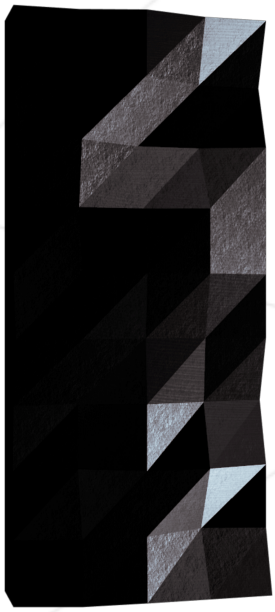


Piscine iOS Swift - Day 04

Tweets

Summary: This document contains the subject for the Day 04 of the iOS Swift piscine of 42

Contents

Chapter I

Preamble

Here is the Wikipedia page of the homing pigeon:

The true messenger pigeon is a variety of domestic pigeon (Columba livia domestica) derived from the wild rock dove, selectively bred for its ability to find its way home over extremely long distances. The rock dove has an innate homing ability, meaning that it will generally return to its nest (it is believed) using magnetoreception. This made it relatively easy to breed from the birds that repeatedly found their way home over long distances. Flights as long as 1,800 km (1,100 miles) have been recorded by birds in competitive pigeon racing. Their average flying speed over moderate 965 km (600 miles) distances is around 97 km/h (60 miles per hour) and speeds of up to 160 km/h (100 miles per hour) have been observed in top racers for short distances.

I.1 Navigation

Research has been performed with the intention of discovering how pigeons, after being transported, can find their way back from distant places they have never visited before. Most researchers believe that homing ability is based on a "map and compass" model, with the compass feature allowing birds to orient and the map feature allowing birds to

determine their location relative to a goal site (home loft). While the compass mechanism appears to rely on the sun, the map mechanism has been highly debated. Some researchers believe that the map mechanism relies on the ability of birds to detect the Earth's magnetic field. A prominent theory is that the birds are able to detect a magnetic field to help them find their way home. Scientific research previously suggested that on top of a pigeon's beak large number of iron particles are found which remain aligned to north like a man-made compass, thus it acts as compass which helps pigeon in determining its home. However, a 2012 study disproved this theory, putting the field back on course to search for an explanation as to how animals detect magnetic fields. A light-mediated mechanism that involves the eyes and is lateralized has been examined somewhat, but developments have implicated the trigeminal nerve in magnetoception. Research by Floriano Papi (Italy, early 1970s) and more recent work, largely by Hans Wallraff, suggest that pigeons also orient themselves using the spatial distribution of atmospheric odors, known as olfactory navigation. Other research indicates that homing pigeons also navigate through visual landmarks by following familiar roads and other man-made features, making 90-degree turns and following habitual routes, much the same way that humans navigate. Research by Jon Hagstrum of the US Geological Survey suggests that homing pigeons use low-frequency infrasound to navigate. Sound waves as low 0.1 Hz have been observed to disrupt or redirect pigeon navigation. The pigeon ear, being far too small to interpret such a long wave, directs pigeons to fly in a circle when first taking air, in order to mentally map such long infrasound waves. Various experiments suggest that different breeds of homing pigeons rely on different cues to different extents. Charles Walcott at Cornell University was able to demonstrate that while pigeons from one loft were confused by a magnetic anomaly in the Earth it had no effect on birds from another loft 1.6 km (1 mile) away. Other experiments have shown that altering the perceived time of day with artificial lighting or using air conditioning to eliminate odors in the pigeons' home roost affected the pigeons' ability to return home. GPS tracing studies indicate that gravitational anomalies may play a role as well.

I.2 Wartime communication

Birds were used extensively during World War I. One homing pigeon, Cher Ami, was awarded the French Croix de guerre for her heroic service in delivering 12 important messages, despite having been very badly injured. Crewman with homing pigeons carried in bombers as a means of communications in the event of a crash, ditching, or radio failure. During World War II, the Irish Paddy, the American G.I. Joe and the English Mary of Exeter all received the Dickin Medal. They were among 32 pigeons to receive this award, for their gallantry and bravery in saving human lives with their actions. Eighty-two homing pigeons were dropped into the Netherlands with the First Airborne Division Signals as part of Operation Market Garden in World War II. The pigeons' loft was located in London, which would have required them to fly 390 km (240 miles) to deliver their messages.[33] Also in World War II, hundreds of homing pigeons with the Confidential Pigeon Service were airdropped into northwest Europe to serve as intelligence vectors for local resistance agents. Birds played a vital part in the Invasion of Normandy as radios could not be used for fear of vital information being intercepted by the enemy.

I.3 Postal carriage

When used as carrier pigeons in pigeon post a message is written on thin light paper and rolled into a small tube attached to the bird's leg. Pigeons can only go back to one "mentally marked" point that they have identified as their home, so "pigeon mail" can only work when the sender is actually holding the receiver's pigeons. White homing pigeons are used in dove-releasing ceremonies at weddings, funerals, and some sporting events. With training, pigeons can carry up to 75 g (2.5 oz) on their backs. The German apothecary Julius Neubronner used carrier pigeons to deliver urgent medication. In 1977 a similar carrier pigeon service was set up for the transport of laboratory specimens between two English hospitals. Every morning a basket with pigeons was taken from Plymouth General Hospital to Devonport Hospital. The birds then delivered unbreakable vials back to Plymouth as needed. The 30 carrier pigeons became unnecessary in 1983 because of the closure of one of the hospitals. In the 1980s a similar system existed between two French hospitals located in Granville and Avranche.

I.4 History

By 3000 BC, Egypt was using homing pigeons for pigeon post, taking advantage of a singular quality of this bird, which when taken far from its nest is able to find its way home due to a particularly developed sense of orientation. Messages were then tied around the legs of the pigeon, which was freed and could reach its original nest. By the 19th century homing pigeons were used extensively for military communications. The sport of flying messenger pigeons was well-established as early as 3000 years ago. They were used to proclaim the winner of the Ancient Olympics. Messenger pigeons were used as early as 1150 in Baghdad and also later by Genghis Khan. By 1167 a regular service between Baghdad and Syria had been established by Sultan Nur ad-Din. In Damietta, by the mouth of the Nile, the Spanish traveller Pedro Tafur saw carrier pigeons for the first time, in 1436, though he imagined that the birds made round trips, out and back.[10] The Republic of Genoa equipped their system of watch towers in the Mediterranean Sea with pigeon posts. Tipu Sultan of Mysore (1750–1799) also used messenger pigeons; they returned to the Jamia Masjid mosque in Srirangapatna, which was his headquarters. The pigeon holes may be seen in the mosque's minarets to this day.

Chapter II

Consignes

Sauf contradiction explicite, les consignes suivantes seront valables pour tous les jours de cette Piscine.

- Seul ce sujet sert de référence : ne vous fiez pas aux bruits de couloir.
- Le sujet peut changer jusqu'à une heure avant le rendu.
- Les exercices sont très précisément ordonnés du plus simple au plus complexe. En aucun cas nous ne porterons attention ni ne prendrons en compte un exercice complexe si un exercice plus simple n'est pas parfaitement réussi.
- Attention aux droits de vos fichiers et de vos répertoires.
- Vous devez suivre la procédure de rendu pour tous vos exercices. L'url de votre dépot `GIT` pour cette journée est disponible sur votre intranet.
- Vos exercices seront évalués par vos camarades de Piscine.
- En plus de vos camarades, vous pouvez être évalués par un programme appelé la Moulinette. La Moulinette est très stricte dans sa notation car elle est totalement automatisée. Il est donc impossible de discuter de sa note avec elle. Soyez d'une rigueur irréprochable pour éviter les mauvaises surprises.
- Les exercices shell doivent s'éxcuter avec `/bin/sh`.
- Vous ne devez laisser aucun autre fichier que ceux explicitement specifiés par les énoncés des exercices dans votre dépot de rendu.
- Vous avez une question ? Demandez à votre voisin de droite. Sinon, essayez avec votre voisin de gauche.
- Toutes les réponses à vos questions techniques se trouvent dans les `man` ou sur Internet.
- Pensez à discuter sur le forum Piscine de votre Intra et sur Slack !
- Lisez attentivement les exemples car ils peuvent vous permettre d'identifier un travail à réaliser qui n'est pas précisé dans le sujet à première vue.
- Réfléchissez. Par pitié, par Thor, par Odin !

Chapter III

Introduction

Today, Internet is omnipresent in our lives. The invention of cell phones has made the observation all the more relevant.

A lot of applications need connecting to send or receive data.

Developers today need to design some API that can communicate with several devices in order to centralize data. Some of these API are opened to every developer. Twitter's one is one of them, and it will be our focus today.

Today, you will learn to make HTTP requests to Twitter's API on iOS to create a Twitter client application. It will have to display tweets in a **table view**.

Here is the documentation about the Twitter's API. You will need this to understand how you can receive tweets.

Chapter IV

Exercice 00: Tweet

	Exercice : 00
Tweet	
Files to turn in : `Swift Standard Library, UIKit`	
Authorised functions : `n/a`	
Notes : `n/a`	

To begin, you will need a *model* to represent a **Tweet**.

Create a **struct Tweet** with:

- The **let name : String** property which is the name of the person tweeting. tweet.
- The **let text : String** property that is the content of the tweet.

The **struct Tweet** must implement the **CustomStringConvertible** protocol.

Chapter V

Exercise 01: APITwitterDelegate

	Exercice : 01
APITwitterDelegate	
Files to turn in : `Swift Standard Library, UIKit`	
Authorised functions : `n/a`	
Notes : `n/a`	

Today, you're gonna need a *controller* that will help you make requests to Twitter. This *controller* will have to call the right methods of your **ViewController** to do so. This is why the protocols are very important.

Create a **protocol APITwitterDelegate** with 2 methods:

- One that will manage the received **Tweet** that will take a [**Tweet**] as a parameter.
- Another that will be called in case of error, that will take **NSError** as a parameter.

Chapter VI

Exercise 02: Requests

	Exercice : 02
Requests	
Files to turn in : `Swift Standard Library, UIKit`	
Authorised functions : `n/a`	
Notes : `n/a`	

Now it's time to create the *controller* specified in the previous exercise.

Make a **class APIController** featuring at least:

- The **weak var delegate : APITwitterDelegate?** property that will later become our **ViewController**.
- The **let token : String** property that will be the connexion token to Twitter.
- A builder that takes a **APITwitterDelegate?** as a parameter for the **delegate** and a **String** for the **token**.
- A method that takes a **String** as a parameter that must make a request to Twitter to retrieve the last 100 french tweets containing **String** and call **delegate**'s matching methods.

`As of now, you must be able to retrieve the last 100 french tweets containing the words "ecole 42" from Twitter and display all the received tweets in debug.`

`Watch the URL encoding of your requests!`

Chapter VII

Exercise 03: Table View

	Exercice : 03
Table View	
Files to turn in : `Swift Standard Library, UIKit`	
Authorised functions : `n/a`	
Notes : `n/a`	

Now, we're gonna design the UI of your application.

Add a **navigation bar** and a **table view**, to your application. Of course, the **table view** must display the last 100 french tweets that include the words "ecole 42".

To do that, the *controller* linked to your **table view** must implement the **protocol APITwitterDelegate**.

Chapter VIII

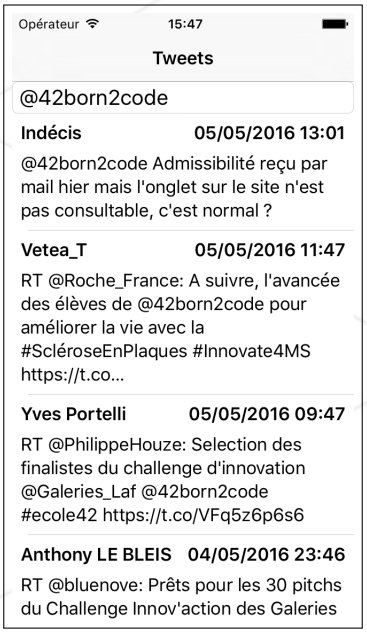
Exercise 04: Research

	Exercice : 04
Research	
Files to turn in : `Swift Standard Library, UIKit`	
Authorised functions : `n/a`	
Notes : `n/a`	

This mini Twitter client misses a search field don't you think?

Add a **text field** to the **table view** to help search other words than "ecole 42".

When pressing "enter", the keyboard must disappear and the request must run.



Chapter IX

Exercise 05: Finishing touches

	Exercice : 05
Finishing touches	
Files to turn in : `Swift Standard Library, UIKit`	
Authorised functions : `n/a`	
Notes : `n/a`	

It's time to make this client more efficient with functionalities you already know how to implement:

- Add **custom cells** to make the display nicer.
- Dynamic cells depending on the their content size.
- Add **warnings** in case of errors.
- Display the tweets dates.