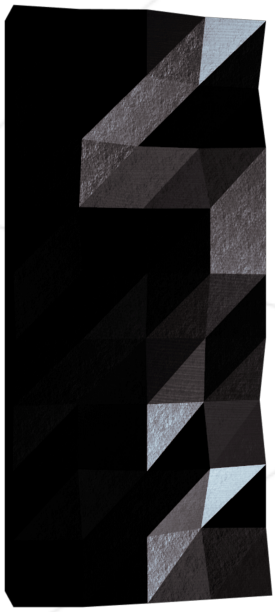


Piscine iOS Swift - Day 03

APM

Summary: This document contains the subject for Day 03 of the iOS Swift piscine 42

Contents

Chapter I

Preamble

Here is an excerpt of the Hubble wikipedia page:

The Hubble Space Telescope (often referred to as HST or Hubble) is a space telescope that was launched into low Earth orbit in 1990 and remains in operation. It was not the first space telescope but it is one of the largest and most versatile, well known both as a vital research tool and as a public relations boon for astronomy. The Hubble telescope is named after 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. Hubble features a 2.4-meter (7.9 ft) mirror, and its four main instruments observe in the ultraviolet, visible, and near infrared regions of the

electromagnetic spectrum. Hubble's orbit outside the distortion of Earth's atmosphere allows it to capture extremely high-resolution images with substantially lower background light than ground-based telescopes. It has recorded some of the most detailed visible light images, allowing a deep view into space. Many Hubble observations have led to breakthroughs in astrophysics, such as determining the rate of expansion of the universe.

The Hubble telescope 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.[7] 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 1986 Challenger disaster. It was finally launched by Space Shuttle Discovery in 1990, but its main mirror had been ground incorrectly, resulting in spherical aberration that compromised 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 maintained in space by astronauts.Five Space Shuttle missions have repaired, upgraded, and replaced systems on the telescope, including all five of the main instruments. The fifth mission was canceled on safety grounds following the Columbia disaster (2003), but NASA administrator Michael D. Griffin approved the fifth servicing mission which was completed in 2009. The telescope is operating as of 2020, and could last until 2030–2040.[3] Its successor is the James Webb Space Telescope (JWST) which is scheduled to be launched in March 2021.

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

The threads or *thread of execution* help carry out instructions of a process following their own call stack. A process starts running on one thread, the **main thread**.

Using several threads help align the treatment of several functions so code can run in the background. This is utterly important on iOS to avoid blocking the user interface (UI) while the application makes calculations or waits for a server to respond.

Today, you will learn about several notions:

- How to use a **collection view**
- How to make **multithread** on iOS
- How to make **warnings**
- How to use a **scroll view**

All of this will be included in an application that will download images from the net.

Chapter IV

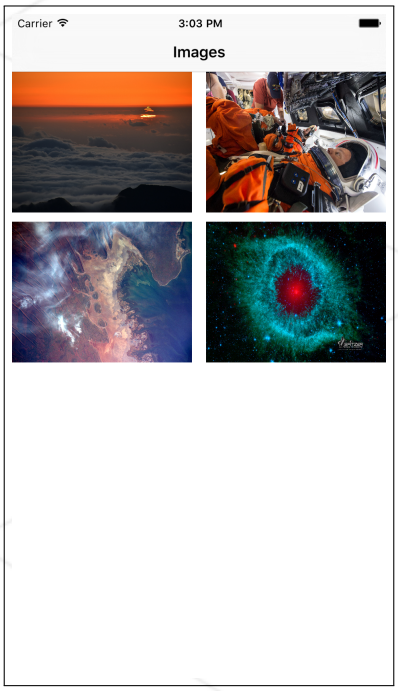
Exercise 00: Photos

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

The **collection view** is a tool that helps display data differently from a **table view** but they're put almost to same use.

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

Pick heavy pictures so the download is long. You can find some on the nasa's website for instance.



Chapter V

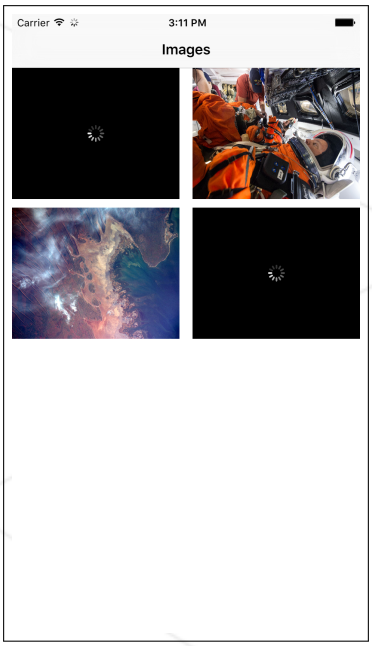
Exercise 01 : Multithreads

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

You might have noticed that during the download , the UI is blocked and iOS doesn't respond. Calls on the **main thread** impair the user experience. To compensate the problems, you will make these calls asynchronous.

You will also add an **activity monitor** on each view of the **collection view**. It will run when the image is downloaded and disappear when the image is displayed.

You will also run the **network activity indicator** when the application uses the network and stop it when it doesn't use it anymore.

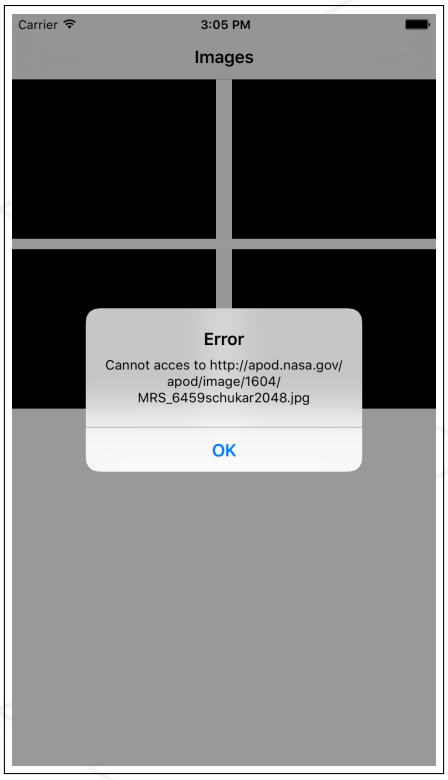


Chapter VI

Exercise 02: Warnings

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

If you encounter a problem downloading the picture, you must make a simple **warning** pop. It explains the problem with an "ok" button to make it disappear.



Chapter VII

Exercise 03: ScrollView

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

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

Create a new view featuring a **scroll view**. When you click a cell of the **collection view**, you will have to display the **scroll view** with the large picture. You must be able to move the image.

Chapter VIII

Exercise 04: Zoom

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

Moving the image is good, but zooming in it is better. Make sure you can zoom in and out of the image.

The image will also have to fit horizontally with the maximum zoom out, whatever the device and the orientation!


Images