

Introduction to Swift

Lecture 4: Dictionary

Here's your challenge to practice with Dictionary should you choose to accept it:

In lecture 3, we talked about Array which we imagined as a list of items with index from 0. In this lecture, we explore Dictionary with key-value pairs. If you look at Array and Dictionary in general way, they are data structures meaning that it's a way for us to store data in a structured manner.

With Array, we put them in a list with indices. When it comes to Dictionary, we use key-value pair. We will use Array whenever we want to store data in order and we just need to use the indices to get access to it. On the other hand, we will want to use Dictionary when we need fast access to a specific key in Dictionary. Put in mind that you can never assume that data is stored in order in Dictionary. And in fact, it doesn't.

We demo about Array and Dictionary quite a lot but I never mentioned that we can build a very compound and complex data structure mixing Array and Dictionary. That's a new thing and a new challenge for us today!

Your Challenge

1. Think about the properties of a music album. A music album has some information such as title, description, cover image, a list of songs in the album. This structure sound like a Dictionary, doesn't it? First thing first, create a Dictionary to represent those information about an album that you love. This album should have title, description, cover image (just the name of the image file some thing like "let-it-be.png"), and a list of songs key-value pairs.

2. Noone just loves only one album (maybe there is someone out there) but I assume that you love some albums. So let's build a data structure that stores a playlist consist of several albums that you love.

3. You will never know if you build those two data structures correctly or not unless you test them well.

4. First, test the album dictionary. Try to get the value of some keys in it and print to the console using `println(...)`.

5. Then test the playlist whose data structure of whether dictionary or array or array of dictionaries or dictionary containing arrays has never been revealed by me :D.

That's it for this challenge. As you will experience, there's a lot of work and thinking involved here but the knowledge is worth the journey! I promise that these exercises will be of incredible help to you in the coming project and your future iOS Development career or hobby.

If you have any frustration on a bug or not-figure-it-out, don't forget to check out the hint and don't hesitate asking in the forum! We are here to help!

My Personal Message

There is actually one more thing. The process of build and testing these data structures may be hard and challenging to you. And I think it will be to most of you starting out. I know it because I personally experience it when I start like you are. It requires me to understand clearly about how Dictionary, Array works. So work hard my friends! If you are not sure about just one point about how to use any language feature up until now, review the lecture or demos! It helps because I do that all the time using what I created or other documentations.

If any of us asks why anyone can know that much about those features in Swift and iOS as I used to ask those questions I started out, the answer comes from a little town at this corner in the world called "*work*". That's the secret: working super hard like you've never done before in many hours and many days. Constantly ask questions and find answers. Constantly push yourself a little bit further. Constantly challenge yourself with new knowledge.

These words really come from my heart and soul because no one can ever deny that the process of learning to code and trying to create your apps is frustratingly hard. There were a thousand times I was about to quit and even stopped for some time. There were a thousand times when I told myself that this work is just too much for me to handle. But at the end of the day, I am convinced that I love what I do. Love is what kept and keeps me pushing forward. Don't give up. Don't give in, my friends!

I have always reminded myself this: "You are a creator. You are creative. So go out there everyday of my life, embrace the challenge to bring out the best creations to the world!".

My best,

Duc

Hints

Only use these whenever you desperately need them!

1. Here are some questions you should ask when dealing with this: what is the type of the keys? What are the type of each value corresponding to the key? The first three should be obvious to you but how about the songs? The key songs contains a list of songs. "a list". What does it remind you of? ... Enough for the hint!

2. This example may of help to you. I want to build a dictionary of my classes at college:

```
var college = [ "comp sci" : [ "data structures", "algorithms"],  
               "math" : "calculus", "probability" ]
```

3. That should be it for the hints otherwise there's not fun with the challenge. Have fun!