SWE 225 Project Details

Title: Hotel Guest Reservation System

Project Objective:

1. Integrate what the student has learned throughout the semester to develop algorithms and Python code to solve programming tasks involving control structures and lists.

Special Instructions

1. This is an **Individual** assignment.
2. Weight: 20% of total course grade.
3. **Due date**: 28th of November 2022 at 23:59

   Late submission penalty: 5% for each late day, up to a maximum of 2 days.

Assignment Specifications

A new fancy hotel has requested your help to build a system to manage guests' reservations. The hotel has 6 categories of rooms. Additionally, the rooms vary in capacity. The price for each room depends on the type, capacity and number of nights. Your program will handle both making new reservations and checking out. Guests should be asked if they would like to make a new reservation or check out of their current room. Your program will ask each guest who wishes to make a new booking the details of their reservation then check availability. If there are rooms available a booking will be placed in the system. When a guest makes a reservation or checks out, the system needs to be updated to reflect the current availability of rooms. At the end of the day a summary must be generated for the management. Your program must use loops, lists, functions and files in order to work correctly.

To begin with you will be provided with a text file called **room_details.txt** which will contain the details for the rooms offered by the hotel. Each line in the file will represent a room category and it is formatted as follows:

"Category name", number of rooms, capacity, price per night, price per 7 nights, price per 30 nights, number of rooms occupied

An example of a line in the file is outlined below:

"Wonderful",20,2,1200,8000,30000,2

Notice that each detail is separated by a comma. You will need to create a function called **LoadDetails** which reads each line from the text file into a multidimensional list. The function needs to separate the details in each line so that the data can be used by your system.

There is no way to know exactly how many guests will interact with the system, therefore you must use a loop to handle each request. When there are no more guests to be processed, the user needs to enter the letter **q** to stop asking for more details.

You must create a function called **CheckAvailability** that will check if a particular room is available. This function must accept three input parameters called **roomData**, **category** and **numberOfGuests**. The function will use the data provided to check the category and capacity then return True if a room is available, or False if not. **CheckAvailability** will also return the index location of the room that is a match. Then, you will need to create a fourth function **CalculatePrice** which will calculate the price of the guest's reservation. You will notice that each room category and size have different rates depending on the duration of the booking. This needs to be taken into account when calculating the final price. This function must accept three input parameters called **roomData, durationOfStay** and **roomIndex**. This function must then return the calculated price.

You will need to create a function called **CreateSummary** which generates a summary of the availability of the rooms. This function must accept an input parameter called **roomData**. The summary must display the following information for each type of room:

- Category name
- Number of rooms occupied

You will then need to create a function called **UpdateTextFile** which will save all the updated information into the text file called **room_details.txt**. This update will replace the old information so that the new data will be loaded when the program runs again.

It is extremely important that the system is implement as specified, meaning that all names must be exactly as required. Your system must also check that the correct information is entered by the user so that the program functions as intended.

Assignment Deliverable

The deliverable for this assignment is the following:

- A python file: "project.py" – the source code for your Python program
- A report which details the algorithm design, the code, testing with results and any future improvements that could be made.

Be sure to use the specified file name "project.py" for the python file and to submit it for grading via Blackboard before the project deadline.

Assignment Notes

- Be sure to prompt the user for all the inputs in the correct order. To grade your program, your instructor will enter the same series of inputs for each student's program.

- Note that your program should gracefully handle invalid inputs. The program is also expected to handle other user-supplied inputs which are invalid.

Organisation Of Your Report

Section 1: Solution Design:

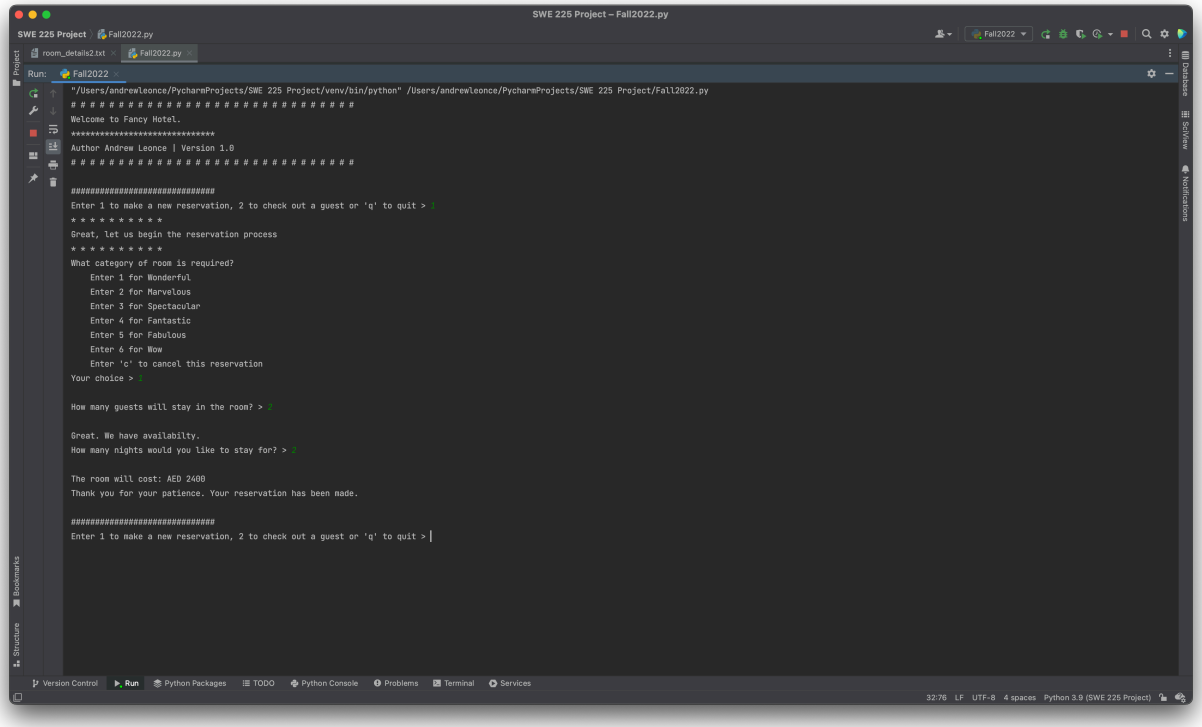
In this section you should provide a Pseudo-code to explain your algorithm and the logic that will drive your Python code.

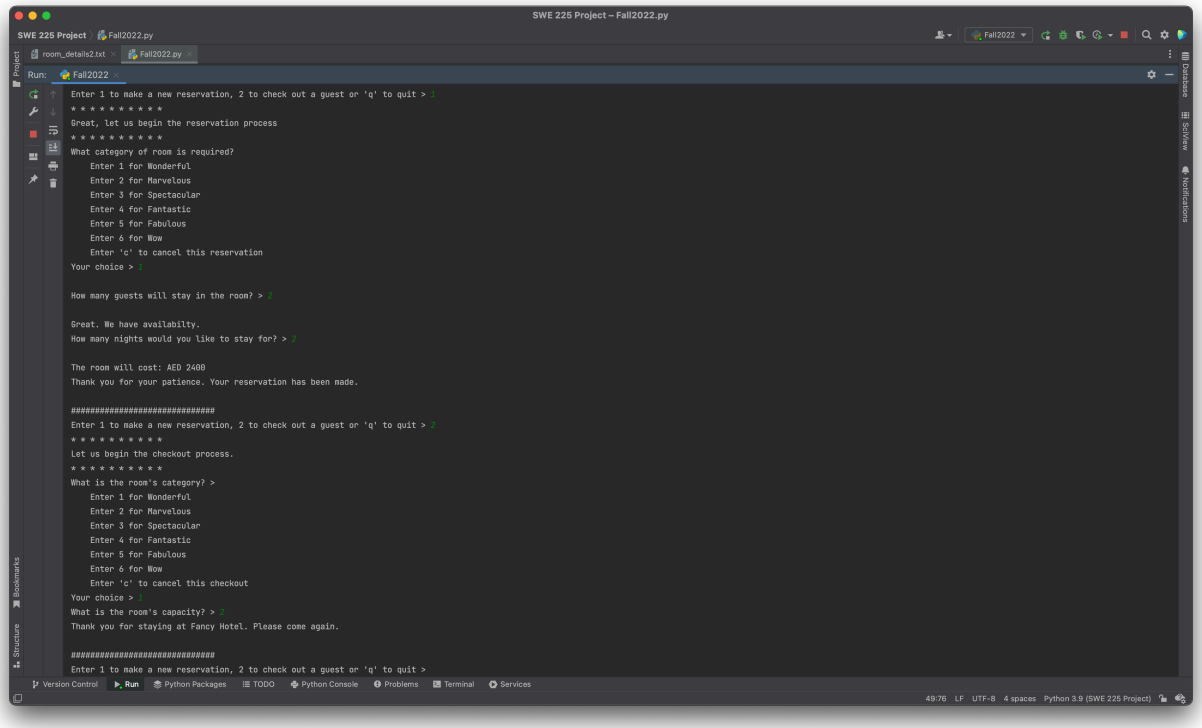
Section 2: Implementation:

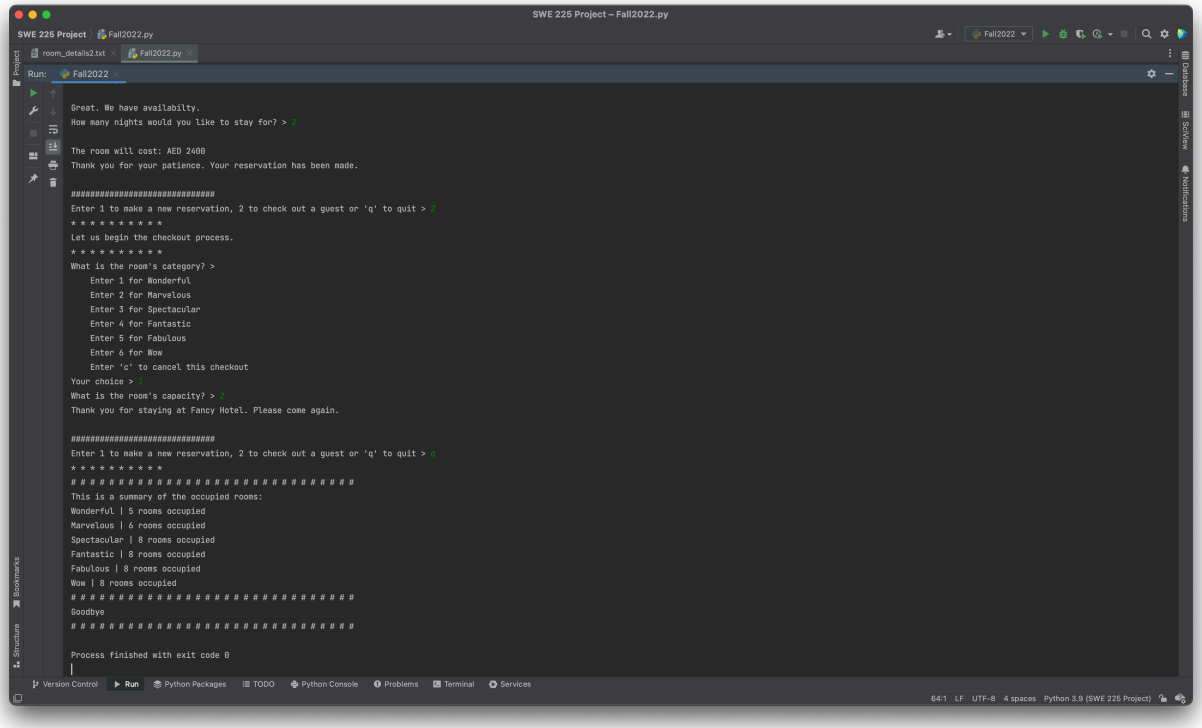
In this section, you should list your complete Python Code. Make sure that your code is optimised for speed and efficiency. Do not forget to include comments which explain what your code is doing. You still need to submit the python file so the code can be tested.

Section 3: Evaluation:

In this section, you should include a screenshot of your program's output, based on the example inputs you have tested. Your output should be as close as possible to the solution provided below.




SWE 225 Project – Fall2022.py
SWE 225 Project
Fall2022.py
room_details2.txt
Fall2022.py
Run:
Fall2022
Enter 1 to make a new reservation, 2 to check out a guest or 'q' to quit > 1
* * * * * * * * * *
Great, let us begin the reservation process
* * * * * * * * * *
What category of room is required?
Enter 1 for Wonderful
Enter 2 for Marvelous
Enter 3 for Spectacular
Enter 4 for Fantastic
Enter 5 for Fabulous
Enter 6 for Wow
Enter 'c' to cancel this reservation
Your choice > 1
How many guests will stay in the room? > 2
Great. We have availabilty.
How many nights would you like to stay for? > 2
The room will cost: AED 2400
Thank you for your patience. Your reservation has been made.
##############################
Enter 1 to make a new reservation, 2 to check out a guest or 'q' to quit > 2
* * * * * * * * * *
Let us begin the checkout process.
* * * * * * * * * *
What is the room's category? >
Enter 1 for Wonderful
Enter 2 for Marvelous
Enter 3 for Spectacular
Enter 4 for Fantastic
Enter 5 for Fabulous
Enter 6 for Wow
Enter 'c' to cancel this checkout
Your choice > 1
What is the room's capacity? > 2
Thank you for staying at Fancy Hotel. Please come again.
##############################
Enter 1 to make a new reservation, 2 to check out a guest or 'q' to quit >
Version Control
Run
Python Packages
TODO
Python Console
Problems
Terminal
Services
49:76 LF UTF-8 4 spaces Python 3.9 (SWE 225 Project)


SWE 225 Project – Fall2022.py
SWE 225 Project
Fall2022.py
room_details2.txt
Fall2022.py
Run:
Fall2022
Great. We have availabilty.
How many nights would you like to stay for? > 2
The room will cost: AED 2400
Thank you for your patience. Your reservation has been made.
##############################
Enter 1 to make a new reservation, 2 to check out a guest or 'q' to quit > 2
* * * * * * * * * *
Let us begin the checkout process.
* * * * * * * * * *
What is the room's category? >
Enter 1 for Wonderful
Enter 2 for Marvelous
Enter 3 for Spectacular
Enter 4 for Fantastic
Enter 5 for Fabulous
Enter 6 for Wow
Enter 'c' to cancel this checkout
Your choice > 1
What is the room's capacity? > 2
Thank you for staying at Fancy Hotel. Please come again.
##############################
Enter 1 to make a new reservation, 2 to check out a guest or 'q' to quit > q
* * * * * * * * * *
# #
This is a summary of the occupied rooms:
Wonderful | 5 rooms occupied
Marvelous | 6 rooms occupied
Spectacular | 8 rooms occupied
Fantastic | 8 rooms occupied
Fabulous | 8 rooms occupied
Wow | 8 rooms occupied
# #
Goodbye
# #
Process finished with exit code 0
Version Control
Run
Python Packages
TODO
Python Console
Problems
Terminal
Services
64:1 LF UTF-8 4 spaces Python 3.9 (SWE 225 Project)