**Introduction to Data Structures**

Data structures are collections of values. They contain the relationships among these values, and the functionality or operations that can be applied to the data.

**Why So many Data Structure?**

Different data structures excel at different things. Some are highly specialized, while others (like arrays) are more generally used.

Note:

* All data structure do the same thing at the end of the day, they store data. But their behaviour, the relationship between the data and their functionality, the methods we get to act upon them are very different.
* You’ve already worked with many of them unknowingly!  
  So if you have ever worked with the DOM an dJavaScript, you’ve manipulated and interacted with a tree.
* THERE IS NO ONE "BEST" DATA STRUCTURE because They all excel in different situations.
* If you wanna Work with map/location data?

Use a graph!

* If you Need an ordered list with fast inserts/removals at the beginning and end?  
  Use a linked list!
* Want Web scraping nested HTML?

Use a tree!

**ES2015 CLASS SYNTAX**

**What is a class?**  
A blueprint for creating objects with pre-defined properties and methods.

**Why do we need to learn this?**We're going to implement data structures as classes!

**Creating Instance Method & Class Method:**

class Student {

constructor(firstName, lastName){

this.firstName = firstName;

this.lastName = lastName;

}

**//Instance Method**   
fullName(){

return `Your full name is ${this.firstName} ${this.lastName}`;

}

**//Class Method**   
static enrollStudents(...students){

// maybe send an email here

}

}

let firstStudent = new Student("Colt", "Steele");

firstStudent.fullName() *// "Colt Steele"* ***This is execution of instance method.***

Student.enrollStudents() *// "Colt Steele"* ***This is execution of class method.***

**Static Method:**The static keyword defines a static method for a class. Static methods are called without instantiating their class and cannot be called through a class instance. Static methods are often used to create utility functions for an application. Static method also known as ‘utility method’.

**What is ‘this’ keyword?**Inside all of our instance methods and constructor, the keyword `this` refers to the object created from that class (also known as an instance).

**Note:**

* Defining a class is just a pattern.
* Function of ‘**new**’ keyword is Dynamic Memory allocation (DMA). Since, class doesn’t take any memory until an object instantiate using ‘new’ keyword. So, when we create an object of a class, ‘new’ keyword allocate memory of that class.
* In Java Constructor is a special type of function whose name is exactly as same as of Class name. It instantiated automatically when an object is created. If we not define constructor in java, Java Compiler create a default constructor of that particular class with name ‘constructor’.

**RECAP**

* Classes are blueprints that when created make objects known as **instances.**
* Classes are created with the new keyword
* The **constructor** function is a special function that gets run when the class is instantiated (Instant Execution)
* Instance methods can be added to classes similar to methods in objects
* Class methods can be added using the static keyword