Algorithm and Computing

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Contacts

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Evaluation

Notebooks (1/3)

- Binômes possibles
- A déposer sur le LMS (un chacun)
- Parties obligatoires / optionnelles

Examen (2/3): 15 décembre 2022

Quizz: non notés

Dates

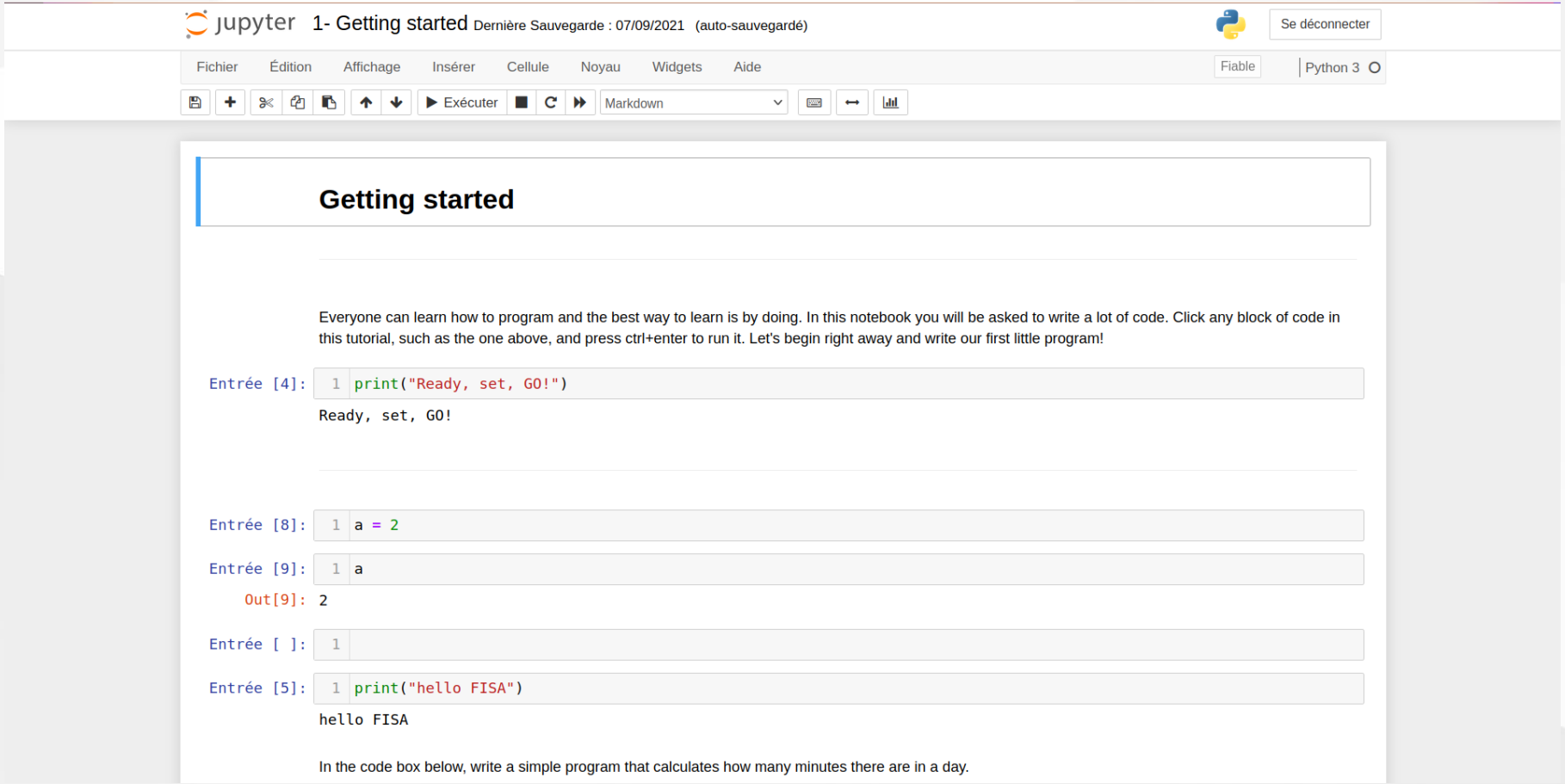
Projet 1 : Analyse de texte

Projet 2 : Planètes 3D

Projet 3 : MicroPython

Projet 4 : Google Maps

Jupyter notebooks



Jupyter notebooks

Exécuter : `Ctrl + Enter` / `Shift + Enter`

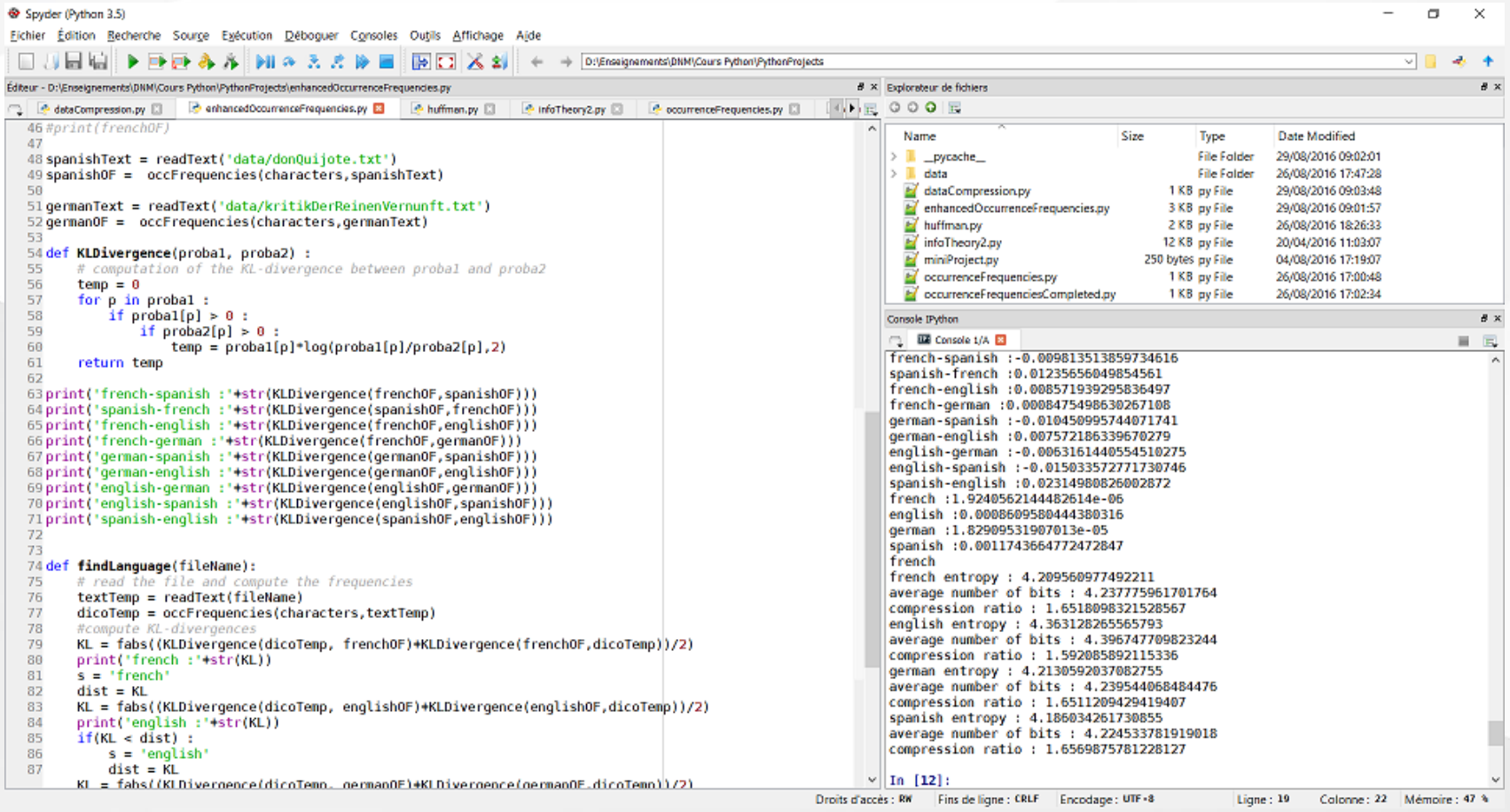
Texte

```
1 Everyone can learn how to program and the best way to learn is by doing. In this notebook you will be asked to
write a lot of code. Click any block of code in this tutorial, such as the one above, and press ctrl+enter to
run it. Let's begin right away and write our first little program!
```

Code

```
Entrée [4]:  1 print("Ready, set, GO!")
```

Spyder


Spyder (Python 3.5)
Fichier Édition Recherche Source Exécution Déboguer Consoles Outils Affichage Aide
Éditeur - D:\Enseignements\DNM\Cours Python\PythonProjects\enhancedOccurrenceFrequencies.py
dataCompression.py
enhancedOccurrenceFrequencies.py
huffman.py
infoTheory2.py
occurrenceFrequencies.py
#print(frenchOF)
spanishText = readText('data/donQuijote.txt')
spanishOF = occFrequencies(characters,spanishText)
germanText = readText('data/kritikDerReinenVernunft.txt')
germanOF = occFrequencies(characters,germanText)
def KLDivergence(proba1, proba2) :
# computation of the KL-divergence between proba1 and proba2
temp = 0
for p in proba1 :
if proba1[p] > 0 :
if proba2[p] > 0 :
temp = proba1[p]*log(proba1[p]/proba2[p],2)
return temp
print('french-spanish :'+str(KLDivergence(frenchOF,spanishOF)))
print('spanish-french :'+str(KLDivergence(spanishOF,frenchOF)))
print('french-english :'+str(KLDivergence(frenchOF,englishOF)))
print('french-german :'+str(KLDivergence(frenchOF,germanOF)))
print('german-spanish :'+str(KLDivergence(germanOF,spanishOF)))
print('german-english :'+str(KLDivergence(germanOF,englishOF)))
print('english-german :'+str(KLDivergence(englishOF,germanOF)))
print('english-spanish :'+str(KLDivergence(englishOF,spanishOF)))
print('spanish-english :'+str(KLDivergence(spanishOF,englishOF)))
def findLanguage(fileName):
# read the file and compute the frequencies
textTemp = readText(fileName)
dicoTemp = occFrequencies(characters,textTemp)
#compute KL-divergences
KL = fabs((KLDivergence(dicoTemp, frenchOF)+KLDivergence(frenchOF,dicoTemp))/2)
print('french :'+str(KL))
s = 'french'
dist = KL
KL = fabs((KLDivergence(dicoTemp, englishOF)+KLDivergence(englishOF,dicoTemp))/2)
print('english :'+str(KL))
if(KL < dist) :
s = 'english'
dist = KL
Explorateur de fichiers
Name Size Type Date Modified
__pycache__ File Folder 29/08/2016 09:02:01
data File Folder 26/08/2016 17:47:28
dataCompression.py 1 KB py File 29/08/2016 09:03:48
enhancedOccurrenceFrequencies.py 3 KB py File 29/08/2016 09:01:57
huffman.py 2 KB py File 26/08/2016 18:26:33
infoTheory2.py 12 KB py File 20/04/2016 11:03:07
miniProject.py 250 bytes py File 04/08/2016 17:19:07
occurrenceFrequencies.py 1 KB py File 26/08/2016 17:00:48
occurrenceFrequenciesCompleted.py 1 KB py File 26/08/2016 17:02:34
Console IPython
Console 1/A
french-spanish :-0.009813513859734616
spanish-french :0.01235656049854561
french-english :0.008571939295836497
french-german :0.0008475498630267108
german-spanish :-0.010450995744071741
german-english :0.007572186339670279
english-german :-0.0063161440554510275
english-spanish :-0.015033572771730746
spanish-english :0.02314980826002872
french :1.9240562144482614e-06
english :0.0008609580444380316
german :1.82909531907013e-05
spanish :0.0011743664772472847
french
french entropy : 4.209560977492211
average number of bits : 4.237775961701764
compression ratio : 1.6518098321528567
english entropy : 4.363128265565793
average number of bits : 4.396747709823244
compression ratio : 1.592085892115336
german entropy : 4.2130592037082755
average number of bits : 4.239544068484476
compression ratio : 1.6511209429419407
spanish entropy : 4.186034261730855
average number of bits : 4.224533781919018
compression ratio : 1.6569875781228127
In [12]:
Droits d'accès : RW
Fins de ligne : CRLF
Encodage : UTF-8
Ligne : 19
Colonne : 22
Mémoire : 47 %

PC ISAE : Linux

Ouvrir un terminal: `Ctrl+Alt+T`

```
module load python/3.7
source activate Mae1Fisa1
jupyter notebook &
spyder &
```

Sur votre machine : Anaconda

- https://www.anaconda.com/products/individual
- Python + Spyder + Jupyter + bibliothèques

Slides

https://github.com/TemplierPaul/Python-class