Submission Requirements
- Submit your project via the Submit tool provided on the website
  - Follow the project submission guidelines for the class

Design Documentation Requirements
- No design documents are required for this project

Input File Requirements
Note: The **Required Files** zip file located on the course website contains all of the files for the project.
- Input.txt (The input data file to load into the program)

Design Specification Requirements
Note: Refer to the sample output in the **Example Output** section below.

<p style="text-align:center; color:red">**!!! WARNING !!!**
DO NOT MODIFY ANY OF THE PROVIDED CODE OR METHODS UNLESS SPECIFICALLY STATED.
!!! WARNING !!!</p>

1. Create a program and call it **Project5**
   Note: Unlike Project 4, the Owner and Vehicle classes must be fully implemented before the
          program will run without error and display the owner data (the sorted data will be incorrect).
   A. The program accepts a single command-line argument
       1. The command-line argument is the path and filename of the input data file
       2. It is recommended that the input data file be located in the project folder
2. Modify the five (5) Collection class methods listed in the **Method Descriptions** section
   Note: Do **NOT** modify the name, parameters, or return type of these methods.
   A. Write the code that produces the correct logical output for each method
3. Modify the Owner class to conform to the provided UML Class diagram
   Note 1: Refer to the **Method Descriptions** section.
   Note 2: Do **NOT** modify the name, parameters, or return type of the specified variables and methods.
   A. Write the code that produces the correct logical output for each method
4. Modify the Vehicle class to conform to the provided UML Class diagram
   Note 1: Refer to the **Method Descriptions** section.
   Note 2: Do **NOT** modify the name, parameters, or return type of the specified variables and methods.
   A. Write the code that produces the correct logical output for each method

<p style="text-align:center; color:red">**!!! WARNING !!!**
DO NOT MODIFY ANY OF THE PROVIDED CODE OR METHODS UNLESS SPECIFICALLY STATED.
!!! WARNING !!!</p>

Additional Notes
- Submit the source code of the Collection.java file only
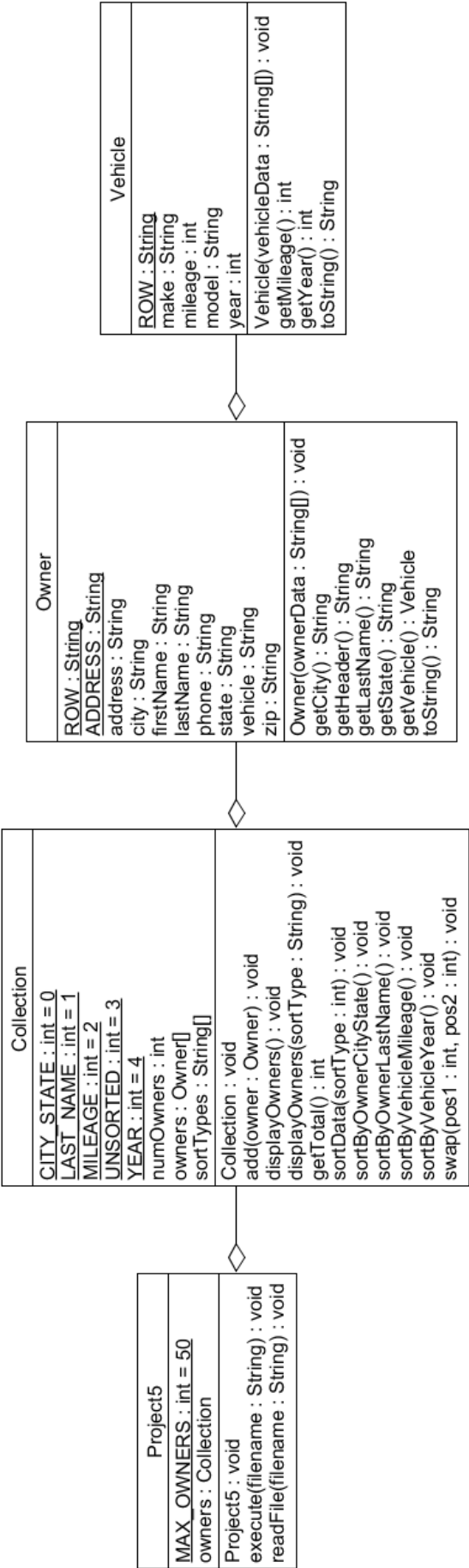- Submit a capture of the program output as a *.txt file

Method Descriptions
1. Collection class
    A. sortByOwnerCityState

    B. sortByOwnerLastName

    C. sortByVehicleMileage
        Note: This method is similar to the sortByOwnerLastName method.

    D. sortByVehicleYear
        Note: This method is similar to the sortByOwnerLastName method.

    E. swap
        1. Swaps values between two specified locations in an array

2. Owner class
    Note: Refer to the UML Class diagram for more information about the Owner class.

    A. Model the Owner class after the UML Class diagram
        1. Create each of the required properties
        2. In the constructor, assign the owner data values to the properties
            a. Refer to the table in the Input File Data Arrangement below
        3. Write the code for the following methods:
            a. getCity
            b. getLastName
            c. getState
            d. getVehicle

3. Vehicle class
    Note: Refer to the UML Class diagram for more information about the Vehicle class.

    A. Model the Vehicle class after the UML Class diagram
        1. Create each of the required properties
        2. In the constructor, assign the vehicle data values to the properties
            a. Refer to the table in the Input File Data Arrangement below
        3. Write the code for the following methods:
            a. getMileage
            b. getYear

Input File Data Arrangement

Position	Description
0	Owner's Last Name
1	Owner's First Name
2	Owner's Street Address
3	Owner's City
4	Owner's State
5	Owner's Zip
6	Owner's Phone Number
7	Vehicle's Make
8	Vehicle's Model
9	Vehicle's Year
10	Vehicle's Mileage

UML Class Diagram

Vehicle

ROW : String
make : String
mileage : int
model : String
year : int

Vehicle(vehicleData : String[]) : void
getMileage() : int
getYear() : int
toString() : String

Owner

ROW : String
ADDRESS : String
address : String
city : String
firstName : String
lastName : String
phone : String
state : String
vehicle : String
zip : String

Owner(ownerData : String[]) : void
getCity() : String
getHeader() : String
getLastName() : String
getState() : String
getVehicle() : Vehicle
toString() : String

Collection

CITY_STATE : int = 0
LAST_NAME : int = 1
MILEAGE : int = 2
UNSORTED : int = 3
YEAR : int = 4
numOwners : int
owners : Owner[]
sortTypes : String[]

Collection : void
add(owner : Owner) : void
displayOwners() : void
displayOwners(sortType : String) : void
getTotal() : int
sortData(sortType : int) : void
sortByOwnerCityState() : void
sortByOwnerLastName() : void
sortByVehicleMileage() : void
sortByVehicleYear() : void
swap(pos1 : int, pos2 : int) : void

Project5

MAX_OWNERS : int = 50
owners : Collection

Project5 : void
execute(filename : String) : void
readFile(filename : String) : void

Example Output

```
Ima Java Programmer
Project 5

Owner Information (Unsorted):

Last Name    First Name  Address                                            Phone          Make        Model         Year  Mileage
---------    ----------  -------                                            -----          ----        -----         ----  -------
Wallace      Larry       9 Truax Way Mobile, AL  34205                      (718)996-3418  Chevrolet   Corvette      2015  15297
Porter       Heather     0596 Sutteridge Terrace El Paso, TX  76198         (480)130-2211  Ford        Focus         2003  196477
```
```
Robinson     Harold      16719 Artisan Alley Austin, TX  45020              (717)547-9558  Dodge       Grand Caravan 2015  15797
Ray          Phyllis     52435 Crest Line Plaza San Diego, CA  28055        (903)913-5260  Nissan      Quest         2009  109139

Owner Information (Sorted by Last Name):

Last Name    First Name  Address                                            Phone          Make        Model         Year  Mileage
---------    ----------  -------                                            -----          ----        -----         ----  -------
Adams        Paul        72 Merry Way Syracuse, NY  38695                    (205)674-4710  Toyota      Camry         2009  108349
Armstrong    James       722 Messerschmidt Lane New York City, NY  31610    (941)710-8944  Kia         Optima        2008  121675
```
```
Watkins      Amanda      41 Bowman Road Norwalk, CT  35279                  (559)353-2654  Cadillac    ATS           2003  195948
Young        Kathryn     310 Harbort Court Denver, CO  77705                (719)955-3700  Honda       Odyssey       2001  225805

Owner Information (Sorted by Mileage):

Last Name    First Name  Address                                            Phone          Make        Model         Year  Mileage
---------    ----------  -------                                            -----          ----        -----         ----  -------
Wallace      Larry       9 Truax Way Mobile, AL  34205                      (718)996-3418  Chevrolet   Corvette      2015  15297
Robinson     Harold      16719 Artisan Alley Austin, TX  45020              (717)547-9558  Dodge       Grand Caravan 2015  15797
```
```
Hunter       Elizabeth   64 Beilfuss Circle Charlotte, NC  30336            (352)422-5663  Dodge       RAM           2000  243415
Rogers       Carol       7 Texas Place Cheyenne, WY  33680                  (917)298-3303  Kia         Sedona        2000  243986

Owner Information (Sorted by Year): // The data is sorted by year in descending order

Last Name    First Name  Address                                            Phone          Make        Model         Year  Mileage
---------    ----------  -------                                            -----          ----        -----         ----  -------
Wallace      Larry       9 Truax Way Mobile, AL  34205                      (718)996-3418  Chevrolet   Corvette      2015  15297
Robinson     Harold      16719 Artisan Alley Austin, TX  45020              (717)547-9558  Dodge       Grand Caravan 2015  15797
```
```
Hunter       Elizabeth   64 Beilfuss Circle Charlotte, NC  30336            (352)422-5663  Dodge       RAM           2000  243415
Rogers       Carol       7 Texas Place Cheyenne, WY  33680                  (917)298-3303  Kia         Sedona        2000  243986

Owner Information (Sorted by City and State): // The data is sorted by State and then by City

Last Name    First Name  Address                                            Phone          Make        Model         Year  Mileage
---------    ----------  -------                                            -----          ----        -----         ----  -------
Wallace      Larry       9 Truax Way Mobile, AL  34205                      (718)996-3418  Chevrolet   Corvette      2015  15297
Rodgers      Diana       57037 Maywood Junction Phoenix, AZ  60681          (315)587-1021  Jeep        Wrangler      2014  31781
```
```
Jordan       Judy        1428 Ludington Hill Madison, WI  60614             (562)728-9809  Jeep        Grand Cherokee 2010 90695
Rogers       Carol       7 Texas Place Cheyenne, WY  33680                  (917)298-3303  Kia         Sedona        2000  243986
```