

# 11-01-2018 – CS15 Notes

## Data Structures

- ex. array
  - read in from file
  - dynamically allocate based on size
  - binary search
  - char array = word
  - 2048 board
  - sorting
  - shifting data in 2D array
- **Definition of a data structure**
  - list or collection
  - order matters and can be changed
  - refer to element by its index
  - stores information
  - same data type
  - store information in memory
  - individual elements are accessible
- **List or collection that organizes multiple data elements of the same type.**

## Data Abstraction

- separate implementation from the logic
- **Implementation (*Implementer*)**
  - class definition for data structure
  - Big Picture

```
class Array
{
    private:
    int ray[MAX];
    int size;
    .
    .
    .
}
```

- append

- remove
- get\_element\_at
- find
- get\_size
- print

- **Logic (*client*)**

- driver for a specific application
- call function of the class

```
Array a;  
a.insert(97);  
a.insert(98);  
.  
.  
.
```