



## IBM Developer SKILLS NETWORK

# Setup Watson Studio

## Objective

After completing this lab, you will be able to:

1. Add a Watson Studio - Lite service
2. Create a project in Watson Studio
3. Add a notebook to a project
4. Perform Project Pre-trained Model
5. Share your results

## Scenario

For the deep learning portion of this lab, we will use Watson Studio. Its a more powerful version of Skills Network labs. It will also allow you to share your notebook to be marked. You will need the link from your Jupyter notebook from the previous section.

You will use the Jupyter notebook for your Particular Deep learning Framework. You will complete the notebook and submit it along with several screenshots to be marked by your peers.

The following will be the instructions on how to sign up for an account, load the notebook and share it. If you already have an account Please jump to Task two.

## Exercise 1: Add a Watson Studio - Lite service

### Scenario

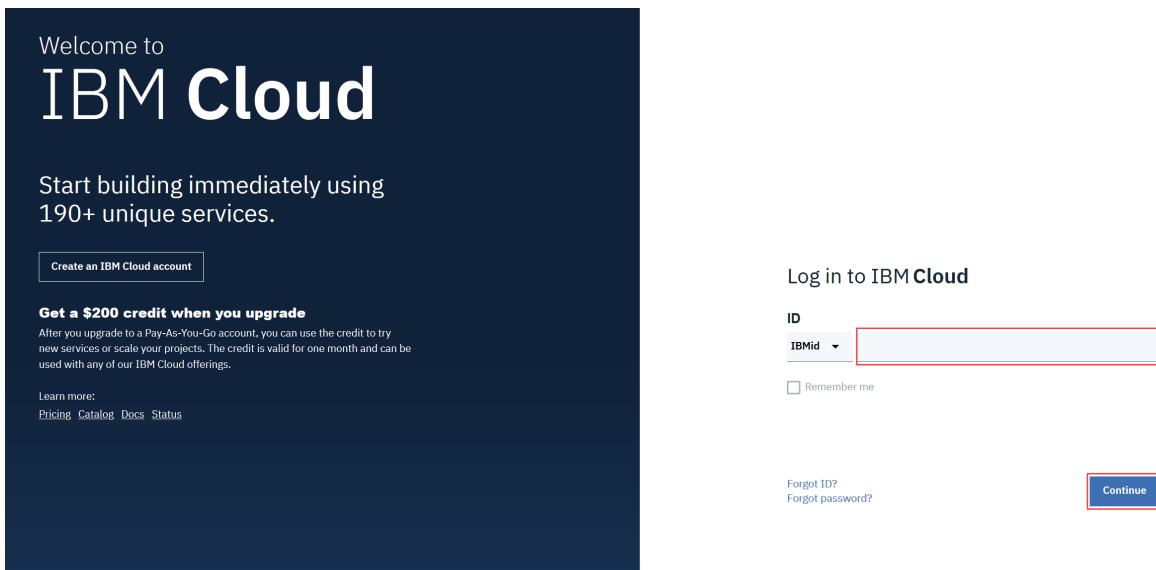
In this exercise, you will use the IBM Cloud account you configured in the previous module. You will add the Watson Studio - Lite service to your IBM Cloud account.

If you have already added a Watson Studio - Lite service, you can skip Task 1 and proceed with Task 2.

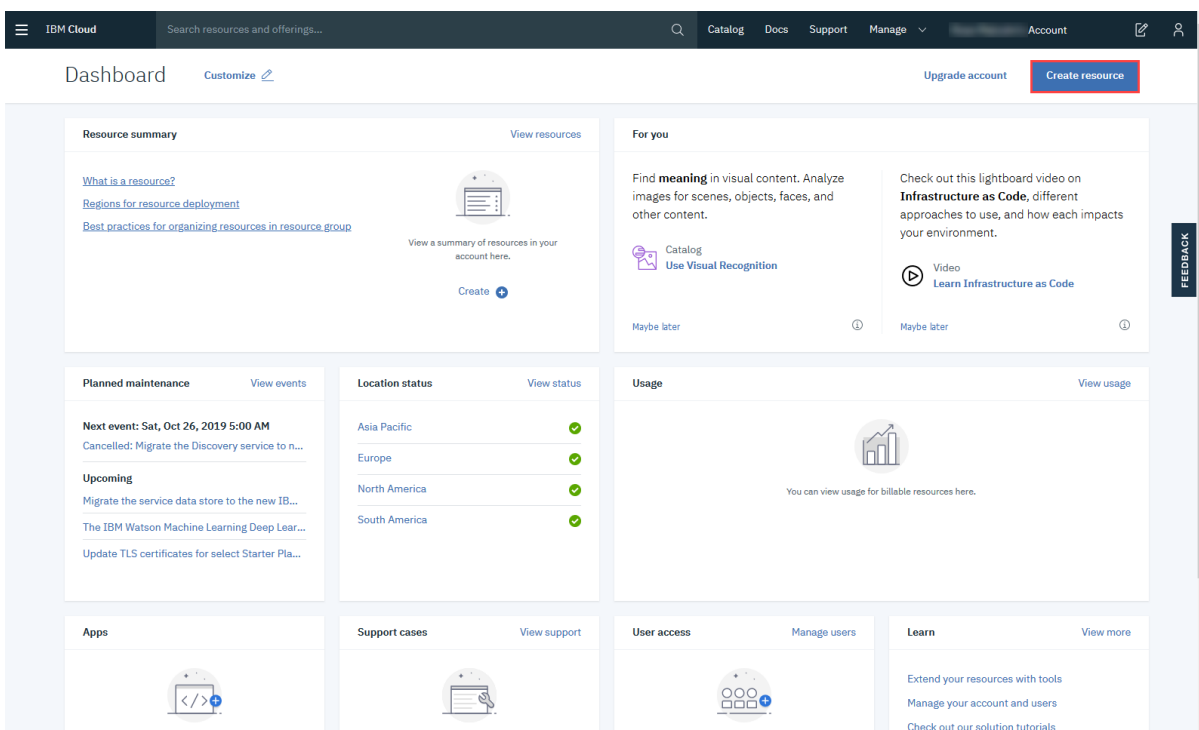
### Task 1: Log in to your IBM Cloud account and add the Watson Studio - Lite service

*Complete this task only if you have not yet configured Watson Studio - Lite. Otherwise, go to Task 2.*

1. Go to the [IBM Cloud](#) page, enter your **ID**, and then click **Continue**.



2. On the Dashboard, click **Create Resource**



3. In the Catalog, click **AI (16)**. Note that the **Lite** plan is selected

IBM Cloud Search resources and offerings...

Try the best of the Catalog for free with no time restrictions with Lite plans.  
The Lite filter is enabled. Remove the filter to see the full Catalog.

### Catalog

Search the catalog...

Services (45) Software

All Categories (45)

- VPC Infrastructure
- Compute (2)
- Containers (1)
- Networking
- Storage (1)
- AI (16)**
- Analytics (4)
- Databases (3)
- Developer Tools (6)
- Integration (4)
- Internet of Things (1)
- Security and Identity (3)
- Starter Kits (1)
- Web and Mobile (2)
- Web and Application (4)

Provider 1

- ☐ IBM
- ☐ Community
- ☐ Third party

Pricing plan

- ☒ Lite
- ☐ Free

Compliance

- ☐ IAM-enabled

Release

- ☐ Beta
- ☐ Dedicated
- ☐ Deprecated

### Services

Explore our broad portfolio of managed services for infrastructure, developer tools, and more to build your apps on the public cloud.

Filters: Lite x Clear all

All Categories

- Analytics Engine** IBM  
Flexible framework to deploy Hadoop and Spark analytics applications.  
Analytics
- API Connect** IBM  
Create, manage, enforce, and run APIs.  
Integration
- App Connect** IBM  
Connect your applications, automate tasks, and improve productivity.  
Integration
- App ID** IBM  
User Authentication and User Profiles for your apps.  
Security and Identity, Web and Mobile
- Availability Monitoring** IBM  
Around the world, around the clock availability and performance monitoring.  
Developer Tools
- Cloud Foundry** IBM  
Run your Cloud Foundry application in either a multi-tenant, or an isolated environment (Cloud Foundry Enterprise).  
Compute
- CloudAMQP** Third party  
RabbitMQ as a Service  
Web and Application
- Cloudant** IBM  
A scalable JSON document database for web, mobile, IoT, and serverless applications.  
Databases
- Compare and Comply** IBM  
Process governing documents to convert, identify, classify, and compare important elements  
AI
- Container Registry** IBM  
Securely store container images and monitor
- Continuous Delivery** IBM  
Develop, build, test and deliver using DevOps
- Db2** IBM  
A next generation SQL database. Formerly

#### 4. In the list of **Services**, click **Watson Studio**.

IBM Cloud Search resources and offerings...

Try the best of the Catalog for free with no time restrictions with Lite plans.  
The Lite filter is enabled. Remove the filter to see the full Catalog.

### Catalog

Search the catalog...

Services (45) Software

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Filters: Lite x Clear all

AI

- Watson Assistant** IBM  
Watson Assistant lets you build conversational interfaces into any application, device, or channel.  
AI
- Watson Studio** IBM  
Embed AI and machine learning into your business. Create custom models using your own data.  
AI
- Compare and Comply** IBM  
Process governing documents to convert, identify, classify, and compare important elements  
AI
- Discovery** IBM  
Add a cognitive search and content analytics engine to applications.  
AI
- Knowledge Catalog** IBM  
Discover, catalog, and securely share enterprise data.  
AI
- Knowledge Studio** IBM  
Teach Watson the language of your domain.  
AI
- Language Translator** IBM  
Translate text, documents, and websites from one language to another. Create industry or region-specific translations via the service's...  
AI
- Machine Learning** IBM  
IBM Watson Machine Learning - make smarter decisions, solve tough problems, and improve user outcomes.  
AI
- Natural Language Understanding** IBM  
Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment and more.  
AI

5. On the Watson Studio page, select the region closest to you, verify that the **Lite** plan is selected, and then click **Create**.

Watson Studio

Author: IBM • Date of last update: 07/18/2019

Need Help? [Contact Support](#) [View docs](#)

Summary

**Watson Studio** Free

Region: Dallas

Plan: Lite

Service name: Watson Studio-0o

Resource group: Default

**Create**

[Add to estimate](#)

[View terms](#)

Select a region

Dallas

Select a pricing plan

Monthly prices shown are for country or region: [United States](#)

PLAN	FEATURES	PRICING
✓ 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)	Free
Standard v1	1 authorized user + unlimited viewer collaborators 50 capacity unit-hours included monthly (additional capacity available) Unlimited elastic compute environments Capacity Type: 1 vCPU and 4 GB RAM = 0.5 capacity units required per hour Capacity Type: 2 vCPU and 8 GB RAM = 1 capacity units required per hour Capacity Type: 3 vCPU and 12 GB RAM = 1.5 capacity units required per hour Capacity Type: 4 vCPU and 16 GB RAM = 2 capacity units required per hour Capacity Type: 8 vCPU and 32 GB RAM = 4 capacity units required per hour Capacity Type: 16 vCPU and 64 GB RAM = 8 capacity units required per hour Decision Optimization = (Capacity Type) + 20 capacity units required per hour	\$99.00 USD/Instance \$0.50 USD/Capacity Unit-Hour \$99.00 USD/Authorized User
Enterprise v2	5 authorized users + unlimited viewer collaborators 5,000 capacity unit-hours included monthly (additional capacity available) Unlimited elastic compute environments Capacity Type: 1 vCPU and 4 GB RAM = 0.5 capacity units required per hour	Expand each section to view details

6. When the Watson Studio resource is successfully created, you will see the Watson Studio page. Click **Get Started**.

Resource list /

Watson Studio-0o

Resource group: Default Location: Dallas [Add Tags](#)

**Watson Studio**

Welcome to Watson Studio. Let's get started!

**Get Started**

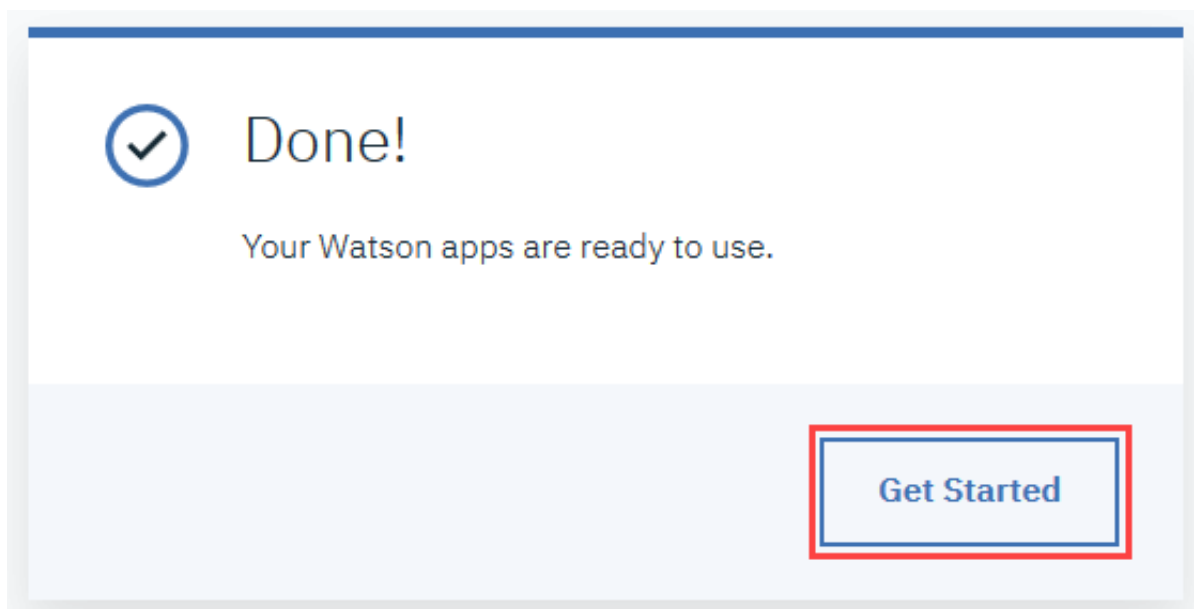
[Documentation](#)

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.

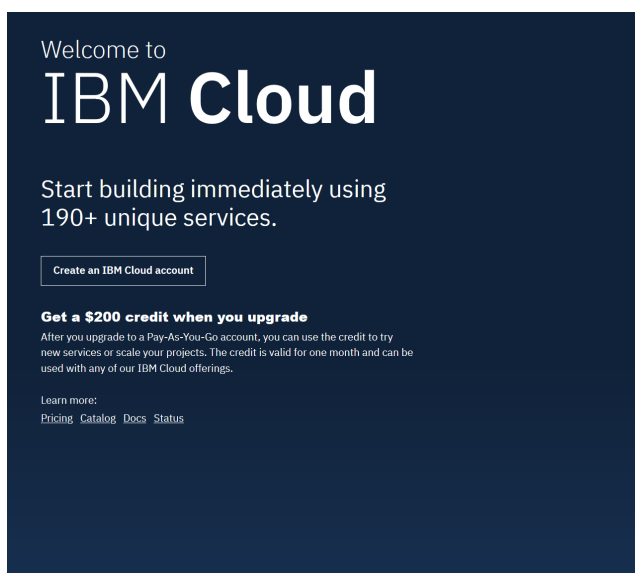
7. You will see this message when Watson Studio is successfully set up for you. Click **Get Started**.



## Task 2: Launch Watson Studio

*Complete this task if you have an existing Watson Studio - Lite service. Otherwise, go to Task 1.*

1. Go to the [IBM Cloud](#) page, enter your **ID**, and then click **Continue**.



### Log in to IBM Cloud

ID

IBMId

☐ Remember me

[Forgot ID?](#) [Forgot password?](#)

2. On the Dashboard, click **Services**.

The screenshot shows the IBM Cloud Dashboard. At the top, there's a navigation bar with 'IBM Cloud', a search bar, and links to Catalog, Docs, Support, and Manage. Below the navigation bar, the 'Dashboard' title is followed by a 'Customize' link. On the right, there are buttons for 'Upgrade account' and 'Create resource'. The main content area is divided into several tiles:

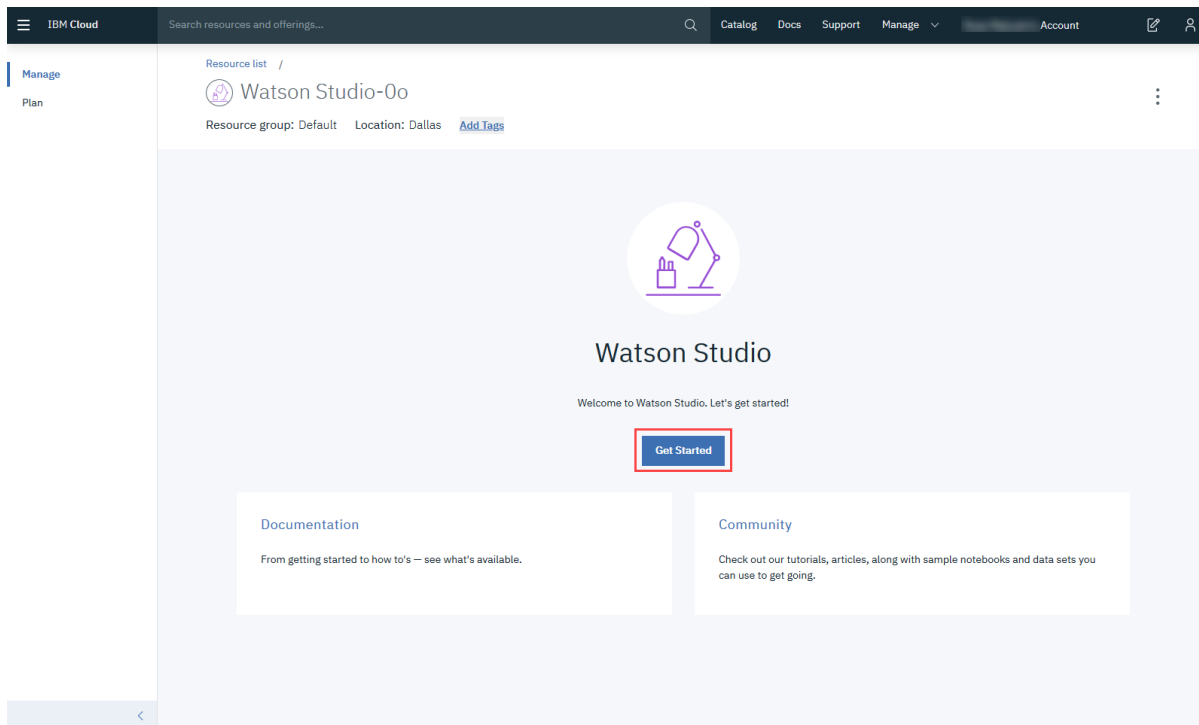
- Resource summary:** A tile with a 'Services' tab selected, showing a count of 1. Below it is a link to 'Add more resources'.
- For you:** A section with two cards. The first card is titled 'Get started with using AI and Cloud Object Storage in 15 minutes' and includes a 'Tutorial Get Started with Watson Studio' link. The second card is titled 'Analyze and visualize open data sets by using IBM Watson Studio, a Jupyter Notebook, and Apache Spark' and includes a 'Tutorial Analyze and visualize open data' link.
- Planned maintenance:** A tile showing the next event: 'Mon, Oct 28, 2019 3:00 PM' with a link to 'Migrate the service data store to the new IBM Cloud d...'. It also lists upcoming updates like 'The IBM Watson Machine Learning Deep Learning ser...', 'Update TLS certificates for select Starter Plan networks', and 'Security and Kernel Update (Disaster Recovery Nodes)'.
- Location status:** A tile showing the status of services across different regions: Asia Pacific, Europe, North America, and South America, all marked with green checkmarks.
- Usage:** A tile with a bar chart icon and the text 'You can view usage for billable resources here.'.
- Apps:** A tile with an icon of a laptop and the text 'You can view your apps here after you create them. Learn more about how to get started.' with a 'Create an app' link.
- Support cases:** A tile with an icon of a document and the text 'You can view a summary of your support cases here after you submit them. Learn more about how to get support.'.
- User access:** A tile with an icon of a group of people and the text 'Working alone is no fun. With the right permissions, you can see other users when they join this account. Learn more about users and access.' with an 'Invite users' link.
- Learn:** A tile with links to 'Extend your resources with tools', 'Manage your account and users', 'Check out our solution tutorials', 'IBM Developer', 'Architecture Center', and 'IBM Skills Gateway'.

3. In the Resource list, expand **Services**, and then click the Watson Studio service.

The screenshot shows the 'Resource list' page in the IBM Cloud dashboard. At the top, there's a navigation bar similar to the dashboard. Below it, the 'Resource list' title is followed by a 'Create resource' button. The main content area is a table with columns: Name, Group, Location, Offering, Status, and Tags. The table is filtered by 'Filter by name or IP address...' and 'Filter by group or org...'. The 'Services' section is expanded, showing a list of resources. The 'Watson Studio-00' resource is highlighted with a red box. It has a 'Default' group, 'Dallas' location, 'Watson Studio' offering, and 'Provisioned' status.

Name	Group	Location	Offering	Status	Tags
Watson Studio-00	Default	Dallas	Watson Studio	Provisioned	---

4. When the Watson Studio resource is successfully created, you will see the Watson Studio page. Click **Get Started**



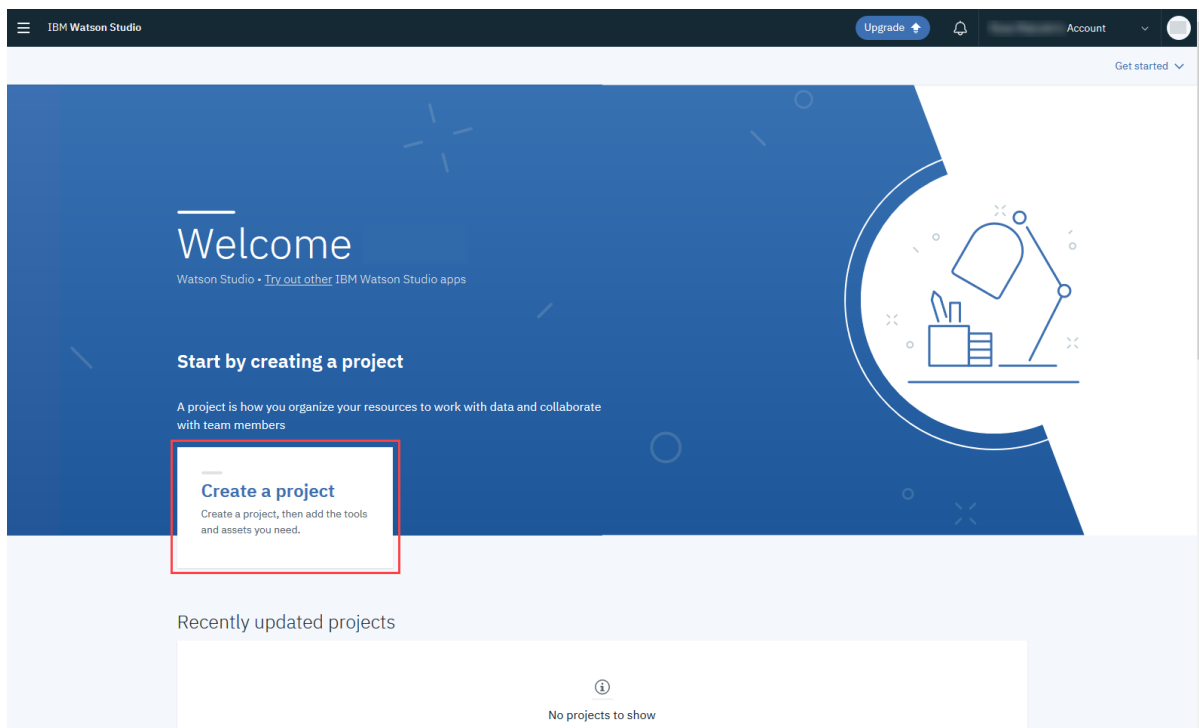
## Exercise 2: Create a new project and add a Jupyter Notebook

### Scenario

In this exercise, you will create a project to hold all the resources and services for your data analysis.

### Task 1: Create a new project

1. On the Watson Studio Welcome page, click **Create a project**.




2. On the Create a project page, click **Create an empty project**

[← Back](#)

## Create a project

Choose whether to create an empty project or to preload your project with data and analytical assets. Add collaborators and data, and then choose the right tools to accomplish your goals. Add services as necessary.




### Create an empty project

Add the data you want to prepare, analyze, or model. Choose tools based on how you want to work: write code, create a flow on a graphical canvas, or automatically build models.

**NEW** AutoAI experiment tool: Fully automated approach to building a classification or re...

USE TO

- Prepare and visualize data
- Analyze data in notebooks
- Train models



### Create a project from a sample or file

Get started fast by loading existing assets. Choose a project file from your system, or choose a curated sample project.

USE TO

- Learn by example
- Build on existing work
- Run tutorials

### 3. On the New project page, enter a **Name** and **Description** for your project

## New project

#### Define project details

**Name**

**Description**

**Choose project options**

☐ Restrict who can be a collaborator ⓘ

Project will include integration with [Cloud Object Storage](#) for storing project assets.

#### Define storage

① Select storage service

[Add](#)

Add an object storage instance and then return to this page and click Refresh.

② Refresh

[Cancel](#)
[Create](#)

### 4. If your IBM Cloud account does not have existing storage for your project, you will be prompted to create it. If your IBM Cloud account does have storage, go to *Task 2: Add a Jupyter Notebook*. Under Select **storage service**, click **Add**.



New project

Define project details

Name

Project name

Description

Project description

Choose project options

☐ Restrict who can be a collaborator

Project will include integration with [Cloud Object Storage](#) for storing project assets.

Define storage

1 Select storage service

Add

Add an object storage instance and then return to this page and click Refresh.

2 Refresh

Cancel

Create

5. On the Cloud Object Storage page, verify that **Lite** is selected, and then click **Create**.

IBM Watson Studio

Cloud Object Storage

Existing

New

Cloud Object Storage

IBM Cloud Object Storage is a highly scalable cloud storage service, designed for high durability, resiliency and security. Store, manage and access your data via our self-service portal and RESTful APIs. Connect applications directly to Cloud Object Storage use other IBM Cloud Services with your data.

Features

Storage for the IBM Cloud

IBM Cloud Object Storage provides unstructured data storage for cloud applications. Libraries and SDKs support a common set of S3 API functions for connecting new applications to scalable cloud storage and integrating your data into other services on the IBM Cloud Platform as well as IBM Watson services. IBM Cloud Object Storage is available with Regional, Cross Region and single site resiliency options worldwide.

Built-in Aspera high-speed transfer

With IBM Cloud Object Storage Aspera high-speed data transfer, you can improve data transfer performance by quickly transferring data over long distances, and under various network conditions. It is natively integrated into Cloud Object Storage and there is no additional cost for uploading data.

Storage Classes and Archive Policy

Choose storage classes based on your usage patterns for active, less-active, and cold workloads with Standard, Vault, and Cold Vault respectively. Use Flex class for dynamic data access with usage patterns that are hard to predict. For rarely used data that requires long-term retention, simply set an Archive policy with our existing storage-class tiers allowing you to reduce costs even further with our lowest priced Archive storage.

Access and Key Management

IBM Identity and Access Management (IAM) policies allow for granular access control at the bucket level using role-based policies. Key Protect support allows customers to have their own managed encryption keys for higher level data security.

Pricing Plan: Monthly Process shown above reflect the: United States

PLAN	FEATURES	PRICING
<div><input checked="" type="radio"/> Lite</div>	<div><div>1 COS Service Instance</div><div>Storage up to 25 GB/mo.</div><div>Up to 20,000 GET requests/mo.</div><div>Up to 2,000 PUT requests/mo.</div><div>Up to Data Retrieval 10 GB/mo.</div><div>Up to 5GB Public Outbound</div><div>Applies to aggregate total across all storage bucket classes</div></div>	Free
<div><input type="radio"/> Standard</div>	<div>There is no minimum fee, so you pay only for what you use.</div>	Expand each section to view details

Cancel

Create

6. In the Confirm Creation box, click **Confirm**.

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDDeveloperSkillsNetwork-DL0321EN-SkillsNetwork/labs/Week4/Setup\_Watson\_Studi...

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# Confirm Creation

## Plan

Lite



## Resource group

Default



## Service name

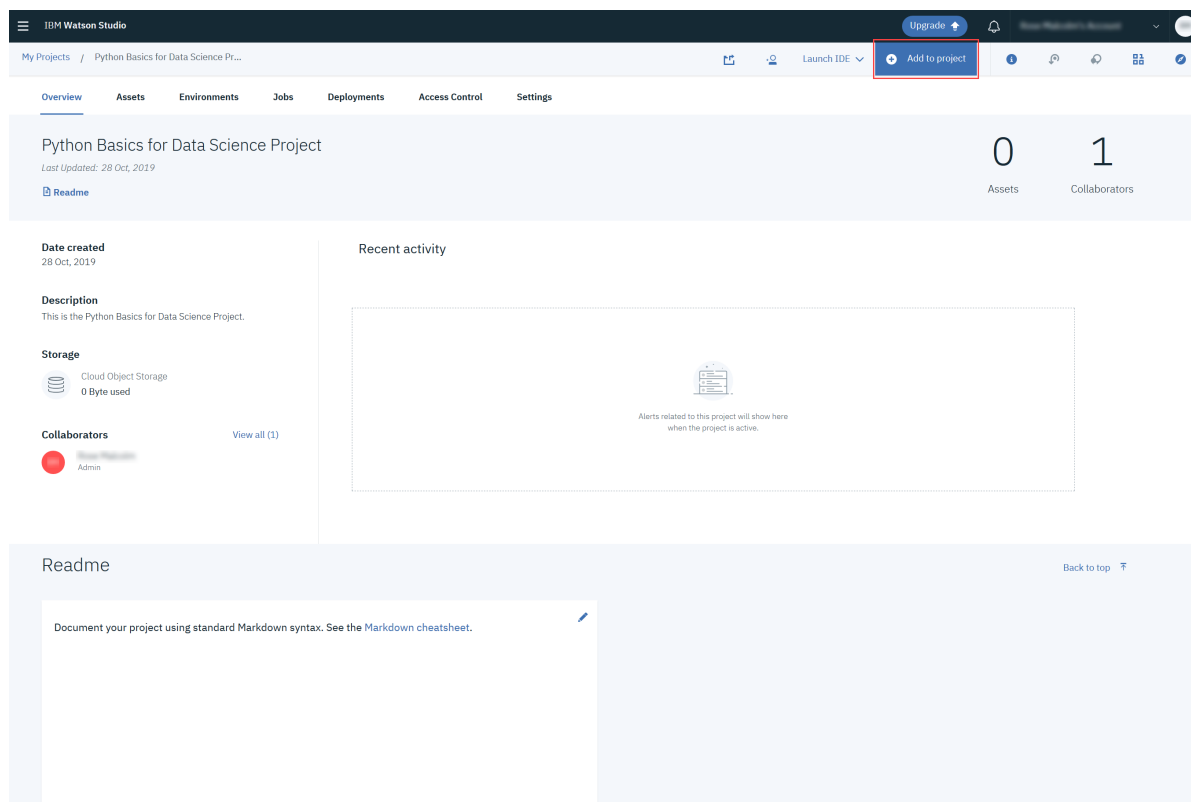
cloud-object-storage-ai

Cancel

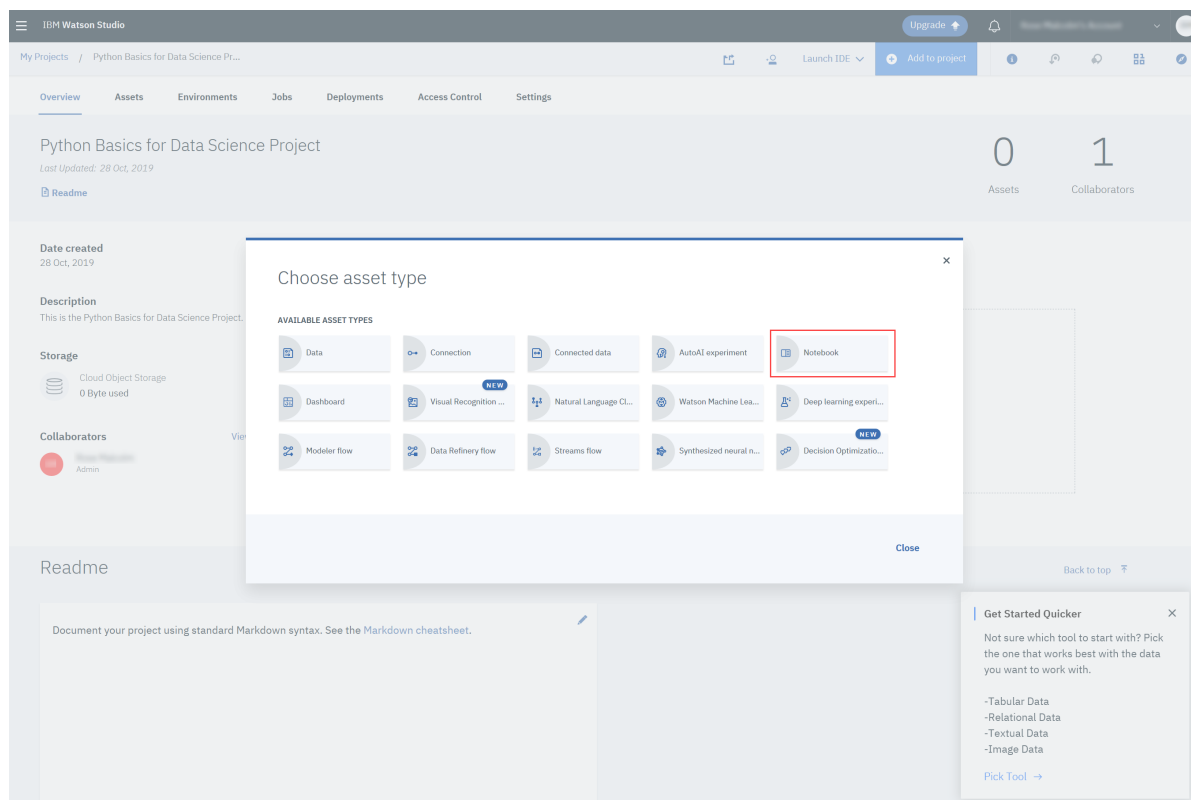
Confirm

## Task 2: Add a Jupyter Notebook

1. On the project page, click **Add to project**.



## 2. In the Choose asset type box, click **Notebook**



## 3. On the Load Notebook page, enter a **Name** for your notebook, then click **From URL**. On the **Notebook URL** line, copy and paste the notebook URL from the introduction for the deep learning framework of your choice.

IBM Watson Studio

My Projects / Python Basics for Data Science Pr... / Add Notebook

### New notebook

Blank From file **From URL**

**Name**  
Lab - Loading Data and Viewing Data  
4 characters remaining

**Description (optional)**  
Type your Description here  
500 characters remaining

**Select runtime**  
Default Python 3.6 XS (2 vCPU and 8 GB RAM)  
The selected runtime has 2 vCPU and 8 GB RAM and consumes 1 capacity unit per hour.  
[Learn more](#) about capacity unit hours and Watson Studio pricing plans.

**Notebook URL**  
https://coclus/PY0101EN43\_EDX

Cancel Create Notebook

4. The notebook you select, which contains the instructions and information for the assignment, is loaded

IBM Watson Studio

My Projects / Data analysis project / test

File Edit View Insert Cell Kernel Help

Not Trusted | Python 3.6

## Analyzing US Economic Data and Building a Dashboard

### Description

Extracting essential data from a dataset and displaying it is a necessary part of data science; therefore individuals can make correct decisions based on the data. In this assignment, you will extract some essential economic indicators from some data, you will then display these economic indicators in a Dashboard. You can then share the dashboard via an URL.

[Gross domestic product \(GDP\)](#) is a measure of the market value of all the final goods and services produced in a period. GDP is an indicator of how well the economy is doing. A drop in GDP indicates the economy is producing less; similarly an increase in GDP suggests the economy is performing better. In this lab, you will examine how changes in GDP impact the unemployment rate. You will take screen shots of every step, you will share the notebook and the URL pointing to the dashboard.

### Table of Contents

- Define a Function that Makes a Dashboard

## Exercise 3: Perform Project on Pre-trained Model

### Scenario

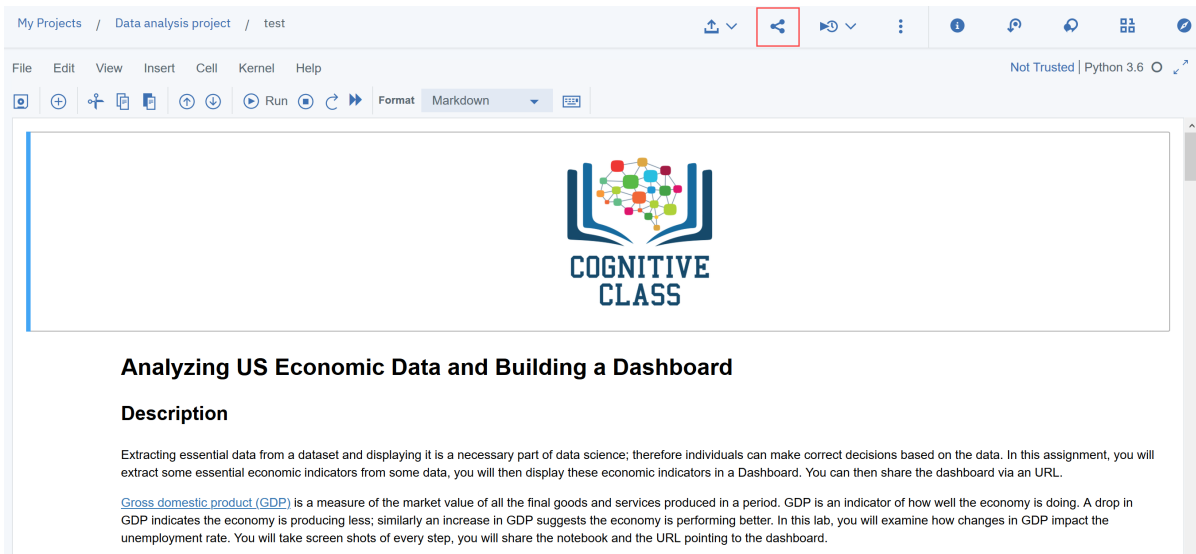
Train a neural network to determine if an image of concrete has a crack or does not have a crack.

### Task 1: Train the output layer

1. Follow the instructions in the Notebook to complete the assignment.

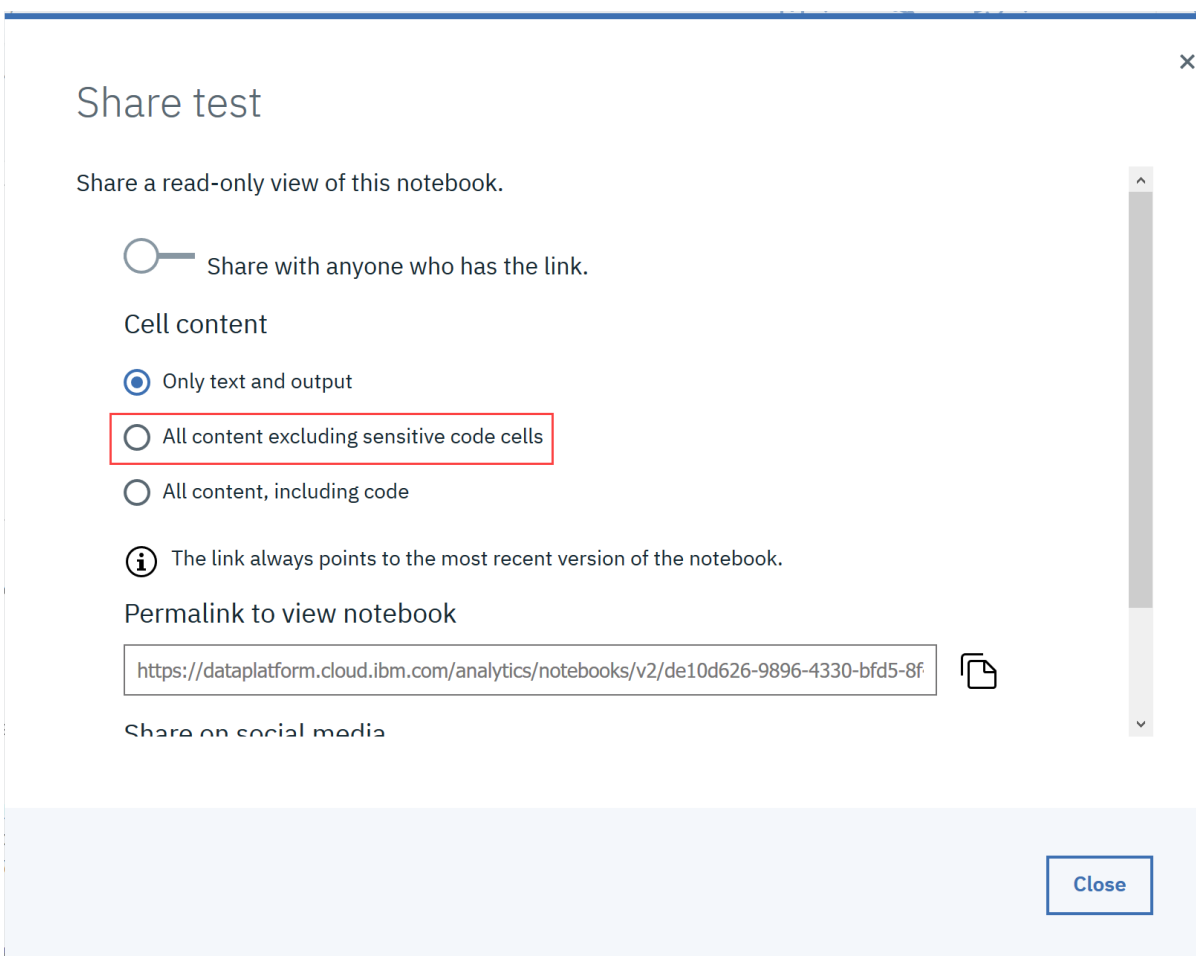
### Task 2: Share your results

## 1. In the Notebook, on the toolbar, click **Share**



The screenshot shows the Jupyter Notebook interface. The top toolbar contains various icons, with the 'Share' icon (a square with a diagonal line) highlighted by a red box. Below the toolbar, the notebook content is visible, featuring the 'COGNITIVE CLASS' logo and the title 'Analyzing US Economic Data and Building a Dashboard'. The 'Description' section explains the task of extracting economic indicators and building a dashboard.

## 2. In the Share box, select **All content excluding sensitive code cells**.



The screenshot shows the 'Share test' dialog box. The 'Share a read-only view of this notebook.' section is visible. Under 'Cell content', the option 'All content excluding sensitive code cells' is selected and highlighted with a red box. Below this, there is an information icon and a note: 'The link always points to the most recent version of the notebook.' The 'Permalink to view notebook' section shows a text box with the URL: <https://dataplatfrom.cloud.ibm.com/analytics/notebooks/v2/de10d626-9896-4330-bfd5-8f>. At the bottom right, there is a 'Close' button.

## 3. To share the Notebook, scroll down and copy the permalink.

