# CIS 501 Project 3: Vehicle Registration System (VRS)

The Kansas Department of Transportation (KDOT) has asked your corporation to develop a Vehicle Registration System (VRS), which keeps track of the following information:

1. For each registered vehicle, the current owner and a list of all the previous owners.
2. For each owner, a list of vehicles that he currently owns.

The system provides the following operations:

1. register a dealer: register a new dealer, with a Dealer ID (DIN - the primary key), dealer name, city, and state
2. register a Vehicle : register a vehicle in the system, with its Vehicle Identification Number (VIN - the primary key), make (such as Toyota), model (such as Camry), year, color, and the initial dealer
   ▪ Assume that initially, a maker has to transfer the ownership of a car to a dealer
3. register an owner : register an owner, with Social Security Number (SSN - the primary key), first name, last name, address, and birth date
4. List all dealers in the system
   • For each dealer, display DIN, Dealer Name, City, State, and a list of vehicles that the dealer currently possesses
   • For each vehicle, display VIN, make, model, year, color
5. List all registered vehicles
   • For each vehicle, display VIN, make, model, year, color
6. List all owners
   • For each owner, display SSN, first name, last name, address and birth date
7. Transfer ownership : transfer the ownership of a vehicle (specified by VIN) from one owner (or a dealer) to another owner (or a dealer), with price and date information.  If a transfer is made to an owner (not to a dealer), a license number must be given
8. For each owner, list the vehicles that the owner currently owns
   • The list starts with the information about the owner (SSN, first name, last name, address, birth date),  followed by one entry for each vehicle that he owns
   • Each vehicle entry displays VIN, make, model, year, color, the date on which he bought the vehicle,  license number, and price
9. For each vehicle, list the ownership history of the vehicle :  list information about the current and all previous owners of the vehicle
   • The list  starts with the information about the vehicle (VIN, make, model, year, color),
   • It is followed by the current owner information which consists of (1) the owner information (SSN, first name, last name, address, birth date),  the date on which the vehicle was bought, license number, and price

- It is then followed by previous owner information: each owner entry displays (1) the owner information (SSN, first name, last name, address, birth date), (2) the period that the owner had owned the car (the date he purchased it and the date he sold it and (3) price (no license information should be printed)

10. Save the current data into a file (*.vrs)
11. Restore the data from a file
12. In order to facilitate testing your program, the system can read a sequence of operations from a file. The following operations can be submitted in a file (*.inf).

- Operations
- Register a Dealer
    - operation, dealer ID (Did), Name, City, State
    - Note: dealerID starts with character "D"
- Register a Vehicle
    - operation, VIN, Make, Model, Year, Color, Initial Dealer (DID)
- Register an Owner
    - operation, SSN, First Name, Last Name, Address, Birth Date
    - Note: SSN starts with a digit (between 1 and 9)
- Transfer Ownership
    - operation, From, To, VIN, Date, Price, License Number (only when selling to a private owner), where
        - "From" may be either dealer (Did) or Private Owner (SSN)
        - "To" may be either dealer (Did), Private Owner (SSN)
- List the ownership history of a vehicle
    - operation, VIN
- List the vehicles that an owner currently owns
    - operation, SSN
- List all dealers and the vehicles that each dealer possesses
    - Operation, DealerID
- Each entry is a string ("xxx") delimited by at least one space character.
- Operations are identified by the following key words:
    - "RegisterDealer", "RegisterVihicle", "RegisterOwner", "TransferD2D", "TransferD2O", "TransferO2D", "TransferO2O", "ListOwnersOfVehicle", "ListVehiclesOfOwner" "ListDealers"
- For more details, look at an example file "Register.inf"

==== the file begins here =======

"RegisterDealer"  "DL1" "Little Apple" "Manhattan" "Kansas"
"RegisterDealer" "DL2" "Figgs" "Topeka" "Kansas"
"RegisterVehicle" "H1" "Honda" "Accord" "1994" "Red" "DL1"
"RegisterVehicle" "S1" "Subaru" "Forester" "2009" "Silver" "DL2"
"RegisterVehicle" "T1" "Toyota" "Camry" "2003" "Gray" "DL1"
"RegisterVehicle" "G1" "Subaru" "Impreza" "2011" "White" "DL2"
"RegisterOwner" "111" "Hideki" "Matsui" "123 South Street, CA" "Feb. 14, 1985"
"RegisterOwner" "222" "Ichiro" "Suzuki" "452 North Street, WA" "Nov. 9, 1982"
"RegisterOwner" "333" "Daisuke" "Matsuzaka" "3301 Manhattan Street, MA" "Dec. 30, 1987"
"TransferD2O" "DL1" "111" "H1"  "Oct. 1997" "11000" "IA123"
"TransferO2O" "111" "222" "H1"  "Nov. 2002" "8000" "KS234"
"TransferO2O" "222" "333" "H1"  "Nov. 2004" "7000""MA455"
"ListOwnersOfVehicle" "H1"
"TransferO2D" "333" "DL2" "H1"  "Nov. 2006" "4000"
"ListOwnersOfVehicle" "H1"
"TransferD2O" "DL2" "111" "G1" "Nov. 2007" "13000"  "KS344"
"TransferD2O" "DL2" "111" "S1"  "Oct. 2008" "21000" "KS198"
"TransferO2O" "111" "222" "G1"  "Jan. 2009" "3000" "IA445"
"TransferD2O" "DL1" "333" "T1"  "Feb. 2009" "26000" "IA556"
"TransferO2D" "222" "DL2" "G1" "Mar. 2010" "2000"
"ListDealers"
"TransferD2O" "DL2" "111" "H1" "Jun. 2011" "1400" "MO345"
"ListVehiclesOfOwner" "111"

===== End of the file ===

o   You do not need to implement delete operations (deleting a dealer, a vehicle, and an owner). This is because deleting a certain record may violate record integrity (such as creation of vehicles without any owner) and is considered to be beyond the scope of two-week design/implementation project.

**Notes:**

1. You are not allowed to use database in your program.
2. There is only one boundary class, "Console," and there is only one console object