CT010-3-1-FSD

FUNDAMENTALS OF SOFTWARE DEVELOPMENT

INSTRUCTIONS TO CANDIDATES:

1. Submit your assignment online in MS Teams unless advised otherwise

2. Late submission will be awarded zero (0) unless Extenuating Circumstances (EC) are upheld

3. Cases of plagiarism will be penalized

4. You must obtain at least 50% in each component to pass this module

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1.0 INTRODUCTION

This assignment asses basic understanding of programming using pseudocode, flowcharts and Python. It was required to make a room rental program using Python for a university. The program was to contain basic features, as in student allocation and registration, functionality in searching records, allowing Early or Mid-way checkouts and the ability to print accounts related information.

Python is an interpreted, object oriented, high level programming language. It has a simple and easy to learn syntax. It supports modules and packages, which makes the program more modular and easier to convert to other languages for code reuse. The Python interpreter is available in both source and binary forms allowing it to run on many major platforms with increased compatibility compared to other programming languages.

2.0 ASSUMPTIONS

The assumptions made while making the program:

i) There are students already staying on the university accommodation
ii) Deposit is void if the occupant leaves the before the end of the tenancy period (1 Semester or 5 months)
iii) The occupants can only leave the accommodation in monthly increments.
iv) The occupant pays a full month's fee after their partial pay is finished, thus receiving money from the University
v) The University pays the occupant immediately (in the case where they receive money) after they checkout of their accommodation.
vi) Occupants living in Master Bedrooms do not have access to the Kitchen facilities.
vii) The system is based on a "First Come, First Server" basis. This means that the first free apartment/room will be given to the student according to their choice.

3.0 DESIGN OF THE PROGRAM

Pseudocode.txt - Notepad

File Edit Format View Help

```
DEFINE FUNCTION menu():

    OUTPUT("\n\n------------UNIVERSITY STUDENT APARTMENT MANAGEMENT SYSTEM------------\n")

    WHILE True:

        OUTPUT("\n" + "-"* 72 + "\n \nEnter 1 to assign apartment to the student. \nEnter 2 to search FOR student details.")

        OUTPUT("Enter 3 to checkout")

        OUTPUT("Enter 4 to find the total funds collected.\nEnter 5 to setup detabase as empty, all the rooms empty with no student.")

        OUTPUT("Enter 6 to Exit.")

        SET choice TO int(INPUT("\n\tEnter the number from given options:\t"))

        IF choice EQUALS 1:

            apt_Available()

        ELSEIF choice EQUALS 2:

            search_Details()

        ELSEIF choice EQUALS 3:

            checkout()

        ELSEIF choice EQUALS 4:

            SET a TO 0

            SET b TO 0

            SET y, x TO total_payment(a,b)

            OUTPUT("\nTotal rental collected:", x)

            OUTPUT("total amount collected:", y)

            SET z TO y - x

            OUTPUT("Total deposit collected:", z)

        ELSEIF choice EQUALS 5:

            WHILE True:

                SET sure TO INPUT("Do you want to reset/setup all the data, <yes> or <no>:\t")
```

Ln 1, Col 1 | 100% | Windows (CRLF) | UTF-8

Pseudocode.txt - Notepad

File Edit Format View Help

```
                SET sure TO INPUT("Do you want to reset/setup all the data, <yes> or <no>:\t")

                IF sure EQUALS 'yes':

                    apt_New()

                    break

                ELSEIF sure EQUALS 'no':

                    break

                ELSE:

                    OUTPUT("You Entered wrong option")

                    continue

        ELSEIF choice EQUALS 6:

            exit()

        ELSE:

            OUTPUT("\n\t\tYou Entered wrong option\n " + "\t\t" + "-" * 24 + "\n")

            OUTPUT()

            continue


        continue


DEFINE FUNCTION apt_New():


    SET data_List_1 TO []

    SET room_Stat TO 0

    FOR i IN range(100):

        data_List_1.append(room_Stat)

    SET file_1 TO open("Apartment Available.txt",'w')
```

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Pseudocode.txt - Notepad

File Edit Format View Help

```
    SET file_1 TO open("Apartment_Available.txt",'w')
    FOR data_1 IN data_List_1:
        file_1.write(str(data_1) + '\n')
    file_1.close()


    SET data_List_2 TO []
    SET amount TO 0
    FOR j IN range(3):
        data_List_2.append(amount)
    SET file_2 TO open("Funds_collected.txt",'w')
    FOR data_2 IN data_List_2:
        file_2.write(str(data_2) + '\n')
    file_2.close()


    SET file_3 TO open("student_Record.txt",'w')
    file_3.close()


    SET file_4 TO open("Checkouts.txt",'w')
    file_4.close()


    OUTPUT("\nNew file is created, with data of all empty rooms, with no student.")
    OUTPUT("New funds file is created, with no fund's data.")
    OUTPUT("New student Record file is created with no student's data.")
    OUTPUT("Checkout student Record file is created with no student's data.")
```

Pseudocode.txt - Notepad

File Edit Format View Help

```
DEFINE FUNCTION apt_Available():
    OUTPUT("-" * 80)
    OUTPUT("\n\n There are 2 types of Apartments available.\n\n Type A: 2 Single Rooms   -(RM 400/- per single room)-, Kitchen & Laundry.\n Type B: 1 Master Bedroom -(RM 500/- per master ro
    OUTPUT("\n Type A: Internet(Optional) FOR RM 50/- \n Type B: Internet(Optional) FOR RM 40/- \n\n")
    OUTPUT("-" * 80)
    OUTPUT("\n")
    WHILE True:
        SET apt_Type TO str(INPUT("Enter Room Type <A> or <B>:\t")).upper()
        IF apt_Type EQUALS 'A' or apt_Type EQUALS 'B':
            IF apt_Type EQUALS 'B':
                SET apt_Type TO str(INPUT("Enter Room Type <S> or <M>:\t")).upper()
                IF apt_Type EQUALS 'S':
                    SET apt_Type TO 'B'
                ELSEIF apt_Type EQUALS 'M':
                    SET apt_Type TO 'C'
                ELSE:
                    OUTPUT("You Entered wrong option")
                    continue
            SET j, count, apt_Num, room_Num TO std_assign(apt_Type)
            IF count != 0:
                OUTPUT("Currently there are:", count, " free rooms available IN Type ", apt_Type ," Apartments")
                SET x TO apt_Assign(j,apt_Type, apt_Num, room_Num)
                break
            ELSE:
                OUTPUT("Currently there are no rooms available IN Type ", apt_Type ," Apartments, please try other type.")
```

Ln 196, Col 1 | 100% | Windows (CRLF) | UTF-8

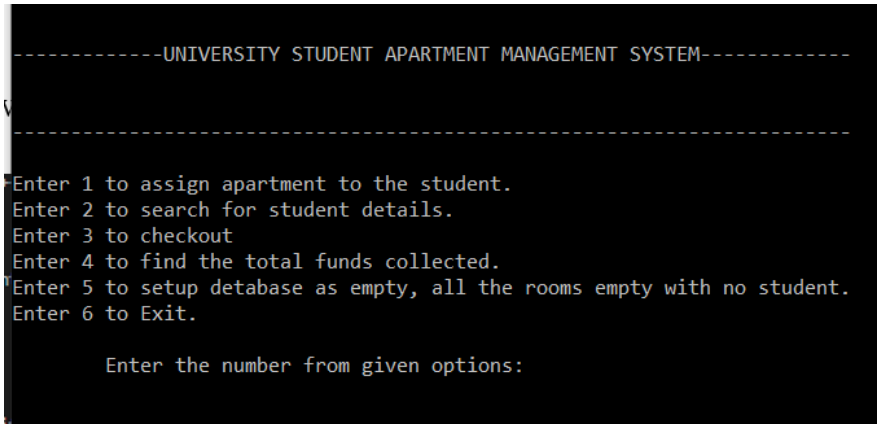
Few screenshots of pseudocode of the code, remaining code is available in the folder

4.0 FUNCTIONALITY

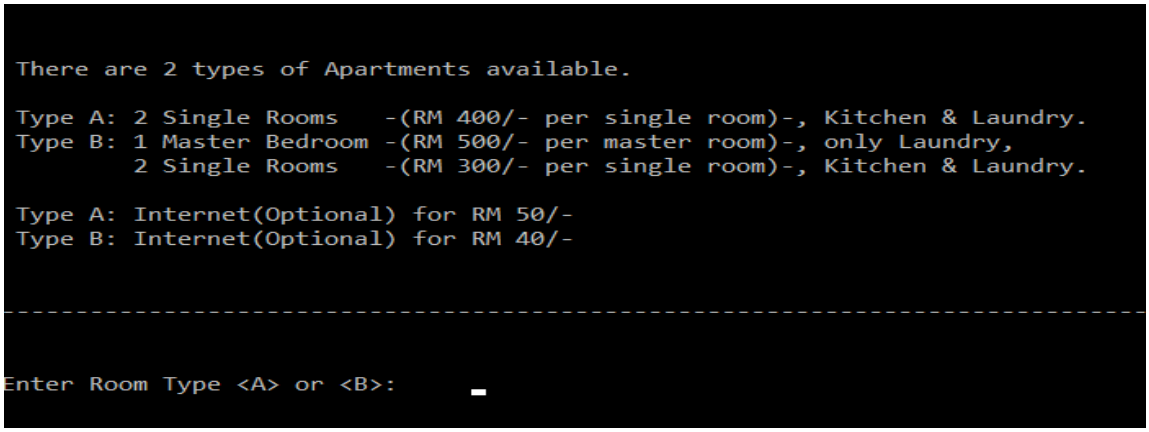
According to the how the program is structured, it has 7 main functions.

i) menu()
ii) apt_Available
iii) search_Details()
iv) checkout()
v) total_payment()
vi) apt_New()
vii) exit()

These are the 6 functions that make up the program. When it is executed, at first the menu() function is called automatically and the user is greeted by a menu.



From here the user can select anyone of these options. As this is a student registration and apartment rental program, users will be keen to use option 1 first. Upon entering option 1, the user is then greeted by another menu, this time called by the apt_Available function.



Then, it is possible to select an Apartment Type (A or B). After selecting an apartment, the user will be prompted to enter more details, such as Student Name, TP Number etc. According to the user's requirements the program will find a free room. The first free room that the program gets will be allocated for that student in that moment.

Option 2 is to search for details about students:

```
Enter 1 to assign apartment to the student.
Enter 2 to search for student details.
Enter 3 to checkout
Enter 4 to find the total funds collected.
Enter 5 to setup database as empty, all the rooms empty with no student.
Enter 6 to Exit.

        Enter the number from given options:    2
```

Option 3

Option 4, displays the total fund collected, total rental collected, total deposit collected

```
Enter 1 to assign apartment to the student.
Enter 2 to search for student details.
Enter 3 to checkout
Enter 4 to find the total funds collected.
Enter 5 to setup database as empty, all the rooms empty with no student.
Enter 6 to Exit.

        Enter the number from given options:    4

Total rental collected: 52845
total amount collected: 56045
Total deposit collected: 3200
```

Option 5, is a really good option for data is setup for first time, it creates all files with null/ no data.

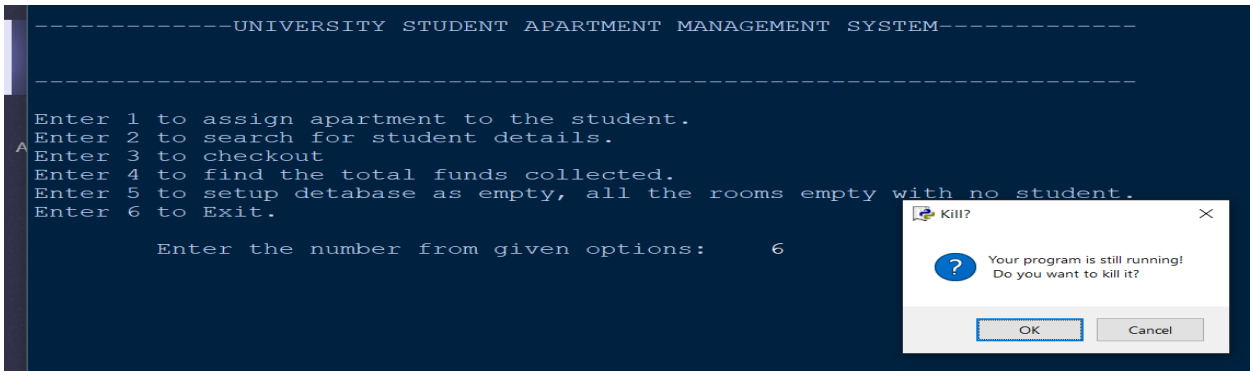
That helps the code and Programme to setup but if it is used while data is available, then all the data will be written with null values or no values, that means all the previous data will be gone.

But few precautions are taken, if by mistake user selects the option 5, he will be asked is he sure or not.

```
Enter 1 to assign apartment to the student.
Enter 2 to search for student details.
Enter 3 to checkout
Enter 4 to find the total funds collected.
Enter 5 to setup database as empty, all the rooms empty with no student.
Enter 6 to Exit.

        Enter the number from given options:    5
Do you want to reset/setup all the data, <yes> or <no>:
```

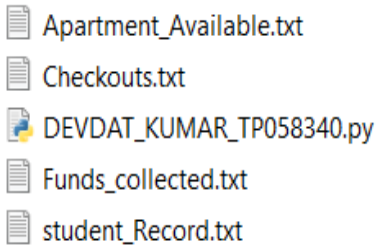
Option 6,

Once a user is done with his work, he can select the option 6 to end and exit the Programme.



5.0 TEST DATA

5.1 Student Registration and Room Allocation:



Student Rental Record file before adding 25 new entries

Apartment_Available.txt

```
2A12yesazmanTP058340f2150R0T2150
3A21yesjawrneyTP000423f2150R0T2150
4A22norodneyTP999687p1300R800T2100
5A31yesrandy060428p1800R350T2150
6A32noericTP0590423f2100R0T2100
7A41noalphaTP090909p1400R700T2100
8A42yesdarcyTP235456f2150R0T2150
9A51yesfafarTP080080p1200R950T2150
10A52nogilaniTP011011f2100R0T2100
41B211yesalphaTP123456f1640R0T1640
42B212yesbetaTP234567p1000R640T1640
43B221nocharlieTP345678f1600R0T1600
44B222nodeltaTP456789p900R700T1600
45B231noexcelTP567890f1600R0T1600
46B232yesfetaTP678901p880R760T1640
47B241yeskarthikTP890123p1200R440T1640
48B242nodevlinTP901234f1600R0T1600
49B251nobobTP821314f1600R0T1600
50B252yesgegaaTP789345p1250R390T1640
81C411yesfuaxtronTP004499f2640R0T2640
82C412yeskonnieTP090907p1500R1140T2640
83C421novoxyTP575777f2600R0T2600
84C422nogeorgeTP969696p1500R1100T2600
85C431nobabasTP787878f2600R0T2600
11A61yeskavinTP343988f2150R0T2150
12A62notartaTP678686p1400R700T2100
51B261yesjiganTP456908p935R705T1640
52B262nohirticTP232354f1600R0T1600
86C432norajesh059340f2600R0T2600
87C441novickyTP892345f2600R0T2600
13A71yesnoTP342480f2150R0T2150
```

Checkouts.

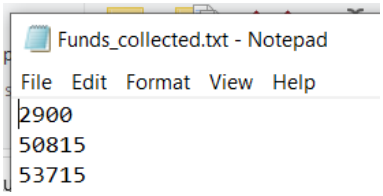
```
------------UNIVERSITY STUDENT APARTMENT MANAGEMENT SYSTEM-------------


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

nter 1 to assign apartment to the student.
nter 2 to search for student details.
nter 3 to checkout
nter 4 to find the total funds collected.
nter 5 to setup detabase as empty, all the rooms empty with no student.
nter 6 to Exit.

       Enter the number from given options:    3
nter your Tp number:   TP969696

       *** 84C422nogeorgeTP969696p1500R1100T2600 ***
nter the number of months lived:       4
ou will get  410.0
```

Checkouts.txt

```
1A11yesdevdatTP058340f2150R0T2150
84C422nogeorgeTP969696p1500R1100T2600
4A22norodneyTP999687p1300R800T2100
43B221nocharlieTP345678f1600R0T1600
```

Funds collected

Fundscollected.txt



Apartment_Available.txt