University of Wollongong
School of Computing and Information Technology
CSIT121 Object Oriented Design and Programming
Assignment 3

Objectives
- To apply Object Oriented Design (OOD).
- To apply Object Oriented Programming (OOP) using Python.

Tasks
Write the Python class(es) to load HDB resale data from a file and provide search capability on the resale data. The data file contains the resale transactions of 2024. Each row represents the sale of a HDB flat, and the columns are shown below.

month	town	flat_type	block	street_nam	storey_ran	floor_area	flat_model	lease_com	remaining	resale_price
2024-02	ANG MO K	2 ROOM	406	ANG MO K	01 TO 03	44	IMPROVED	1979	54 years 04	285000
2024-02	ANG MO K	2 ROOM	323	ANG MO K	04 TO 06	44	IMPROVED	1977	52 years 0!	293000
2024-02	ANG MO K	2 ROOM	314	ANG MO K	01 TO 03	44	IMPROVED	1978	52 years 1:	303000
2024-04	ANG MO K	2 ROOM	314	ANG MO K	01 TO 03	44	IMPROVED	1978	52 years 1(	288000
2024-01	ANG MO K	2 ROOM	116	ANG MO K	07 TO 09	44	IMPROVED	1978	53 years 0(	288000
2024-03	ANG MO K	2 ROOM	172	ANG MO K	01 TO 03	45	IMPROVED	1986	60 years 1:	300000
2024-04	ANG MO K	2 ROOM	174	ANG MO K	01 TO 03	45	IMPROVED	1986	60 years 1(	320000
2024-01	ANG MO K	2 ROOM	510	ANG MO K	04 TO 06	44	IMPROVED	1980	55 years 0:	322500
2024-01	ANG MO K	3 ROOM	308B	ANG MO K	01 TO 03	70	MODEL A	2012	87 years 0!	520000

You will decide (design) the class(es) to implement, and the methods in the class(es). You will decide the data structure (list, dictionary, objects in a list, object in a dictionary, etc.) to hold the resale data. Floor area and resale price must be stored as numeric values. Erroneous data (incorrect data type, invalid value, etc.) must be handled and recorded in a file. After the data is loaded, the program/class must provide the following methods. You may include additional methods.

get_town	This method will return a list of distinct town values extracted from the resales data.
get_flat_type	This method will return a list of distinct flat type values extracted from the resales data.
get_flat_model	This method will return a list of distinct flat model values extracted from the resales data.

search	This method will return a collection (list, dictionary, or any other data structures) of sale transactions that meet the search conditions. The search conditions can include any or all of the following: • town – single or multiple values. • flat type – single or multiple values. • flat model – single or multiple values.

Implement a loop to allow user to search for resale transactions repeatedly until the user decides to quit. Make use of the methods defined above to perform the search.

You will carry out OOD and OOP as follow:
• You must *not* use global variable.
• You must choose an appropriate data type (class) for each attribute.
• You must include appropriate properties and setters (or get and set methods).
• You must decide the parameter(s) for each method.
• You may include additional attributes and methods for each class.
• You must define a main function with helper functions to thoroughly test the functionalities of the program.
• You must include exception handling.
• You must include comments in the program.

Submission
• Please submit **one text** file containing the Python code (with comments), the execution results (in text form, and 10 rows for each search), and the content of the error log file to UOW Moodle.
• File name must be in the form of: TX_Y.txt where X is your tutorial group and Y is your full name.
• Repeat your tutorial group, your student number and name inside the file.
• Late submission will be penalized 25% per day late. Please refer to UOW Moodle for the assignment due date (in Singapore time).