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.

Submission

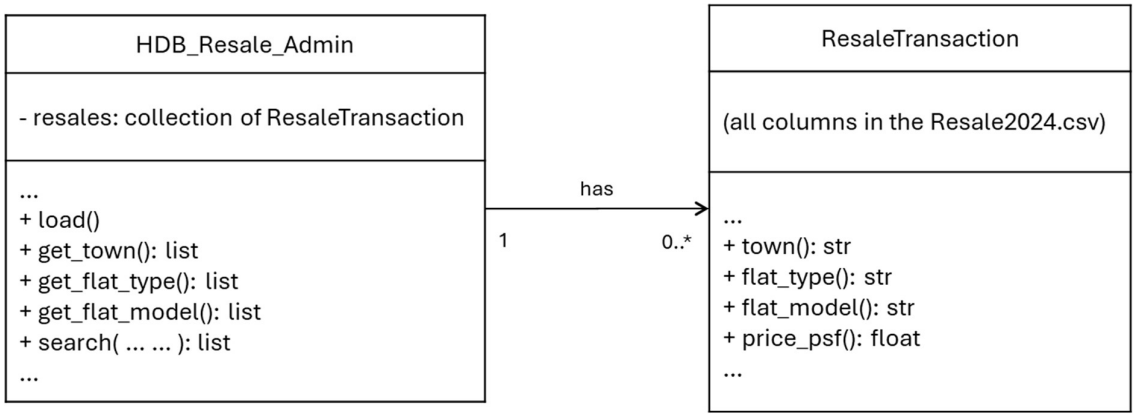
- Please submit **one text** file containing the Python code (with comments) and the execution results (in text form) to UOW Moodle.
- File name must be in the form of: **TXX_NAME_UOWID.txt** where XX is your tutorial group, NAME is your full name and UOWID is your 7-digit UOW ID number. For example, **T02_JeffreyTan_8080426.txt**
- Late submission will be penalized 25% per day late. Please refer to UOW Moodle for the assignment due date (in Singapore time).

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 for 2024. Each row represents the sale of a HDB flat, and the columns are as follows.

month	town	flat_type	block	street_nan	storey_ran	floor_area_	flat_model	lease_com	remaining_	resale_price
2024-02	ANG MO KI	2 ROOM	406	ANG MO KI	01 TO 03	44	IMPROVED	1979	54 years 04	285000
2024-02	ANG MO KI	2 ROOM	323	ANG MO KI	04 TO 06	44	IMPROVED	1977	52 years 05	293000
2024-02	ANG MO KI	2 ROOM	314	ANG MO KI	01 TO 03	44	IMPROVED	1978	52 years 11	303000
2024-04	ANG MO KI	2 ROOM	314	ANG MO KI	01 TO 03	44	IMPROVED	1978	52 years 10	288000
2024-01	ANG MO KI	2 ROOM	116	ANG MO KI	07 TO 09	44	IMPROVED	1978	53 years 06	288000
2024-03	ANG MO KI	2 ROOM	172	ANG MO KI	01 TO 03	45	IMPROVED	1986	60 years 11	300000
2024-04	ANG MO KI	2 ROOM	174	ANG MO KI	01 TO 03	45	IMPROVED	1986	60 years 10	320000
2024-01	ANG MO KI	2 ROOM	510	ANG MO KI	04 TO 06	44	IMPROVED	1980	55 years 07	322500
2024-01	ANG MO KI	3 ROOM	308B	ANG MO KI	01 TO 03	70	MODEL A	2012	87 years 09	520000

Given the following ***draft*** class diagram, you can further decide (design) and implement required attributes, and 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 (log file).

Class: HDB_Resale_Admin

Attribute	**Description**
resales	Collection of (valid) ResaleTransaction objects.
Method	
load	To read the resales data from a data file and save into the collection resales. For rows with erroneous data, the method must handle and record the errors into a log file.
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 list of ResaleTransaction objects that meet the search conditions. The search conditions can include any or all the following: • town – single or multiple values. • flat type – single or multiple values. • flat model – single or multiple values. • price psf – single value, if given, search result should contain ResaleTransaction objects that are equal or above this value.

Class: ResaleTransaction

Attribute	**Description**
… …	Study the given Resale2024.csv and include at minimum, all columns as attributes. If necessary, you may include additional attributes.
Method	
town	Property that returns the town for this resale transaction.
flat_type	Property that returns the flat type for this resale transaction.
flat_model	Property that returns the flat model for this resale transaction.

price_psf	Define this property that returns the price per square foot for this resale transaction, using the resale price divided by floor area.

You will carry out OOD and OOP as follows:

- You must ***not*** use global variables.
- 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.