OOP - Class

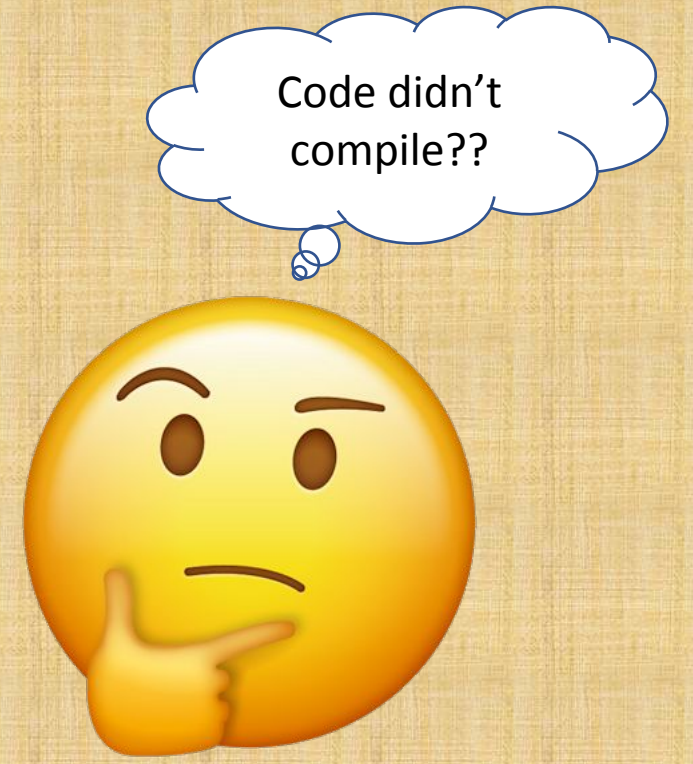
Class Definition as on brilliant.org -

In object-oriented programming, a class is a blueprint for creating objects (a particular data structure), providing initial values for state (member variables or attributes), and implementations of behavior (member functions or methods).

OOP -Class

```
class ComputerLanguage{
    //Member to Store Language Name
    var languageName: String

    //Member to identify if it is a compiled language
    var isCompiled: Bool

    //Member storing the market adoption %ages
    var adoptionRate: Double

    //Member identifying if languages has OOP support
    var supportsOOP: Bool

    //and so on…
}
```

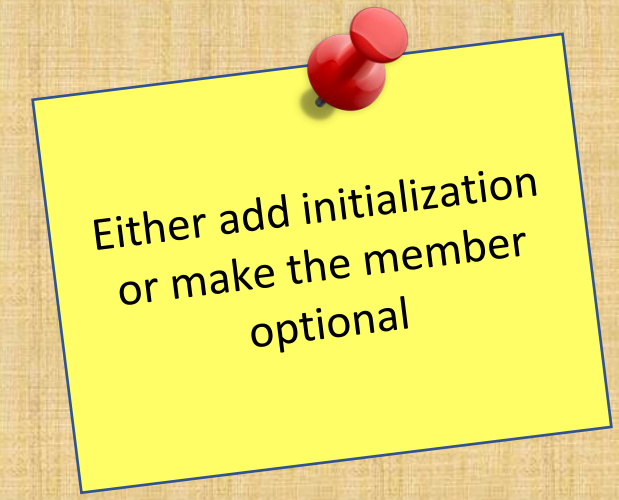
OOP -Class



Remember our discussion on variables needing initiation
You have two choices

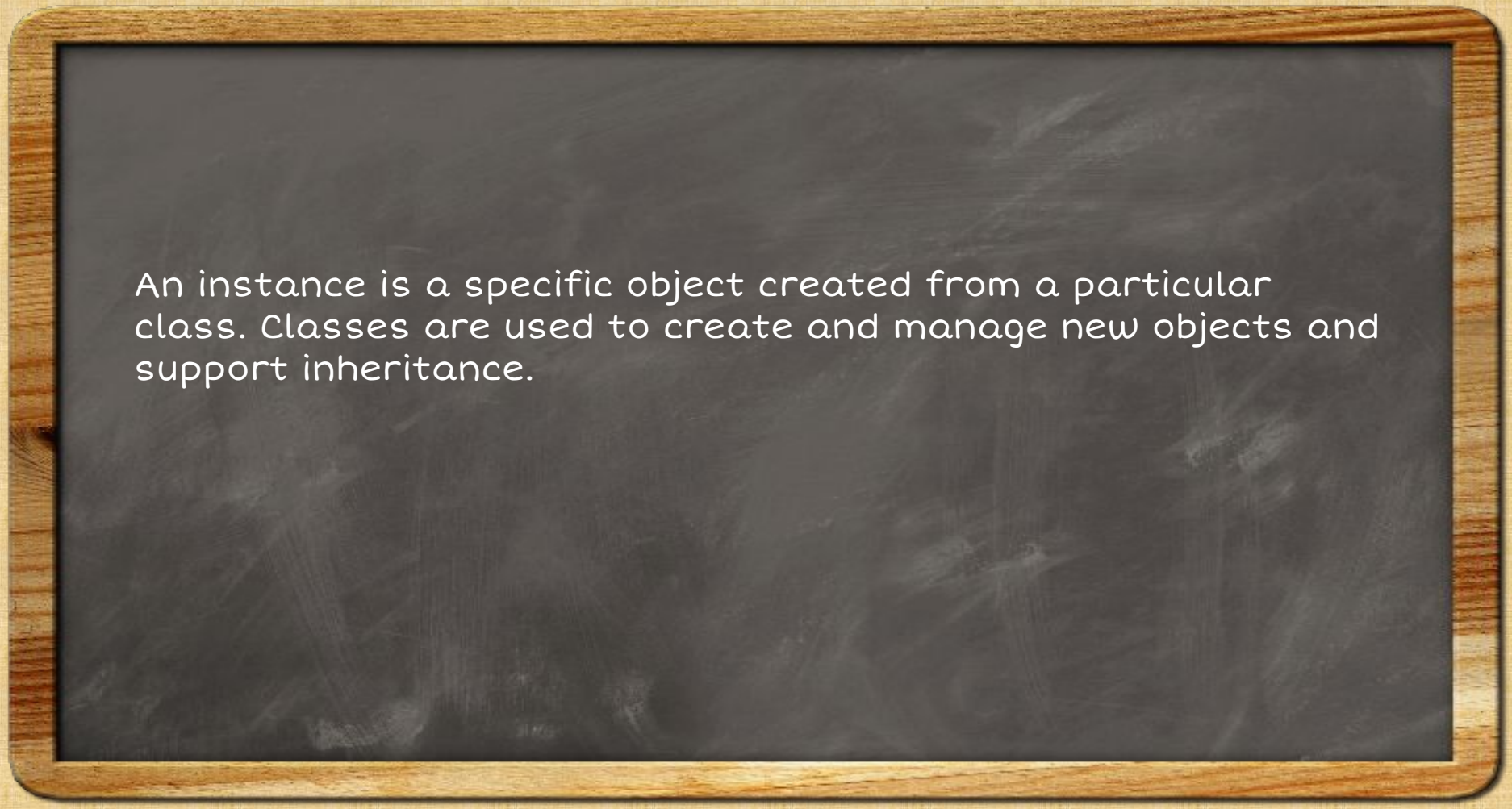
OOP -Class

```
class ComputerLanguage{
    var languageName: String
    var isCompiled: Bool?
    var adoptionRate: Double
    var supportsOOP: Bool?

    init(languageName: String, adoptionRate: Double){
        self.languageName = languageName
        self.adoptionRate = adoptionRate
        self.isCompiled = true
        self.supportsOOP = true
    }
}
```




```
ComputerLanguage(languageName: "Swift",
adoptionRate: 5.9)
```

OOP -Objects


An instance is a specific object created from a particular class. Classes are used to create and manage new objects and support inheritance.

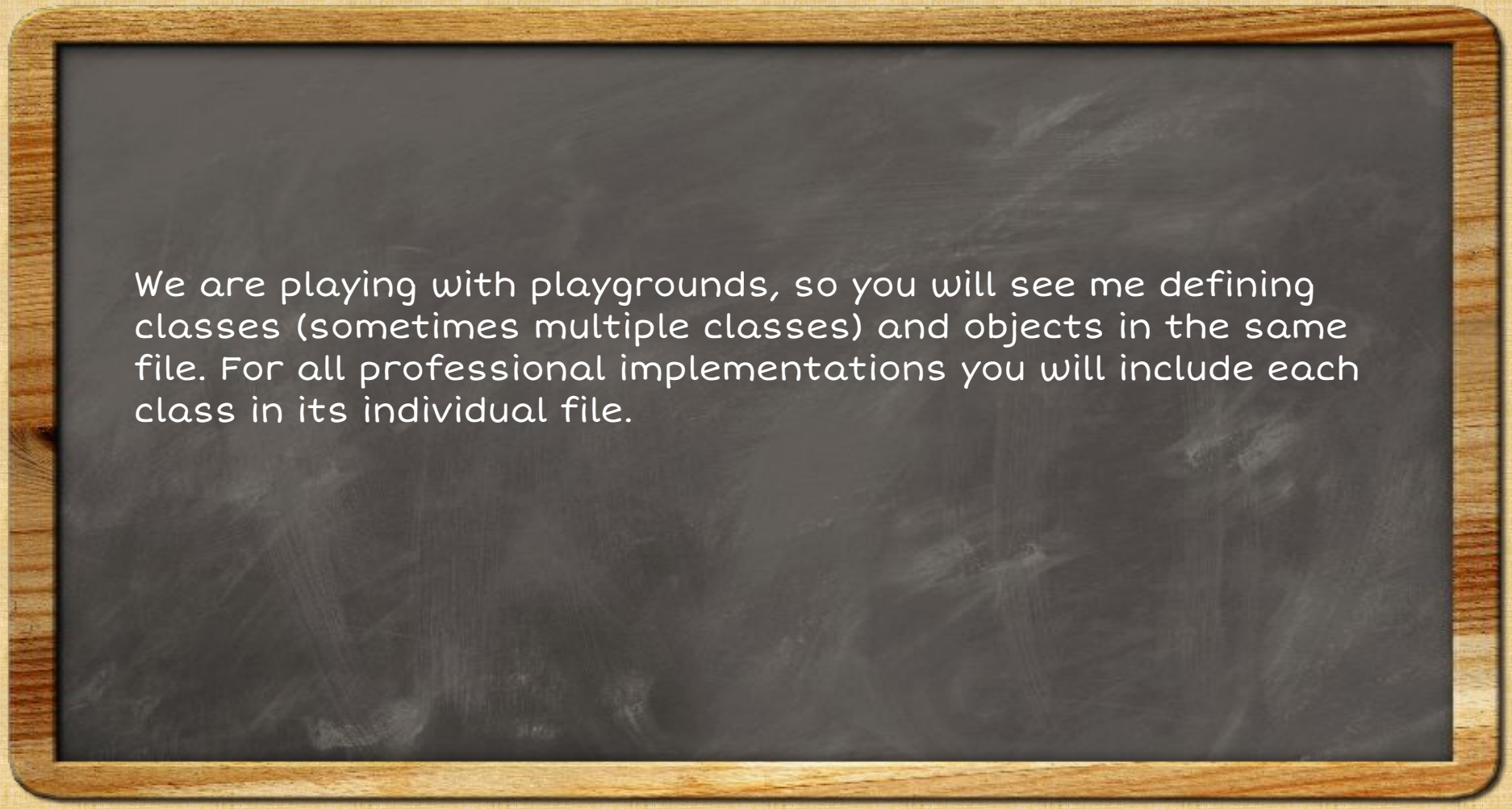
OOP -Objects


```
var java = ComputerLanguage(languageName: "Java", isCompiled: true, adoptionRate: 40.2, supportsOOP: true)
```

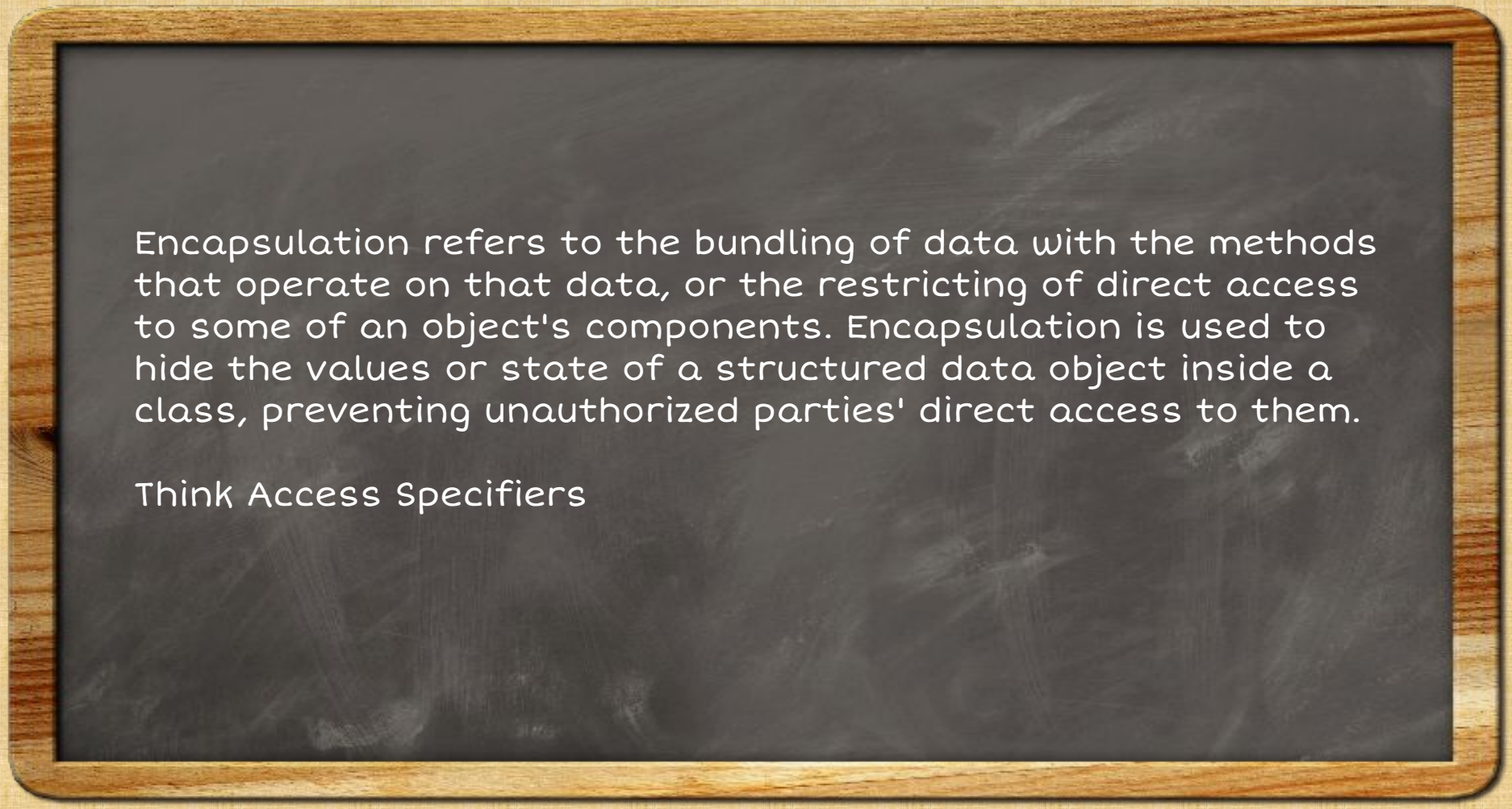
```
var swift = ComputerLanguage(languageName: "Swift", isCompiled: true, adoptionRate: 5.9, supportsOOP: true)
```

```
var kotlin = ComputerLanguage(languageName: "Kotlin", isCompiled: true, adoptionRate: 7.8, supportsOOP: true)
```

OOP – Comment on classes and files



OOP -Encapsulation



OOP -Encapsulation

```
class AmortizationCalculator{
    private var myInterestRate: Double = 3.4 //I may be pulling this from
network call or from DB

    public func getInterestRateApplied() -> Double{
        return self.myInterestRate
    }
}


var calculator = AmortizationCalculator()
print (calculator.getInterestRateApplied())
```

OOP -Inheritance

As the name says –

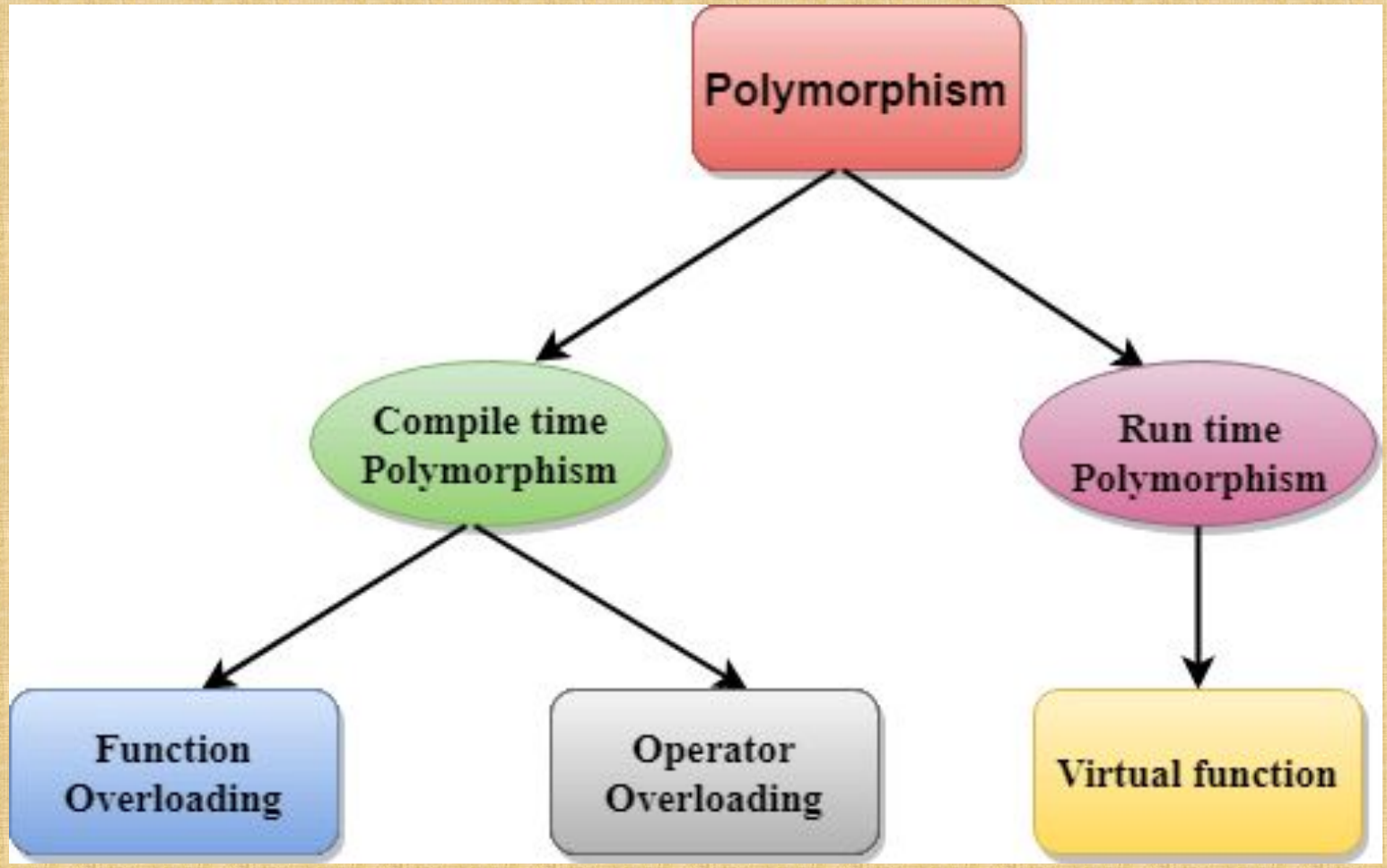
Pass on the wealth

OOP -Inheritance

```
class ComputerLanguage{
    var languageName: String
    init() {
        languageName = ""
    }
}
class OOPLanguage: ComputerLanguage{
    public func teachClassMeaning(){}
    public func teachObjects(){}
    public func teachInheritence(){}
}
class Swift: OOPLanguage{
    public func coverOOPBasics(){
        self.teachClassMeaning();
        self.teachObjects();
        self.teachInheritence();
    }
}
var swift = Swift()
swift.languageName = "Swift"
```

OOP -Polymorphism

OOP -Polymorphism



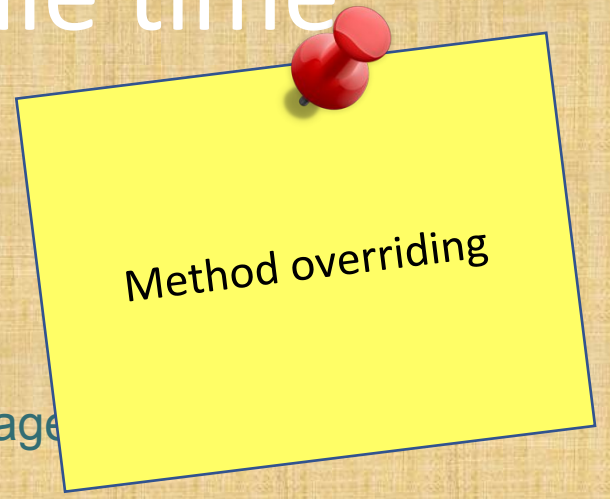
OOP –Polymorphism - Compile time

Method overloading

```
class ComputerLanguage{
    var languageName: String
    init(languageName: String){
        self.languageName = languageName
    }
    public func doSyntaxAnalysis(){
        print ("My default syntax analysis implementation for: \(languageName)")
    }

    public func doSyntaxAnalysis(ignoringWarnings: Bool){
        print ("My default syntax analysis implementation for: \(languageName) while ignoring warnings: \(ignoringWarnings)")
    }
}


var swift = ComputerLanguage(languageName: "Swift")
swift.doSyntaxAnalysis()
swift.doSyntaxAnalysis(ignoring Warnings: true)
```

OOP –Polymorphism - Compile time

```
class ComputerLanguage{
    var languageName: String
    init(languageName: String){
        self.languageName = languageName
    }
    public func doSyntaxAnalysis(){
        print ("My default syntax analysis implementation for: \(language
    }
}
class Swift: ComputerLanguage{
    init(){
        super.init(languageName: "Swift")
    }
    override public func doSyntaxAnalysis(){
        print ("Doing my custom implementation for: \(languageName)")
    }
}
var swift = Swift()
swift.doSyntaxAnalysis()
```



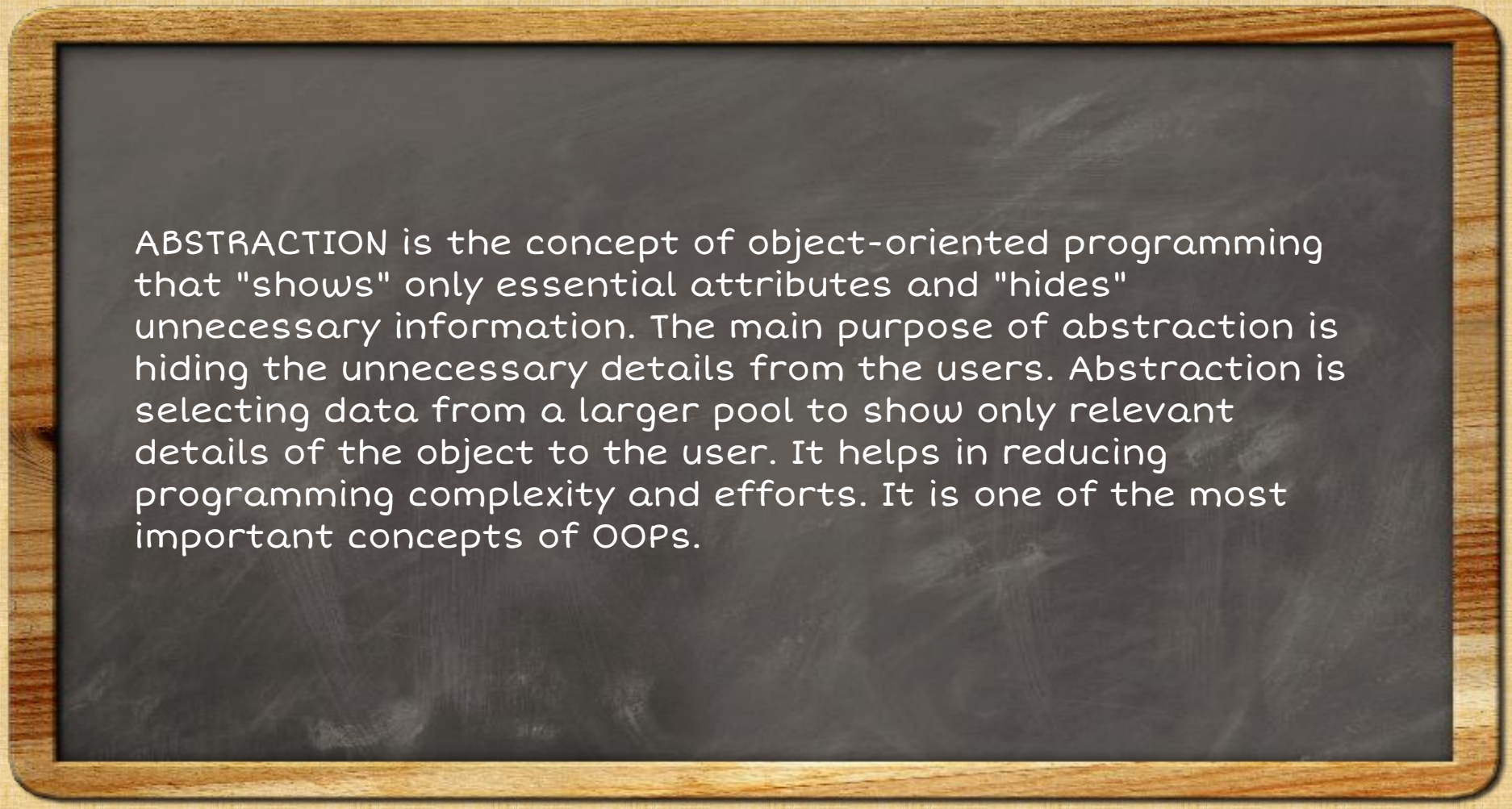
OOP –Polymorphism - Run time

```
protocol ComputerLanguageProtocol{
    var languageName: String{ get set }
    func doSyntaxAnalysis()
}


class ComputerLanguage: ComputerLanguageProtocol{
    var languageName: String
    init(languageName: String){
        self.languageName = languageName
    }
    public func doSyntaxAnalysis(){
        print ("My default syntax analysis implementation for: \(languageName)")
    }
}
```

OOP –Polymorphism - Run time

```
class Swift: ComputerLanguage{
    init(){
        super.init(languageName: "Swift")
    }
    override public func doSyntaxAnalysis(){
        print ("Doing my custom implementation for: \(languageName)")
    }
}

class Java: ComputerLanguage{
    init(){
        super.init(languageName: "Java")
    }
}
var swift = Swift()
swift.doSyntaxAnalysis()
var java = Java()
java.doSyntaxAnalysis()
```

OOP -Abstraction



OOP -Abstraction

You don’t need to worry about what Xbox does on hitting X

OOP -Abstraction

```
protocol ComputerLanguageProtocol{
    var languageName: String{ get set }
    func doSyntaxAnalysis()
}
extension ComputerLanguageProtocol{
    public func doSyntaxAnalysis(){
        print ("My default syntax analysis implementation for: \(languageName)")
    }
}
class Swift: ComputerLanguageProtocol{
    var languageName = "Swift"
    public func doSyntaxAnalysis(){
        print ("Doing my custom implementation for: \(languageName)")
    }
}
class Java: ComputerLanguageProtocol{
    var languageName = "Java"
}
Swift().doSyntaxAnalysis()
Java().doSyntaxAnalysis()
```