

Batch #16 / iOS Class
Remote Learning Assignment - Week 2

Object-Oriented Swift

1. Declare a class **Animal** with property **gender** and method **eat()**. The data type of gender should be enum Gender as below and when you call eat() method, it will print I eat everything!

```
enum Gender {  
  
    case male  
  
    case female  
  
    case undefined  
}
```

2. Declare three classes: **Elephant**, **Tiger**, **Horse** that inherits from Animal and override the eat method to print what they usually eat.
3. Declare a class **Zoo** with a property **weeklyHot** which means the most popular one in the zoo this week. The codes below can't work correctly, please find what data type should A be and solve the problem. Note that **tiger**, **elephant**, and **horse** are instances of class Tiger, Elephant, and Horse, respectively.

```
class Zoo {  
  
    var weeklyHot: A  
  
    init(weeklyHot: A) { }  
}  
  
let zoo = Zoo(weeklyHot: Tiger())  
  
zoo.weeklyHot = tiger  
zoo.weeklyHot = elephant  
zoo.weeklyHot = horse
```

4. What's the difference between **Struct** and **Class** ?
5. What's the difference between **instance method** and **type method** ?
6. What does **Initializer** do in class and struct ?
7. What does **self** mean in an instance method and a type method ?
8. What's the difference between **reference type** and **value type** ?

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Enumerations and Optionals in Swift

1. There are several gasoline types, 92, 95, 98, and diesel that we can use enum to model them.
 - Please create an enum named `Gasoline` to model gasoline.
 - Every kind of gasoline has its price. Please create a method named `getPrice` in `Gasoline` enum that will return different prices depending on different gasoline.
 - Please establish `raw values` for `Gasoline`. The data type of raw value should be `String`. For example, `Gasoline.oil92.rawValue` should be "92".
 - Please explain what enum `associated value` is and how it works.
2. Optional is a very special data type in Swift. Take `var a: Int? = 10` for example, the value of `a` will be `nil` or `Int`. You should have learned how to deal with Optional.
 - People would like to have pets, but not everyone could have one. Declare a class `Pet` with `name` property and a class `People` with `pet` property which will store a `Pet` instance or `nil`. Please try to figure out what data type is suitable for these properties in `Pet` and `People`.
 - Please create a `People` instance and use `guard let` to unwrap the `pet` property.
 - Please create another `People` instance and use `if let` to unwrap the `pet` property.

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Protocol in Swift

1. Declare a struct **Person** with a **name** property type String and a protocol name **PoliceMan**. There is only one method **arrestCriminals** with no argument and return void in the protocol.
2. Make struct **Person** conform to **PoliceMan** protocol.
3. Declare a protocol **ToolMan** with a method **fixComputer** that has no argument and return void.
4. Add a property **toolMan** to the struct **Person** with data type **ToolMan**.
5. Declare a struct named **Engineer** that conforms to the **ToolMan** protocol.
6. Create a **Person** instance with the name Steven and also create the relative data you need to declare this instance.

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Error Handling in Swift

```
enum GuessNumberGameError {  
  
    case wrongNumber  
}  
  
class GuessNunerGame {  
  
    var targetNumber = 10  
  
    func guess(number: Int) throws {  
  
        guard number == targetNumber else {  
  
            throw GuessNumberGameError.wrongNumber  
        }  
  
        print("Guess the right number: \(targetNumber)")  
    }  
}
```

Read the code above first and paste it in the playground file, there is an error inside the code. Please solve the error **by adding additional code** in the file. Do not remove or modify the code above. Call `guess(number:)` and pass 20 as the argument after you fix the problem.

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Simple App

Please implement the app following the design below (measured in points.)

UI Requirements:

Label on the top:

Top: 100, Leading: 40, Font size: 16, Font Color: White

Label in the middle:

Top: 100, Leading: 40, Trailing: 40, Font size: 16, Font Color: White

Button:

Bottom: 50, Leading: 40, Trailing: 40, Font size: 16, Font Color: White



Functional Requirements:

Each time the user hits the button, the background color and text should change randomly. We give the text below. There are 7 sentences in the array. You can choose 7 kinds of color to cooperate with it. For example, you can take the colors of the rainbow as your color set.

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Hints:

1. Hex color in Swift
2. Random number in Swift
3. IBAction, IBOutlet

```
let text = [  
    "Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas tempus.",  
    "Contrary to popular belief, Lorem Ipsum is not simply random text.",  
    "Richard McClintock, a Latin professor at Hampden-Sydney College in ",  
    "looked up one of the more obscure Latin words, consectetur",  
    "from a Lorem Ipsum passage, and going through the cities of the word",  
    "This book is a treatise on the theory of ethics, very popular during the.",  
    "The first line of Lorem Ipsum, Lorem ipsum dolor sit amet..",  
]
```