contents and algorithms of my program. After that I inserted my flowchart in my word file. The next step was to write pseudocode which was a tuff task for me and took me a long time to complete it. After I was done with my pseudocode, I started to write about the data structures that I have in my program and explaining briefly about strings, Boolean, dictionary, etc with proper examples.

Now it was the time for me to explain about my program and after that it was explaining the testing stage of my program and providing the necessary testing images that I needed to paste in my word file.

At conclusion by doing this course work I learned about file handling proper programming manner and proper documentation manner. I also learned about the concepts of function and modules. I main this I learned from this course work is the ability to research. It is one of the most important thig I learned from doing this course work. I learned how to use internet properly which will be very helpful in future. Thankyou!

9.Bibliography

Bibliography

college, a. (2024). *python learning*. Retrieved from apna college: https://www.apnacollege.in/home

Dawson, M. (2010). *Python programming third edition.* USA: Course teachnology.

foundation, P. s. (2001-2024). *That is python programming?* Retrieved from python.org: https://docs.python.org/3/library/index.html

Gillis, A. S. (1999-2024). *What is difinition algorithm*. Retrieved from teach target: https://www.techtarget.com/whatis/definition/algorithm

Neary, M. (2012-2024). *real python*. Retrieved from realpython: https://realpython.com/python-idle/

Padmanabhan, T. (2016). *Programming with Python.* Singapore : Springer Nature Singapore Pte Ltd. .

python with mosh. (2024). Retrieved from code with mosh: https://codewithmosh.com

10. Appendex

10.1 hero.py

```
import datetime
from process import *  # Importing functions from seperate module
from read import *
from write import *
def hero():

    # Getting customer information
    name=input("\nPlease enter your Name: ").upper()
    address=input("Please enter your Address: ").upper()
    contact=(input("Please enter your number: "))


    # To diaplay the companies land and other details in our program!
    print("\n")
    print("                                             WELCOME!!!\n")
    print("                                        Techno Property Nepal")
    print("                                     Location: Kathmandu, Nepal")
    print("                                         Contact No: 071-59999")
    print("                                Email: NepalTechnoProperty12@gmail.com\n\n")
    print("--------------------------------------------------------------------------------------------------------
----------")
    print("Kitta      |   \tCity            |\tDirection     |\t\tAnna   |\tPrice   |\tAvailability    |")
    print("--------------------------------------------------------------------------------------------------------
----------")
    print("\n")
    # Custom Land Details which will be used throughout our program!
    dic = {
        '1': ['\tBhairahawa', '\tSouth',   '\t3', '\t90000', '\tAvailable'],

        '2': ['\tKathmandu '  , '\tWest',   '\t4', '\t100000', '\tNotAvailable'],

        '3': ['\tBhaktapur', '\tSouth',   ' \t5', '\t80000', '\tAvailable'],

        '4': ['\tDillibazar ', '\tEast',    '\t6', '\t120000', '\tNot Available'],

        '5': ['\tLalitpur ',  '\tNorth',   '\t7', '\t50000', '\tAvailable'],

        '6': ['\tDharan',    '\t\tWest',   '\t8', '\t30000', '\tNot Available'],

        '7': ['\tItahari',    '\t\tEast',   '\t9', '\t60000', '\tNot Available']
    }


# To Display Custom land details
    for key, value in dic.items():
        print(f"{key}\t{value[0]}\t{value[1]}\t\t{value[2]}\t{value[3]}\t{value[4]}")
        print("----------------------------------------------------------------------------------------------------
-------------")

        print("\n\n")
    print(" \nTo rent a land, Please input 'rent'")
    print("\nTo return a land, please input'return'")

# Initializing dictionaries to store rented and returned lands
    to_rent_lands = {}
    to_return_lands= {}

    # Loop to handle user interactions
    next = True  # Initialize a variable for the first choice

    final_choice = None  # Initialize a variable for last choice

    while next:
            if final_choice is None:
                reason = input("\nWhat do you want to do, rent or return?").lower()
            else:
                reason = final_choice
            print("\n")

            try:
                # Renting a land
                if reason == "rent":
                    for_rent_land(dic, to_rent_lands)
                    final_choice = "rent"  # Update last choice

                # Returning a land
                elif reason == "return":
                    for_return_land(dic, to_return_lands)
                    final_choice = "return"  # Update last choice


                else:
                    print("Your Input is Invalid!")
            except Exception as e:
                print("Error:", e)
    # To ask for continuation of the program
            while True:
                try:
                    ans = input("Would you like to continue? (yes/no): ").lower()
                    print("\n\n")
                    if ans == "yes":
                        break
                    # It will Break out of the loop and continue the code.
                    elif ans == "no":
                        next = False
                        break
                     # It will Break out of the loop and stop the code.
                    else:
                        print("Please enter 'yes' or 'no'.\n")
                except Exception as e:
                    print("An error occurred:", e)

    # Check if there are rented or returned lands before generating the bill
            if to_rent_lands or to_return_lands:
                try:
                        # Displaying billing information
                        print("\n")
                        print("                                  Techno Property Nepal ")
                        print("                                 Address: Kathmandu, Nepal")
                        print("                                    Contact: 071-59999")
                        print("                            Email:
NepalTechnoProperty12@gmail.com\n\n")

                    # Generating a unique bill ID based on the current date and time.
                        year = str(datetime.datetime.now().year)
                        month = str(datetime.datetime.now().month)
                        day = str(datetime.datetime.now().day)
                        hour = str(datetime.datetime.now().hour)
                        id_ = year + month + day + hour

                        print("\t\t\t\t\t\t\t\t\t\tDate: ", year, "/", month, "/", day,"/", hour ,"\n\n")
                        print("Bill ID: ", id_)
                        print("Customer Name: ", name)
                        print("Customer Address: ", address)
                        print("Customer Contact: ", contact)
                        print("\n")

                        # Generating and displaying the bill
                        generate_bill(to_rent_lands, to_return_lands)

                        # Writing billing information to a file
```

```
                        for_writting_bill(name, address, contact, to_rent_lands, to_return_lands)
                        print("\n")
                        print("Above is the invoice for the land(s) you recently inquired about.")
                        print("\n")

                except Exception as e:
                    print("An error occurred while generating the bill:", e)
            else:
                    print("No lands have been rented or returned, so no bill is generated.")


    # Writing all land details to a file
    for_writting_file("land_dic_details.txt", dic)

#to only display the main file(hero)

hero()
```

10.2 process.py

```
import datetime


# This is a function to rent a property
def for_rent_land(lands, to_rent_lands):

    # Filtering available lands
    available_property = {a: b for a, b in lands.items() if b[4] == '\tAvailable'}
    Display(available_property)
    print("\n")
    ans = input("Which land are you interested in for a rent? ")


    if ans in available_property:
        duration = int(input("How long do you want to rent the land in months? "))
        try:
            # Calculating total cost based on duration
            Cost = int(available_property[ans][3]) * duration
            print(f"The total cost for renting kitta {ans} for {duration} month's is: NPR {Cost}")
            # Storing rented land details
            to_rent_lands[ans] = {"City": available_property[ans][0], "Price":
available_property[ans][3], "duration": duration, "Cost": Cost}
            lands[ans][4] = "Not Available"  # Updating land availability
        except ValueError:
            print(" Please enter valid duration in months.")
    else:
        print("Kitta number that you have entered is not available or does not exist")

     #This is a function to return a property
def for_return_land(lands, to_return_lands):
    # Filtering rented lands
    to_rent_lands = {a: b for a, b in lands.items() if b[4] == '\tNot Available'}
    Display(to_rent_lands)
    print("\n")
    ans = input("Do you remember which land did u rent? ")

    if ans in to_rent_lands:
        duration = int(input("Could you please specify the months you rented the land
for?"))
        real_duration = int(input("Could you please specify after how many months you are
returning the land?"))

        try:
            # Validating return duration
            if real_duration < duration:
                print("Invalid duration: The real duration cannot be less than the rented
duration.")
                return

            back = real_duration - duration
            per_month_cost = int(to_rent_lands[ans][3])
            total = per_month_cost * duration
            # Calculating fine for exceeding duration
            if real_duration > duration:
                fine_per_month = 0.15 * per_month_cost
                fine = fine_per_month * back
                total += fine
                print(f"A fine must be paid for each month you have exceeded: NPR {fine}")

            print(f"Total cost for renting kitta {ans} with/without fine is: NPR {total}")

            # Including rental cost and fine in to_return_lands dictionary
            to_return_lands[ans] = {
                "City": to_rent_lands[ans][0],
                "rental_cost": per_month_cost * duration,
                "duration": real_duration,
                "Fine": fine if real_duration > duration else 0,
                "Price": per_month_cost,
                "Cost": total,
                "Total": total - (fine if real_duration > duration else 0)
            }

            lands[ans][4] = "Available"

        except ValueError:
            print("Invalid input. Please enter valid duration in months.")
    else:
        print("The kitta number you entered is not rented or does not exist.")

#below is the Function for displaying lands
def Display(lands):
    print("-----------------------------------------------------------------------------------------------------------------
----------------------------------")
    print("Kitta\t|\t\tCity\t|\t\t\tDirection\t|\tAnna\t|\t\tPrice\t|\t\tAvailability")
    print("-----------------------------------------------------------------------------------------------------------------
----------------------------------")
    for key, value in lands.items():
        print(f"{key}\t\t{value[0]}\t\t{value[1]}\t\t{value[2]}\t\t{value[3]}\t\t{value[4]}")
        print("---------------------------------------------------------------------------------------------------------------
-----------------------------------------")
```

```
"""
Below is theFunction for generating bill
it will help to display the rented lands and calculate the total amount
"""
def generate_bill(for_rent_land, to_return_lands):
    total = 0
    print("---------------------------------------------------------------------------------------------------------
----------")
    print("Kitta\t|\tCity\t\t|\tPrice\t|\tStatus\t|\tduration\t|\tCost")
    print("---------------------------------------------------------------------------------------------------------
----------")

    """
    Displaying rented lands and
    calculating the total amount


    """
    for a, b in for_rent_land.items():
        duration = b["duration"]
        Cost = b["Cost"]
        total += Cost
        print(f"{a}\t{b['City']}\t{b['Price']}\t\tRented\t\t{duration} months\t\t {Cost}\t")

    """
    Displaying returned lands and
    calculating the total amount


    """
    for a, b in to_return_lands.items():
        duration = b["duration"]
        rentcost = b["rental_cost"]
        fine = b["Fine"]
        returncost = rentcost + fine
        total += returncost
        print(f"{a}\t{b['City']}\t\t{b['Price']}\t|     Rented\t|\t {duration} \t\t| \t\t{rentcost}\t")
        print("------------------------------------------------------------------------------------------------------
-------------")
        print(f"                                                                                  | Fine = {fine}\t\n ");


    print(f"                                                                                  | Total = {total}\t")
    print("---------------------------------------------------------------------------------------------------------
----------")
 return total
```

10.3 write.py

```
import datetime
# Function to write billing information to a file

def for_writting_bill(name, address, contact, to_rent_lands, to_return_lands):
    """
    Getting current date and time
    adding year, month, day, hour and minute to the date
    and generating a unique bill ID based on the current date and time
    """
    date = datetime.datetime.now()
    year = str(date.year)
    month = str(date.month)
    day = str(date.day)
    hour = str(date.hour)
    minute = str(date.minute)
    id_ = year + month + day + hour + minute

    # Generating file name based on customer name and bill ID
    file_name = name +id_ +".txt"

    # Opening the file in write mode
    with open(file_name, "w") as file:
        # Writing company information to the file
        file.write("\n\n" +
                   "                                                 Techno Property Nepal\n " +
                   "                                              Address: Kathmandu, Nepal\n " +
                   "                                                 Contact No: 071-59999\n"+
                   "                                       Email: NepalTechnoProperty12@gmail.com\n"
                   "                                      ----------------------------------------\n ");


        # Writing date and billing information to the file
        file.write("\n")
        file.write("Bill ID: " + str(id_) + "\n")
        file.write("Customer Name: " + name + "\n");
        file.write("Customer Address: " + address  + "\n");
        file.write("Customer Contact: " + contact + "\n");


        Total = 0

         # heading for the bill details
        file.write("\n");
        file.write("Kitta\t|\tCity\t\t|\tPrice\t|\tStatus\t|\tduration\t|\tCost\n" );
        file.write("-------------------------------------------------------------------------------------------------
------------\n ");


    # Displaying rented lands and calculating total cost
        for a, b in to_rent_lands.items():
            duration = b["duration"]
            Cost = b["Cost"]
            Total += Cost
            file.write(f"{a}\t{b['City']}\t{b['Price']}\t\tRented\t\t{duration}  \t\t\t{Cost}\n");

     # Displaying returned lands and calculating total cost
        for a, b in to_return_lands.items():
            duration = b["duration"]
            rentcost = b["rental_cost"]
            fine = b["Fine"]
            returncost = rentcost + fine
            Total += returncost
            file.write(f"{a}\t{b['City']}\t\t{b['Price']}\t     Rented\t\t  {duration}
\t\t\t{returncost}\n");
            file.write("\n");
            file.write("----------------------------------------------------------------------------------------------
---------------\n ");
            file.write(f"                                                                 | Fine = {fine}\t\n
");
        file.write(f"                                                                 | Total = {Total}\t")
        file.write("-------------------------------------------------------------------------------------------------
------------ ");
        file.write("\n");
```

10.4 read.py

```
"""
below is a function for writing land details to a file
this will write the land details to a .txt file in the folder that we have this read.py file
"""
def for_writting_file(filename, lands):
    # Open the file in write mode
    with open(filename, "w") as file:
        # Writing headers to the file
        file.write("Kitta     |  \tCity              |   \tDirection        |  \tAnna    |  \tPrice 
|\tAvailability |\n")
        file.write("--------------------------------------------------------------------------------------------------------
-----------------------\n")
        # Writing land details to the file
        for a, b in lands.items():
            file.write(f"{a}\t{b[0]}\t{b[1]}\t\t{b[2]}\t{b[3]}\t\t{b[4]}\n")
```