OBJECTS AND CLASSES

ANY REAL WORLD ENTITY - OBJECT

- Real-world objects share two characteristics: They all have state and behaviour.

- OOP tries to model real world objects and communication between them through its programming paradigm.
- An object stores its state in data fields(attributes) and exposes its behaviour through methods (functions).

GROUP OF SIMILAR OBJECTS - CLASS

- Class is a **blueprint or template** from which objects are created.
- CLASS : Animal
- OBJECTS : Cat, Dog, etc.

- We can think of a class as a sketch (prototype) of a house. It contains all the details about the floors, doors, windows, etc. Based on these descriptions we build the house. House is the object.
- It is a user defined data type (not C++ built in data type)
  - Objects are variables of the type class
  - Behave like built in data type of C

Class Definition

- Starts with the keyword class followed by the class name
- Then the class body comes enclosed by a pair of curly braces.
- Necessary to end with a semi-colon

```
class Animal{
    public: //Access Specifiers
    string color; //state
    int legs; //state

    int countLegs(){ //behavior
        return legs; //methods to access data members
    }
};
```

Object Definition

- Classname followed by object name.
- We declare objects of a class with exactly the same sort of declaration that we declare variables of basic types.
- Objects can also be defined when a class is defined by placing their names immediately after the closing brace.

```
class Animal{
    public: //Access Specifiers
    string color; //state
    int legs; //state

    int countLegs(){ //behavior
        return legs; //methods to access data members
    }
} Dog, Cat;
```

- But, usually we would like to declare objects close to the place where they are actually going to be used.

```
class Animal{
    public: //Access Specifiers
    string color; //state
    int legs; //state

    int countLegs(){ //behavior
        return legs; //methods to access data members
    }
};
int main(){
    Animal Dog, Cat;
}
```