Object Oriented Programming C++

* Object Oriented
  + Need to use classes
    - Ensures encapsulation
    - Used to create objects
  + Instantiation is creating an object using a class
* Making a class
  + Keyword “class” needed at the start followed by the name of the class
  + Access specifier: public, private, and protected
    - Private: 🡪 Cannot change variables inside the class
    - Public: 🡪 Functions outside of the class can change variables
    - Protected: 🡪 (will see later)
  + A function in the class
  + Close a class as “};”
  + Everything declared in a class = “members of the class”
    - Member functions of the class
    - Member data of the class
* Making Objects
  + Declare the class first
  + Name of the class as a keyword followed by object name and semicolon
    - Ex) Vehicle Minivan;
    - Ex) Vehicle Sportscar;
  + The objects will have different definitions for the variables in class Vehicle, making them different
* Using The Class
  + Accessing member data (variables) and member functions—Format: object.member
    - Ex) Minivan.passengers = 20;
    - Ex) Minivan.range();
      * Use dot operator (.) to access member data and member functions
      * Can only use “Minivan.passengers” if the class is public, if private, we need to make a function that can change the variables and make the function public
* Member Functions
  + Prototyping
    - Simply naming the function in the class and then later, outside of the class, implementing the function.
      * Ex) Vehicle::range() {}
        + Tells the compiler which class the function belongs to
        + “::” = scope resolution operator

To define a member function in the main code

* Constructors
  + Used to set member data values upon creation in the class.
    - Prototype as just the class name
    - Defining the prototyped constructor: Vehicle::Vehicle()
* Deconstructor
  + Used to delete the object made after being used
    - Prototype with a “~” before the class name
    - Defining the prototyped deconstructor: Vehicle::~Vehicle()