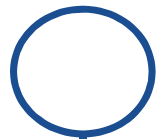




## AGENDA



# Lab 03

Cloud IBM



## Créer un compte IBM Cloud

- Se connecter à <https://www.ibm.com/cloud/>
- Créer un compte IBM Cloud

IBM | Cloud | Why IBM | Products | Solutions | Garage | Pricing | Blog | Docs | Support | Search | Cloud sign-up/log-in

# IBM Cloud is the cloud for smarter business

**Inscrivez-vous pour obtenir un IBMid et créez votre compte IBM Cloud**  
Construisez des applications dans IBM Cloud gratuitement sans restriction de temps

**Développement gratuit garanti avec les plans Lite**  
Développez des applications sans vous inquiéter et gratuitement grâce aux services du plan Lite plafonnés aussi longtemps que vous le souhaitez.

**Commencez vos projets sans attendre**  
Ignorez la saisie de vos informations de carte de crédit et commencez à travailler après quelques étapes très rapides.

Obtenez un crédit de \$200 en procédant à la mise à niveau

Vous possédez déjà un compte IBM Cloud ? [Connexion](#)

Adresse électronique\* ✓

Prénom\* ✓

Nom\* ✓

Pays ou région\* ✓  
France

## Tableau de bord

GRUPE DE RESSOURCES  
Toutes les ressources ▾

ORGANISATION CLOUD FOUNDRY  
Toutes les organisations ▾

ESPACE CLOUD FOUNDRY  
Tous les espaces ▾

EMPLACEMENT  
Tous les emplacements ▾

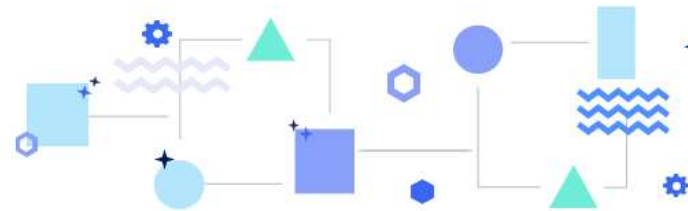
CATÉGORIE  
X IA ▾



Créer une ressource

### Fast-track your app development

Want to go from prototype to production with the click of a button? Hit the ground running with one of our IBM Cloud starter kits. You can also check out our solution tutorials that provide real-world cloud solution examples.



#### Build with Watson

Starter Kit · Lite Services · IBM  
Accelerate your AI development to build smarter solutions.

[View Watson starter kits](#)



#### Create enterprise-level web apps

Starter Kit · Lite Services · IBM  
Develop and deploy cloud-native apps within minutes.

[View App Service starter kits](#)



#### Learn to build, deploy, and scale

Tutorials · Lite Services · IBM  
Use IBM Cloud to implement common patterns based on best practices and proven technologies.

[View Solution tutorials](#)



## Créer un service Watson Studio

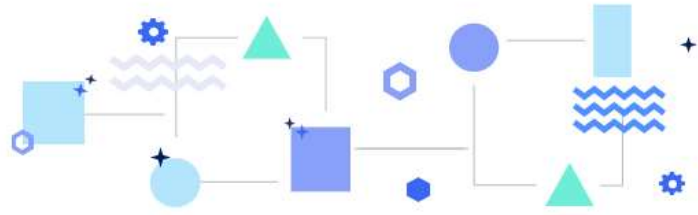



### Tableau de bord


GROUPES DE RESSOURCES: Toutes les ressources  
ORGANISATION CLOUD FOUNDRY: Toutes les organisations  
ESPACE CLOUD FOUNDRY: Tous les espaces  
EMPLACEMENT: Tous les emplacements  
CATÉGORIE: IA  
[Créer une ressource](#)


## Fast-track your app development

Want to go from prototype to production with the click of a button? Hit the ground running with one of our IBM Cloud starter kits. You can also check out our solution tutorials that provide real-world cloud solution examples.



 **Build with Watson**  
Starter Kit · Lite Services · IBM  
Accelerate your AI development to build smarter solutions.  
[View Watson starter kits](#)

 **Create enterprise-level web apps**  
Starter Kit · Lite Services · IBM  
Develop and deploy cloud-native apps within minutes.  
[View App Service starter kits](#)

 **Learn to build, deploy, and scale**  
Tutorials · Lite Services · IBM  
Use IBM Cloud to implement common patterns based on best practices and proven technologies.  
[View Solution tutorials](#)



- Cloud Foundry
- Conteneurs
- Infrastructure
- VMware

Tableau de bord

- API
- Développement Nouveau
- Apple
- Blockchain
- DevOps
- Finance
- Fonctions
- Intégration
- Mobile
- Sécurité
- Watson
- Applications Web

Catalogue Documentation Support Gérer

Rechercher une ressource... Lyes NADOUR's Account

ORGANISATION CLOUD FOUNDRY Toutes les organisations v

ESPACE CLOUD FOUNDRY Tous les espaces v

EMPLACEMENT Tous les emplacements v

CATÉGORIE IA v

Créer une ressource

### your app development

prototype to production with the click of a button and running with one of our IBM Cloud starter kits. Check out our solution tutorials that provide real-world solution examples.

**Watson**  
IBM Cloud development to build  
Starter kits

**Create enterprise-level web apps**  
Starter Kit · Lite Services · IBM  
Develop and deploy cloud-native apps within minutes.  
[View App Service starter kits](#)

**Learn to build, deploy, and scale**  
Tutorials · Lite Services · IBM  
Use IBM Cloud to implement common patterns based on best practices and proven technologies.  
[View Solution tutorials](#)



- Watson
- Présentation
- Kits de démarrage
- Services Watson 
- Parcourir les services
- Services existants
- Ressources développeur
- Documentation
- Kits de développement de logiciels
- Ressources de formation
- Applications

# Développez avec Watson

La plateforme d'intelligence artificielle pour entreprise






### Extrayez des connaissances

Interrogez l'actualité pour comprendre les sujets sensibles, les opinions et bien plus encore.


[Initiation](#)



### Développer un agent conversationnel

Créez un agent conversationnel pour interagir avec vos clients.

[Initiation](#)



### Convertissez de l'audio en texte

Convertissez un discours en plusieurs langues en texte.

[Initiation](#)

IBM Cloud Catalogue Documentation Support Gérer Rechercher une ressource... Lyes NADOUR's Account

Watson

- Présentation
- Kits de démarrage
- Services Watson
  - [Parcourir les services](#)
  - Services existants
- Ressources développeur
  - Documentation
  - Kits de développement de logiciels
  - Ressources de formation
- Applications

**Natural Language Understanding**  
[Détails](#) [Démonstration](#)  
Traitement automatique du langage naturel pour le texte. Comprenez les mots...  
Lite IBM


**Knowledge Studio**  
[Détails](#)  
Enseignez à Watson le langage de votre domaine grâce à des modèles...  
Lite IBM

**Machine Learning**  
[Détails](#)  
IBM Watson Machine Learning - make smarter decisions, solve tough problems,...  
Lite IBM

**Knowledge Catalog**  
[Détails](#)  
Discover, catalog, and securely share enterprise data.  
Lite IBM

**Compare Comply**  
[Détails](#)  
Process governing documents to convert, identify, classify, and compare...  
IBM

**Watson Studio**  
[Détails](#)  
Embed AI and machine learning into your business. Create custom models...  
Lite IBM



← Tout afficher Watson Studio Lite • IBM

Watson Studio democratizes machine learning and deep learning to accelerate infusion of AI in your business to drive innovation. Watson Studio provides a suite of tools and a collaborative environment for data scientists, developers and domain experts.

[Afficher la documentation](#) [Dispositions](#)

AUTEUR IBM  
DATE DE PUBLICATION 18/09/2018  
TYPE Service

Nom du service :

Watson Studio-eisti2018

Sélectionnez une région/un emplacement où effectuer le déploiement :

Royaume-Uni

Sélectionner un groupe de ressources :

Default

Fonctions

- t  
:  
f  
:

PLAN	FONCTIONS	TARIFICATION
✓ Lite	1 authorized user 50 capacity unit-hours monthly limit 1 free small compute environment with 1 vCPU and 4 GB RAM (does not require capacity unit-hours)	Gratuit
<p>The Lite plan for Watson Studio offers everything you need to become a better data scientist or domain expert in a collaborative environment.</p> <p>Les services du plan Lite sont supprimés au bout de 30 jours d'inactivité.</p>		
Standard v1	1 authorized user + unlimited viewer collaborators	€74.47

Vous avez besoin d'aide ? [Contacter le support IBM Cloud](#)

Estimer le coût mensuel [Calculateur de coût](#)

 [Créer](#)

Tableau de bord /

# Watson Studio-eisti2018

Groupe De Ressources: Default Emplacement: United Kingdom



## Watson Studio

Welcome to Watson Studio. Let's get started!



### Documentation

From getting started to how to's — see what's available.

### Community

Check out our tutorials, articles, along with sample notebooks and data sets you can use to get going.

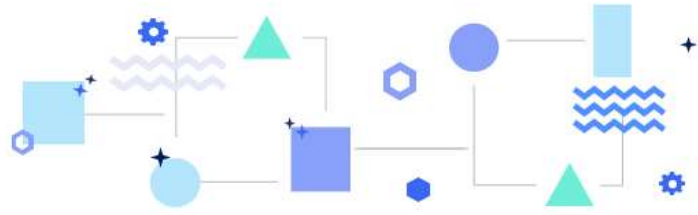



### Tableau de bord


GROUPES DE RESSOURCES: Toutes les ressources  
ORGANISATION CLOUD FOUNDRY: Toutes les organisations  
ESPACE CLOUD FOUNDRY: Tous les espaces  
EMPLACEMENT: Tous les emplacements  
CATÉGORIE: IA  
[Créer une ressource](#)


## Fast-track your app development

Want to go from prototype to production with the click of a button? Hit the ground running with one of our IBM Cloud starter kits. You can also check out our solution tutorials that provide real-world cloud solution examples.



 **Build with Watson**  
Starter Kit · Lite Services · IBM  
Accelerate your AI development to build smarter solutions.  
[View Watson starter kits](#)

 **Create enterprise-level web apps**  
Starter Kit · Lite Services · IBM  
Develop and deploy cloud-native apps within minutes.  
[View App Service starter kits](#)

 **Learn to build, deploy, and scale**  
Tutorials · Lite Services · IBM  
Use IBM Cloud to implement common patterns based on best practices and proven technologies.  
[View Solution tutorials](#)



- Cloud Foundry
- Conteneurs
- Infrastructure
- VMware

Tableau de bord

- API
- Développement Nouveau
- Apple
- Blockchain
- DevOps
- Finance
- Fonctions
- Intégration
- Mobile
- Sécurité
- Watson
- Applications Web

Catalogue Documentation Support Gérer

Rechercher une ressource... Lyes NADOUR's Account

ORGANISATION CLOUD FOUNDRY Toutes les organisations  
ESPACE CLOUD FOUNDRY Tous les espaces  
EMPLACEMENT Tous les emplacements  
CATÉGORIE IA

Créer une ressource

### your app development

prototype to production with the click of a button and running with one of our IBM Cloud starter kits. Check out our solution tutorials that provide real-world solution examples.

**Watson**  
IBM  
development to build  
starter kits

**Create enterprise-level web apps**  
Starter Kit · Lite Services · IBM  
Develop and deploy cloud-native apps within minutes.  
[View App Service starter kits](#)

**Learn to build, deploy, and scale**  
Tutorials · Lite Services · IBM  
Use IBM Cloud to implement common patterns based on best practices and proven technologies.  
[View Solution tutorials](#)



- Watson
- Présentation
- Kits de démarrage
- Services Watson
  - Parcourir les services
  - Services existants
- Ressources développeur
  - Documentation
  - Kits de développement de logiciels
  - Ressources de formation
- Applications





# Développez avec Watson

La plateforme d'intelligence artificielle pour entreprise



  
**Extrayez des connaissances**  
Interrogez l'actualité pour comprendre les sujets sensibles, les opinions et bien plus encore.  
[Initiation](#)

  
**Développer un agent conversationnel**  
Créez un agent conversationnel pour interagir avec vos clients.  
[Initiation](#)

  
**Convertissez de l'audio en texte**  
Convertissez un discours en plusieurs langues en texte.  
[Initiation](#)

## Tableau de bord

GROUPE DE RESSOURCES Toutes les ressources ORGANISATION CLOUD FOUNDRY Toutes les organisations ESPACE CLOUD FOUNDRY Tous les espaces EMBLEMMENT Tous les emplacements CATÉGORIE IA Créer une ressource

### Services

Nom	Emplacement	Groupe de res...	Plan	Détails	Offre de servi...
Watson Studio-eisti2018	Royaume-Uni	Default	Lite	À Disposition	Watson Studio



**Se connecter au service Watson Studio et créer un nouveau projet**

### Tableau de bord

GROUPE DE RESSOURCES Toutes les ressources ORGANISATION CLOUD FOUNDRY Toutes les organisations ESPACE CLOUD FOUNDRY Tous les espaces EMBLEMMENT Tous les emplacements CATÉGORIE X IA Créer une ressource

#### Services

Nom	Emplacement	Groupe de res...	Plan	Détails	Offre de servi...
Watson Studio-eisti2018	Royaume-Uni	Default	Lite	À Disposition	Watson Studio



Watson Studio



Gérer

Plan

Tableau de bord /

# Watson Studio-eisti2018

Groupe De Ressources: Default

Emplacement: United Kingdom



## Watson Studio

Welcome to Watson Studio. Let's get started!



[Get Started](#)




## Welcome Lyes!


Watson Studio is part of IBM Watson Studio.

Try out other IBM Watson Studio apps.

### Get started with key tasks



New project



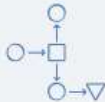
Refine data




New notebook



Deep learning



New Modeler flow



New model



IBM Watson Studio Projects Tools Community Services Manage Support Docs

Get started - LN

### New project

Select a project tile to get the right tools and services for your work.  
You can add additional tools later as the needs of your project grow. All projects include data storage.

- Basic**  
Want to start simple? Upload data in your project and add tools later.
- Data Science**   
Analyze data to discover insights and share your findings with others.
- Watson Tools**  
Tag and classify content using Watson services.
- Deep Learning**  
Build neural networks and deploy deep learning models.
- Modeler**  
Build modeler flows to train SPSS and Spark models or design deep neural networks.
- Business Analytics**  
Create visual dashboards from your data to gain insights faster.
- Complete**  
Want to explore every corner of Watson Studio? See every tool in one project.

Cancel OK

No projects to show

### New project

#### Define project details

Name  
IBM\_DS\_EISTI2018  
84

Description  
*Project description*  
3000

#### Choose project options

- Restrict who can be a collaborator ⓘ
- Project will include integration with Cloud Object Storage for storing project assets.
- Additional tools and services can be added in Project Settings after project creation.

#### Storage

cloud-object-storage-dsx

Cancel Create



## Créer des notebooks Python

IBM Watson Studio Projects Tools Community Services Manage Support Docs

My Projects / IBM\_DS\_EISTI2018 Launch IDE + Add to project

Overview Assets Environments Bookmarks Deployments Access Control

IBM\_DS\_EISTI2018  
Last Updated: Oct 15 2018  
Readme

Assets 0  
Collaborators 1

- Connected assets
- Notebook
- Connection
- Data asset
- Model
- Experiment BETA
- Environment

**Date created**

Oct 15 2018

**Description**

No description available

**Storage**

0% of 25 GB used

**Collaborators**

[View all \(1\)](#)

 Lyes NADOUR  
Admin

**Recent activity**



Alerts related to this project will show here when the project is active.

IBM Watson Studio Projects Tools Community Services Manage Support Docs

My Projects / IBM\_DS\_EISTI2018 / Add Notebook

### New notebook

Blank  From file  From URL

Name\*

Mon\_Watson\_Notebook\_01 28 Characters Remaining

Description

Type your Description here

Language\*

Python 3.5 with Spark

Spark version\*

Spark 2.3

Default Spark Python 3.5 XS (Driver with 1 vCPU and 4 GB RAM, 2 executors with 1 vCPU and 4 GB RAM ea) ▼

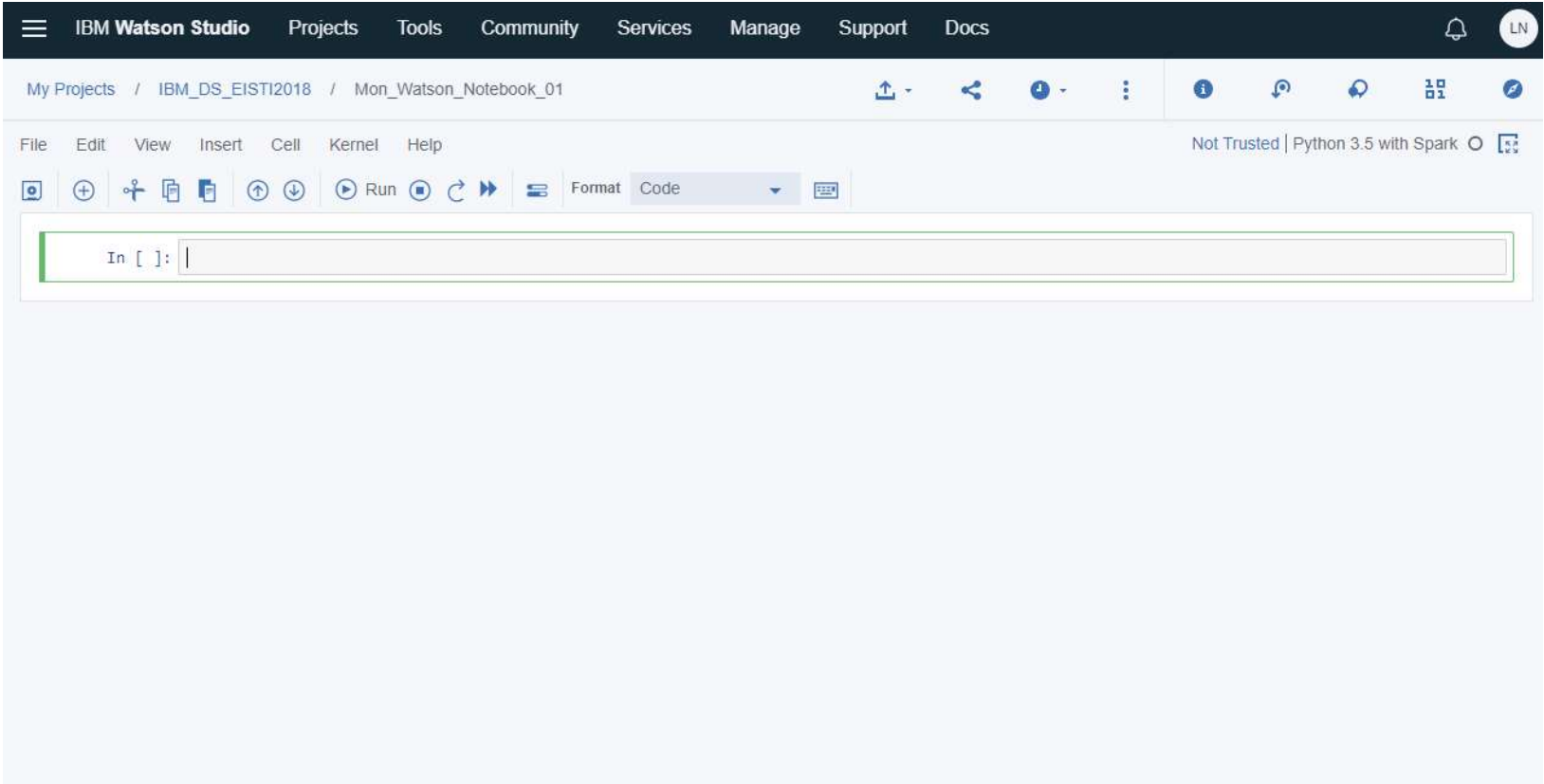
The selected runtime uses one driver with 1 vCPU and 4 GB RAM, and 2 executors each with 1 vCPU and 4 GB RAM.  
This runtime consumes 1.5 capacity units per hour.  
[Learn more about capacity unit hours and Watson Studio pricing plans.](#)

IBM Watson Studio Projects Tools Community Services Manage Support Docs

My Projects / IBM\_DS\_EISTI2018 / Mon\_Watson\_Notebook\_01

File Edit View Insert Cell Kernel Help Not Trusted | Python 3.5 with Spark

In [ ]:

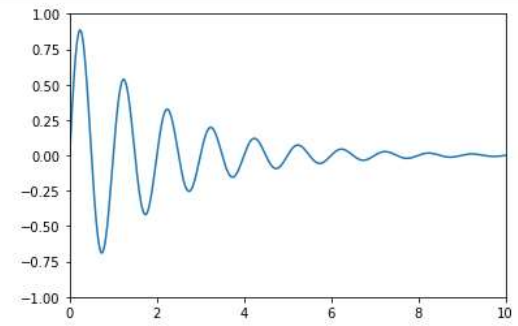
The image shows a screenshot of the IBM Watson Studio web interface. At the top, there is a dark navigation bar with the 'IBM Watson Studio' logo and several menu items: 'Projects', 'Tools', 'Community', 'Services', 'Manage', 'Support', and 'Docs'. On the right side of this bar are a notification bell icon and a user profile icon labeled 'LN'. Below the navigation bar is a breadcrumb trail: 'My Projects / IBM\_DS\_EISTI2018 / Mon\_Watson\_Notebook\_01'. To the right of the breadcrumb are several utility icons for file operations. Below this is a secondary menu bar with 'File', 'Edit', 'View', 'Insert', 'Cell', 'Kernel', and 'Help'. On the right of this menu bar, it says 'Not Trusted | Python 3.5 with Spark' and a small icon. The main area of the interface is a code editor. At the top of the editor is a toolbar with icons for adding, deleting, and running code cells, along with 'Format' and 'Code' dropdown menus. The code editor itself contains a single cell with the prompt 'In [ ]:' and a cursor, indicating it is ready for code input.



```
In [2]: import numpy as np
import matplotlib.pyplot as plt
```

```
In [3]: x = np.arange(0, 10, 0.005)
y = np.exp(-x/2.) * np.sin(2*np.pi*x)
```

```
In [6]: fig = plt.figure()
ax = fig.add_subplot(111)
ax.plot(x, y)
ax.set_xlim(0, 10)
ax.set_ylim(-1, 1)
plt.show()
```



In [ ]:

Editer le notebook à gauche avec le code ci-dessous

```
import numpy as np
import matplotlib.pyplot as plt

x = np.arange(0, 10, 0.005)
y = np.exp(-x/2.) * np.sin(2*np.pi*x)

fig = plt.figure()
ax = fig.add_subplot(111)
ax.plot(x, y)
ax.set_xlim(0, 10)
ax.set_ylim(-1, 1)
plt.show()
```

Enregistrer le notebook

View All Projects

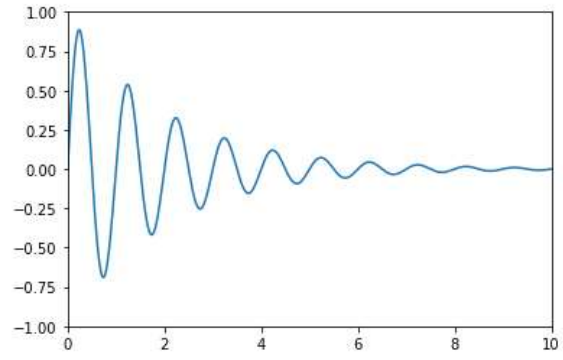
Recent Projects

IBM\_DS\_EIST2018

```
In [2]:
```

```
In [3]: x = np.arange(0, 10, 0.005)  
y = np.exp(-x/2.) * np.sin(2*np.pi*x)
```

```
In [6]: fig = plt.figure()  
ax = fig.add_subplot(111)  
ax.plot(x, y)  
ax.set_xlim(0, 10)  
ax.set_ylim(-1, 1)  
plt.show()
```



```
In [ ]:
```

IBM Watson Studio Projects Tools Community Services Manage Support Docs

My Projects / IBM\_DS\_EISTI2018 Launch IDE + Add to project

Overview Assets Environments Bookmarks Deployments Access Control

IBM\_DS\_EISTI2018  
Last Updated: Oct 15 2018  
Readme

Assets 0  
Collaborators 1

- Connected assets
- Notebook
- Connection
- Data asset
- Model
- Experiment BETA
- Environment

**Date created**

Oct 15 2018

**Description**

No description available

**Storage**

0% of 25 GB used

**Collaborators**

[View all \(1\)](#)

 Lyes NADOUR  
Admin

**Recent activity**



Alerts related to this project will show here when the project is active.

### New notebook

Blank **From file** From URL

Name\*

CoursPython

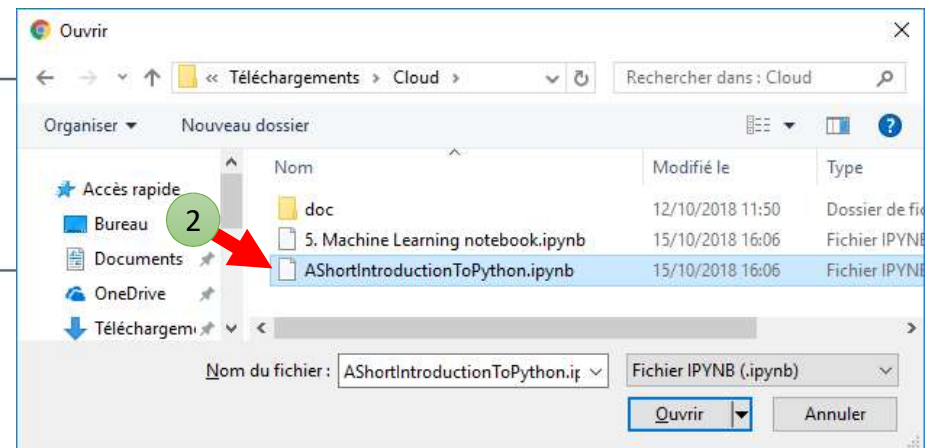
Description

Type your Description here

1 Notebook file\*

Choisir un fichier AShortIntroductionToPython.ipynb

Import a Python, Scala, or R notebook file (.ipynb) from your local device.



3

Cancel Create Notebook

## 0. Python ?

Python is a dynamic, interpreted (bytecode-compiled) language.

There are no type declarations of variables, parameters, functions, or methods in source code.

This makes the code short and flexible, and you lose the compile-time type checking of the source code. Python tracks the types of all values at runtime and flags code that does not make sense as it runs.

Thanks to its large community supporting powerful yet simple to use machine learning and data manipulation libraries, Python is a language of choice for any Data Scientist willing to code !

## 1. First Step

DSX provides you an already installed python installation, which is ready to use in this notebook without any further action !

The current development environment is an open-source [Jupyter](#) notebook. A notebook consists of cells that could be either **Code** cells or **Markdown** cells. Markdown is a lightweight markup language with plain text formatting syntax. You can double click this Markdown cell to see the *code*. Then, press **CTRL + ENTER**, or press the **Run Cell** button in the menu bar to execute it. [Here](#) is a simple Markdown cheat sheet to introduce you to this markup language. The other cell format that is available to you is the **Code** format where you can write code in the kernel language you chose. The kernel language is selected at notebook creation and can be later modified in the `Kernel -> Change kernel` menu. You can insert new cells anywhere in the notebook by pressing the **+** button in the top bar.

```
In [2]: print("Hello, world!")  
Hello, world!
```

To get yourself started, you can type the following stack of instructions and see for yourself how python behaves :

```
In [3]: a = 3  
        b = 2*a  
        type(b)  
Out[3]: int
```



**Bon cours**