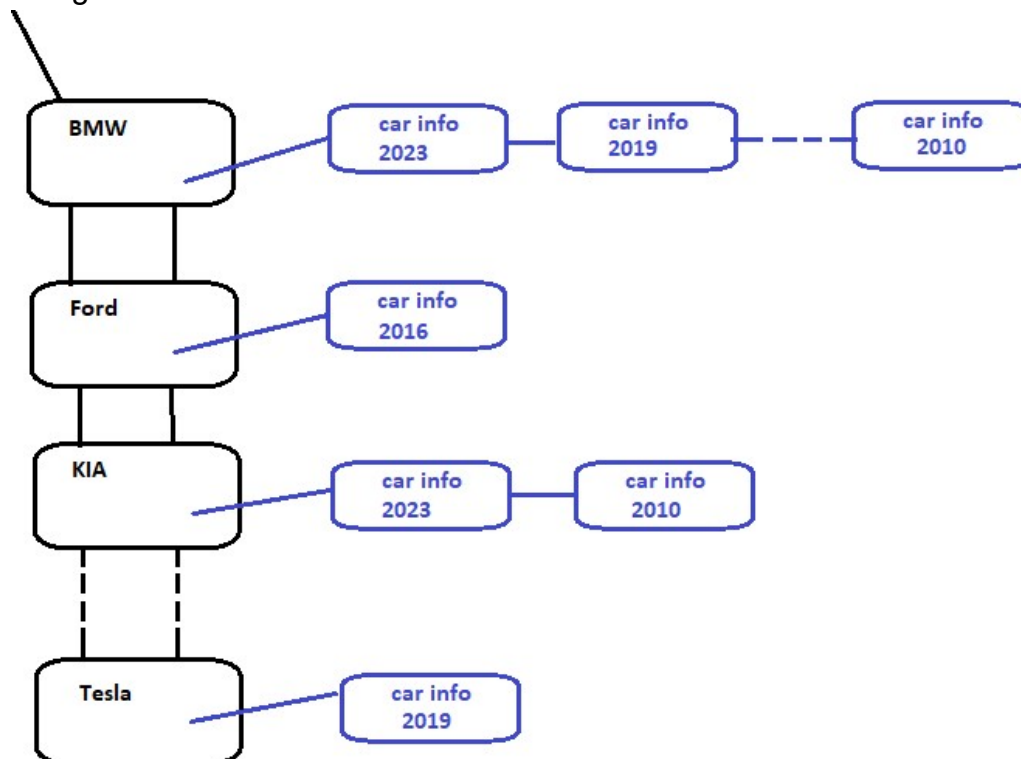**COMP242 Project II:** Due date 4/6/2023 @ 10pm

Project Idea: **Car Agency System**

Description:

In this project, you will implement an application of a car agency. This agency contains different kinds of cars. Each client gives an order to buy a car. The car agency admin will search for the required car upon customers' request in order if still available (First Comes First Served).

The following shows the structure of cars data structure:

Note: Car **brands** are sorted alphabetically and **cars** are sorted by year.

Main Features to Include:

The car agency system has the following main requirements:

1) There are many kinds of cars in the car agency's inventory stored in a data structure as shown in the above figure (double linked list has car **brand** and a single linked list of the available **cars**). They may have more than one car from each brand/year.
2) The customers' orders are processed in a **Queue**.
3) The sold cars are stored in a **Stack**.

Detailed Operations:

- Options to read cars data from a file (**cars.txt**), fill the cars data structure, and an option to save back to the cars file (same format). The information of cars include: ***Brand***, ***Model***, ***Year***, ***Color***, and ***Price***.
- Options to read customers order from a file (**orders.txt**), fill them back to Stack (Finished orders) and to Queue (InProcess orders), and an option to save back to the orders file (same order and format).
- Options to add/delete/update/search a car brand (from double linked list).
- Options to add/delete/update/search a car within a brand (from single linked list).
- Customers can navigate cars brands and available cars within a brand and place an order to the order queue (order includes cars info and customer info as well). Use filters to limit the car results (e.g. by year/color/model/price).
- Admin can process customers' orders queue and add finished one to a finish ordered stack. Make sure to remove the sold cars from the cars data structure. In case a car is not anymore available, the admin has an option to remove it from front of queue and add it back to the end of queue **or** to cancel the order completely.
- An option to report the last 10 sold cars.

You Only Have to Use LinkedLists, Queues, and Stacks that you Implemented in the Lab to Store Data.

For a good user experience, you will need to implement a graphical user interface (GUI) using javaFX.

Good Luck!