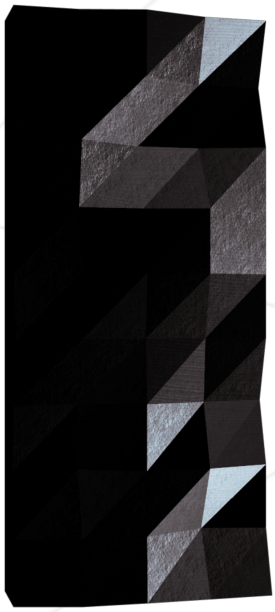


Piscine iOS Swift - Day 03

APM

Maxime LEMORT mlemort@student.42.fr
42 Staff pedago@42.fr

Summary: This document contains the subject for Day 03 for the „Piscine iOS Swift" from 42

Contents

Chapter I

Foreword

Here is an extract from Hubble's wikipedia page:

The Hubble Space Telescope (HST) is a space telescope that was launched into low Earth orbit in 1990 and remains in operation. Although not the first space telescope, Hubble is one of the largest and most versatile, and is well known as both a vital research tool and a public relations boon for astronomy. The HST is named after the astronomer Edwin Hubble, and is one of NASA's Great Observatories, along with the Compton Gamma Ray Observatory, the Chandra X-ray Observatory, and the Spitzer Space Telescope.

With a 2.4-meter (7.9 ft) mirror, Hubble's four main instruments observe in the near ultraviolet, visible, and near infrared spectra. Hubble's orbit outside the distortion of Earth's atmosphere allows it to take extremely high-resolution images, with substantially lower background light than ground-based telescopes. Hubble has recorded some of the most detailed visible light images ever, allowing a deep view into space and time. Many Hubble observations have led to breakthroughs in astrophysics, such as accurately determining the rate of expansion of the universe.

The HST was built by the United States space agency NASA, with contributions from the European Space Agency. The Space Telescope Science Institute (STScI) selects Hubble's targets and processes the resulting data, while the Goddard Space Flight Center controls the spacecraft.

Space telescopes were proposed as early as 1923. Hubble was funded in the 1970s, with a proposed launch in 1983, but the project was beset by technical delays, budget problems, and the Challenger disaster (1986). When finally launched in 1990, Hubble's main mirror was found to have been ground incorrectly, compromising the telescope's capabilities. The optics were corrected to their intended quality by a servicing mission in 1993.

Hubble is the only telescope designed to be serviced in space by astronauts. After launch by Space Shuttle Discovery in 1990, five subsequent Space Shuttle missions repaired, upgraded, and replaced systems on the telescope, including all five of the main instruments. The fifth mission was initially canceled on safety grounds following the Columbia disaster (2003). However, after spirited public discussion, NASA administrator Mike Griffin approved the fifth servicing mission, completed in 2009. The telescope is operating as of 2017, and could last until 2030–2040. Its scientific successor, the James Webb Space Telescope (JWST), is scheduled for launch in 2018.

Chapter II

General Instructions

- Only this document will serve as reference. Do not trust rumors.
- Read carefully the whole subject before beginning.
- Watch out! This document could potentially change up to an hour before submission.
- This project will be corrected by humans only.
- The document can be relied upon, do not blindly trust the demos which can contain unrequired additions.
- You will have to submit one app every day (except for Day 01) on your git repository, submit the folder of the Xcode project.
- Here it is the official manual of Swift and of Swift Standard Library
- It is forbidden to use other libraries, packages, pods, etc. before Day 07
- Got a question ? Ask your peer on the right. Otherwise, try your peer on the left.
- You can discuss on the Piscine forum of your Intra !
- By Odin, by Thor ! Use your brain !!!

The videos on Intra were produced before Swift 3. Remove the prefix "NS" which you see in front of the class/struct/function in the code in the videos in order to use them in Swift 3.

Intra indicates the date and the hour of closing for your repositories. This date and hour also corresponds to the beginning of the peer-evaluation period for the corresponding piscine day. This peer-evaluation period lasts exactly 24h. After 24h passed, your missing peer grades will be completed with 0.

Chapter III

Introduction

The threads allow you to perform the instructions of a process by following their own call stack. Initially a process is started on a single thread, the **main thread**.

Using multiple threads allows you to parallelize the processing of multiple functions to run code in background. This point is extremely important on iOS to avoid blocking the user interface (UI) while the application is making calculations or waiting for a server to respond.

Today you will see several notions :

- How to use a **collection view**
- How to do a **multithread** on iOS
- How to create **alerts**
- How to use a **scroll view**

All ths application do, is to download images from the internet.

Chapter IV

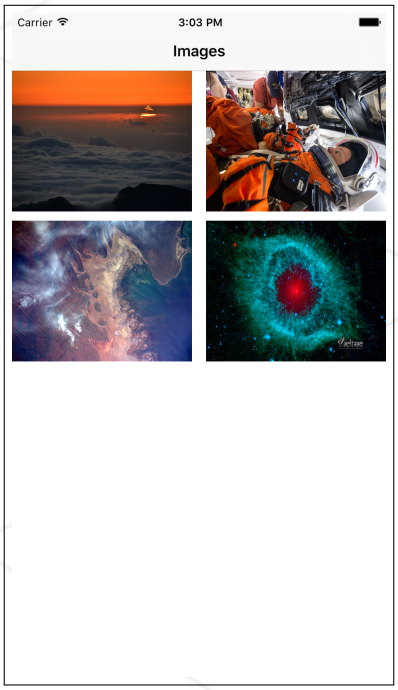
Exercise 00 : Pictures

	Exercice : 00
Pictures	
Files to turn in : `.xcodeproj and all the necessary files`	
Allowed functions : `Swift Standard Library, UIKit`	
Notes : `n/a`	

The **collection view** is a tool that allows to display data, different from a **table view** but their use is almost identical.

Create a **collection view** that displays at least 4 photos of the web of your choice. The 4 photos must be displayed in full in the **collection view**.

Take big pictures so that downloads take time. You can search for pictures on the site of the nasa for example.



Chapter V

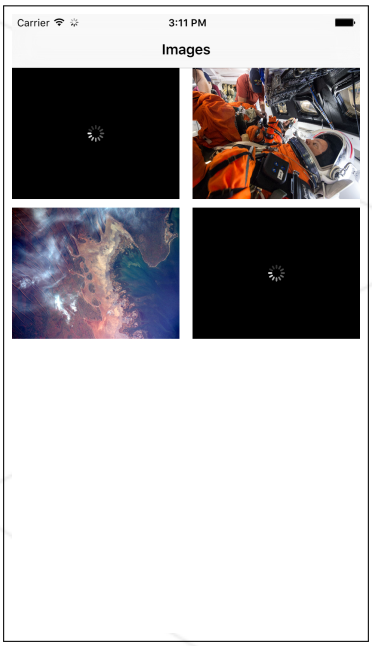
Exercise 01 : Multithreads

	Exercice : 01
Multithreads	
Files to turn in : `.xcodeproj and all the necessary`	
Allowed functions : `Swift Standard Library, UIKit`	
Notes : `n/a`	

You noticed that the time the images are downloading, the UI is blocked and iOS does not respond. Calls on the **main thread** interfere with the user experience. To remedy this problem, you will make these calls asynchronous.

Also add an **activity monitor** to each view of the **collection view** that must rotate when the image is downloaded and disappears when the image is displayed.

You must also run the network activity indicator when the application uses the network and stop it when it no longer uses it.

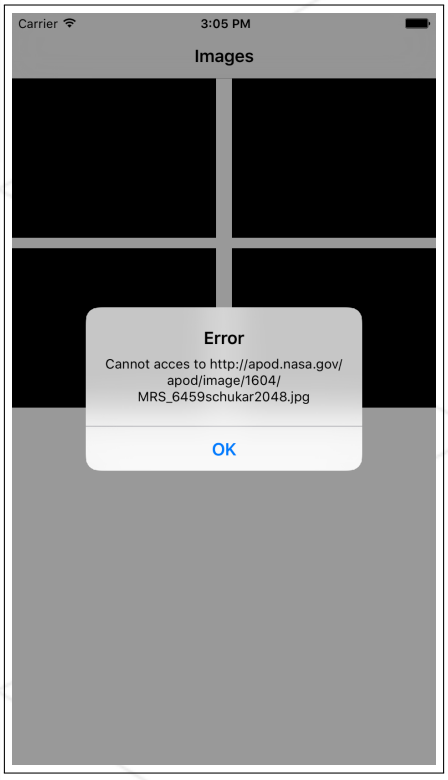


Chapter VI

Exercise 02 : Alerts

	Exercice : 02
Alerts	
Files to turn in : `.xcodeproj and all the necessary files`	
Allowed functions : `Swift Standard Library, UIKit`	
Notes : `n/a`	

If there is a problem during the download of the photo, you have to make appear a simple **alert** which explains the problem with a "Ok" button to make disappear the **alert**.



Chapter VII

Exercise 03 : ScrollView

	Exercice : 03
ScrollView	
Files to turn in : `.xcodeproj and all the necessary files`	
Allowed functions : `Swift Standard Library, UIKit`	
Notes : `n/a`	

Add a **navigation bar** with a title for each view.

Create a new view containing a **scroll view**. When you click on a cell in the **collection view**, you will need to display the **scroll view** with the large image. We must be able to move the image.

Chapter VIII

Exercise 04 : Zoom

	Exercice : 04
Zoom	
Files to turn in : `.xcodeproj and all the necessary files`	
Allowed functions : `Swift Standard Library, UIKit`	
Notes : `n/a`	

To move the image is good, to be able to zoom is better. Make it possible to zoom in and zoom out of the image.

It is also necessary that the image holds perfectly in width with the maximum zoom out, and that whatever the device and its orientation!


Images