Batch #21 / iOS Class

Remote Learning Assignment - Week 2

Part 1: Object-Oriented Swift

1. Declare a class Animal with a property gender and a 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 Class and Struct?

5. What does Initilizer do in class and struct?

6. What's the difference between reference type and value type?

7. What's the difference between instance method and type method?

8. What does self mean in an instance method and a type method respectively?

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Part 2: 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. Use guard let to unwrap the pet property and print its name.
    - Please create another People instance. Use if let to unwrap the pet property and print its name.

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Part 3: 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.

Part 4: Error Handling in Swift

```swift
enum GuessNumberGameError {
    case wrongNumber
}

class GuessNumberGame {

    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 a piece of code in the file. Call `guess(number:)` and pass 20 as the argument after you fix the problem.

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Part 5: A Simple App

Please implement the app by 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.

Hints:

1. RGB color
2. Random number in Swift

```
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..",
]
```