# Lab 17
# Fleet of Vehicles

**Objective:**

Write a classes that represents a vehicle system

First download the driver and put it in your project
- DO NOT ALTER THE DRIVER!

Write a class file called **Vehicle**
- Some of the attributes are
  - Manufacturer's name
  - Number of Cylinders (must be greater than 0)
  - Owner's name
- Create the following Constructors
  - Default – sets everything to default values
  - Parameterized Constructor
    - Check for valid values
- Accessors and Mutators for each variable
  - MAKE SURE THE MUTATORS CHECK FOR VALID VALUES!
- Create the following Methods
  - equals – takes in another instance of a Vehicle and returns true only if the names and the number of cylinders are equal
  - toString – returns a String that contains the Manufacturer's name, number of cylinders, and the owners name

Write another class **Truck** which is a **Vehicle**
- Some of the attributes of Truck are
  - Load capacity: a nonnegative number of tons represented by a decimal number
  - Towing capacity: a nonnegative number of tons represented by a decimal
- Create the following constructors
  - Default – sets everything to default values
    - This includes calling the Vehicle's default constructor
  - Parameterized Constructor
    - This must also take in via parameter the manufacturer's name, number of cylinders, and the owner's name in addition to the load and towing capacity.
- Accessors and Mutators for each variable
  - MAKE SURE THE MUTATORS CHECK FOR VALID VALUES!
- Create the following methods
  - equals – This should override the vehicle's equals method return true if all the properties of vehicle and truck are equal
  - toString – This should also override the vehicle's toString method and also return the Vehicle's toString along with the towing and load capacity

Write another class **Car** which is a **Vehicle**
- Some of the attributes of Truck are
  - Gas Mileage: a nonnegative number of gallons represented by a decimal number
  - Number of passengers: a nonnegative number of passengers represented by a whole number
- Create the following constructors
  - Default – sets everything to default values
    - This includes calling the Vehicle's default constructor
  - Parameterized Constructor
    - This must also take in via parameter the manufacturer's name, number of cylinders, and the owner's name in addition to the load and towing capacity.
- Accessors and Mutators for each variable
  - MAKE SURE THE MUTATORS CHECK FOR VALID VALUES!
- Create the following methods
  - equals – This should override the vehicle's equals method return true if all the properties of vehicle and car are equal
  - toString – This should also override the vehicle's toString method and also return the Vehicle's toString along with the gas mileage and number of passengers

**Example Dialog:**

```
Welcome to the fleet manager
Enter 1: to add a Vehicle
Enter 2: to remove a Vehicle
```

```
Enter 9 to quit
1
Enter 1: if it is a car
Enter 2: if it is a truck
Enter 3: if it is unclassified
1
Enter the manufacturer's name
Nissan
Enter the number of cylinders
6
Enter the owner's name
JJ
Enter the car's gas mileage
29
Enter the number of passengers
5
The Fleet currently
Manufacturer's Name: Nissan
Number Of Cylinders: 6
Owner's Name: JJ
Gas Mileage: 29.0
Number of Passengers: 5

Enter 1: to add a Vehicle
Enter 2: to remove a Vehicle
Enter 9 to quit
1
Enter 1: if it is a car
Enter 2: if it is a truck
Enter 3: if it is unclassified
2
Enter the manufacturer's name
Chevy
Enter the number of cylinders
8
Enter the owner's name
Eddie
Enter the truck's load capacity
1
Enter the truck's towing capacity
2
The Fleet currently
Manufacturer's Name: Nissan
Number Of Cylinders: 6
Owner's Name: JJ
Gas Mileage: 29.0
Number of Passengers: 5

Manufacturer's Name: Chevy
Number Of Cylinders: 8
Owner's Name: Eddie
Towing Capacity: 2.0
Load Capacity: 1.0

Enter 1: to add a Vehicle
Enter 2: to remove a Vehicle
```

```
Enter 9 to quit
1
Enter 1: if it is a car
Enter 2: if it is a truck
Enter 3: if it is unclassified
3
Enter the manufacturer's name
Ford
Enter the number of cylinders
6
Enter the owner's name
Bob
The Fleet currently
Manufacturer's Name: Nissan
Number Of Cylinders: 6
Owner's Name: JJ
Gas Mileage: 29.0
Number of Passengers: 5

Manufacturer's Name: Chevy
Number Of Cylinders: 8
Owner's Name: Eddie
Towing Capacity: 2.0
Load Capacity: 1.0

Manufacturer's Name: Ford
Number Of Cylinders: 6
Owner's Name: Bob

Enter 1: to add a Vehicle
Enter 2: to remove a Vehicle
Enter 9 to quit
2
Enter 1: if it is a car
Enter 2: if it is a truck
Enter 3: if it is unclassified
2
Enter the manufacturer's name
Chevy
Enter the number of cylinders
8
Enter the owner's name
Eddie
Enter the truck's load capacity
1
Enter the truck's towing capacity
2
The Fleet currently
Manufacturer's Name: Nissan
Number Of Cylinders: 6
Owner's Name: JJ
Gas Mileage: 29.0
Number of Passengers: 5

Manufacturer's Name: Ford
Number Of Cylinders: 6
```

```
Owner's Name: Bob

Enter 1: to add a Vehicle
Enter 2: to remove a Vehicle
Enter 9 to quit
9
The Fleet currently
Manufacturer's Name: Nissan
Number Of Cylinders: 6
Owner's Name: JJ
Gas Mileage: 29.0
Number of Passengers: 5

Manufacturer's Name: Ford
Number Of Cylinders: 6
Owner's Name: Bob

Goodbye
```

**Lab Report Questions:**

1. Describe inheritance.
2. Describe polymorphism.

**Finally:**

Upload file to the dropbox