

Setup Watson Studio

Scenario

Extracting essential data from a dataset and displaying it is a necessary part of data science; enabling individuals to make correct decisions based on data.

In this assignment, you will extract some essential economic indicators from some data and then display these economic indicators on a Dashboard.

A dashboard often provides a view of key performance indicators. You also have the option to store the Dashboard on IBM Object Storage so anyone can view the Dashboard, but you will not be marked on this aspect.

In this lab, you will configure Watson Studio and IBM Object Storage as required to complete the assignment, perform the assignment tasks, and then share your results.

Objectives

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. Analyze a dataset and extract key performance indicators
5. Display key performance indicators on a dashboard
6. Share your results

Exercise 1: Add a Watson Studio - Lite service

Scenario

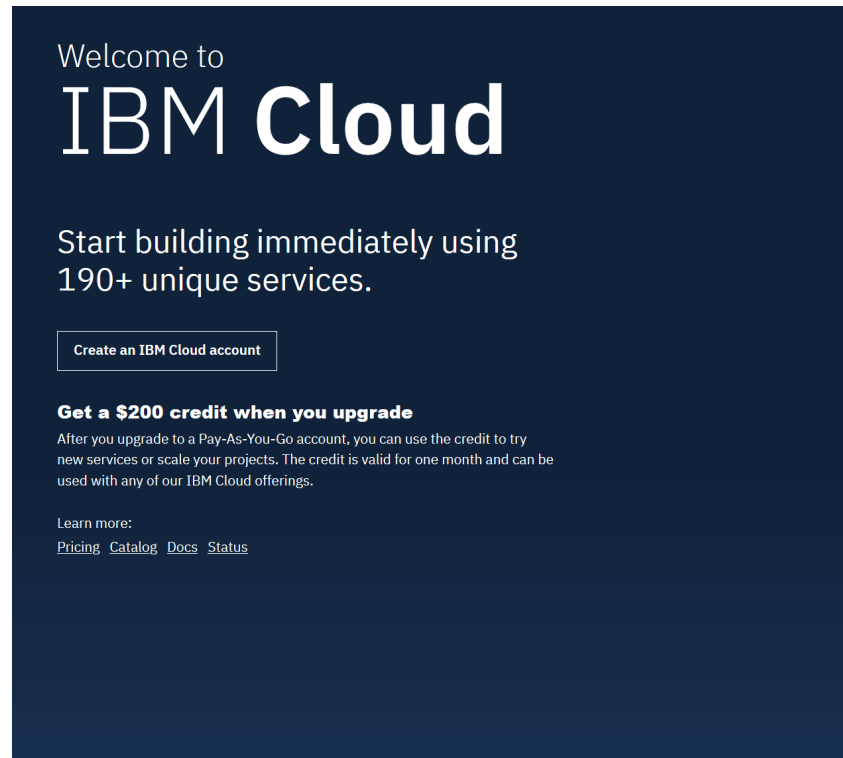
In this exercise, you will use the IBM Cloud account you configured in the previous module. You will add the Watson Studio - Lite service to your IBM Cloud account.

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**.



Log in to IBM Cloud

ID

IBMid ▾

☐ Remember me

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

Continue

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

The screenshot displays the IBM Cloud Dashboard interface. At the top, there is a navigation bar with the IBM Cloud logo, a search bar, and links for Catalog, Docs, Support, Manage, Account, and a user profile icon. Below the navigation bar, the main dashboard area is divided into several sections:

- Resource summary:** Includes links for "What is a resource?", "Regions for resource deployment", and "Best practices for organizing resources in resource group". It also features a "View resources" link, a "Create" button with a plus icon, and a "View resources" link.
- For you:** Contains a "Catalog" link for "Use Visual Recognition" and a "Video" link for "Learn Infrastructure as Code". Both items have a "Maybe later" option and an information icon.
- Planned maintenance:** Shows the "Next event: Sat, Oct 26, 2019 5:00 AM" and a list of upcoming events: "Cancelled: Migrate the Discovery service to n...", "Migrate the service data store to the new IB...", "The IBM Watson Machine Learning Deep Lear...", and "Update TLS certificates for select Starter Pla...". It includes a "View events" link.
- Location status:** Displays a table of regions with their status:

Location	Status
Asia Pacific	✓
Europe	✓
North America	✓
South America	✓

It includes a "View status" link.

- Usage:** Features a bar chart icon and the text "You can view usage for billable resources here." with a "View usage" link.
- Apps:** Includes a "Create" button with a plus icon.
- Support cases:** Includes a "View support" link.
- User access:** Includes a "Manage users" link.
- Learn:** Includes links for "Extend your resources with tools", "Manage your account and users", and "Check out our solution tutorials". It includes a "View more" link.

A vertical "FEEDBACK" button is located on the right side of the dashboard.

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

IBM Cloud

Search resources and offerings...

Q

Catalog Docs Support Manage

Account

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

☐ 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

FEEDBACK

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

The screenshot shows the IBM Cloud Catalog interface. At the top, there's a navigation bar with 'IBM Cloud', a search bar, and links for 'Catalog', 'Docs', 'Support', 'Manage', 'Account', and a user icon. Below this is a blue banner stating: '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.' The main content area is titled 'Catalog' and has a search bar. On the left, there's a sidebar with 'Services (45)' and 'Software'. Under 'Services', there's a list of categories: '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)', and 'Web and Application (4)'. The 'AI (16)' category is selected. Below the categories, there's a 'Provider' section with checkboxes for 'IBM', 'Community', and 'Third party'. The 'Pricing plan' section has checkboxes for 'Lite' (selected) and 'Free'. The 'Compliance' section has a checkbox for 'IAM-enabled'. The main content area is titled 'Services' and has a description: 'Explore our broad portfolio of managed services for infrastructure, developer tools, and more to build your apps on the public cloud.' Below this, there's a 'Filters' section with 'Lite x' and 'Clear all'. The 'AI' category is selected, and a grid of services is displayed. The 'Watson Studio' service is highlighted with a red box. The services shown are: 'Watson Assistant', 'Watson Studio', 'Compare and Comply', 'Discovery', 'Knowledge Catalog', 'Knowledge Studio', 'Language Translator', 'Machine Learning', and 'Natural Language Understanding'. Each service card includes an icon, the service name, the provider (IBM), a brief description, and the category (AI). A 'FEEDBACK' button is visible on the right side of the main content area.

IBM Cloud

Search resources and offerings...

Catalog Docs Support Manage Account

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

- ☐ IBM
- ☐ Community
- ☐ Third party

Pricing plan

- ☒ Lite
- ☐ Free

Compliance

- ☐ IAM-enabled

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

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

FEEDBACK

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

Search resources and offerings...

Catalog Docs Support Manage Account

Watson Studio

Lite IBM Service IAM-enabled

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

Create About

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

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

Summary

Watson Studio

Free

Region: Dallas

Plan: Lite

Service name: Watson Studio-00

Resource group: Default

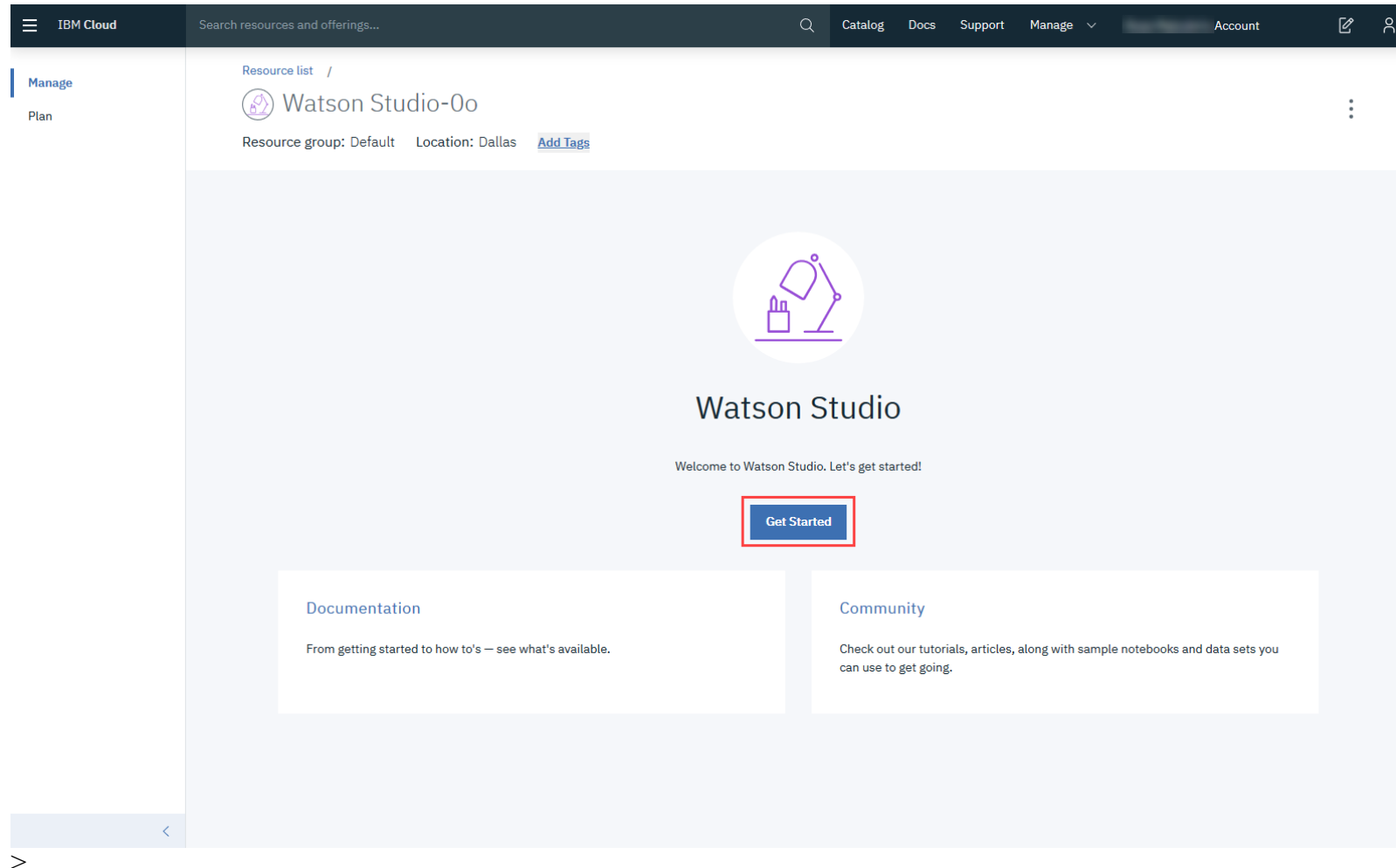
Create

Add to estimate

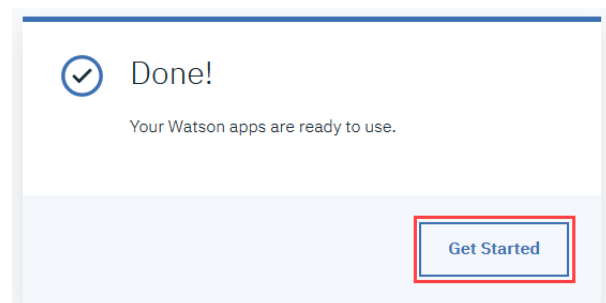
[View terms](#)

FEEDBACK

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



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?](#)

Continue

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

The screenshot shows the IBM Cloud dashboard interface. At the top, there's a navigation bar with 'IBM Cloud' and a search bar. Below the navigation bar, the 'Dashboard' is visible with a 'Customize' link. The main content area is divided into several sections:

- Resource summary:** This section has a 'View resources' link. A table lists 'Services' with a count of '1'. This row is highlighted with a red border. Below the table is an 'Add more resources' button with a plus icon.
- For you:** This section contains two cards. The first card is titled 'Get started with using AI and Cloud Object Storage in 15 minutes.' and includes a 'Tutorial' link 'Get Started with Watson Studio'. 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' link 'Analyze and visualize open data'. Both cards have a 'Maybe later' button and an information icon.
- Planned maintenance:** This section has a 'View events' link. It lists the next event: 'Mon, Oct 28, 2019 3:00 PM' with the description 'Migrate the service data store to the new IBM Cloud d...'. Below this, it lists 'Upcoming' events: '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:** This section has a 'View status' link. It shows a table of locations with their status:


Location	Status
Asia Pacific	✓
Europe	✓
North America	✓
South America	✓

- Usage:** This section has a 'View usage' link. It shows a bar chart icon and the text 'You can view usage for billable resources here.'
- Apps:** This section has an icon of a laptop with a plus sign. It says 'You can view your apps here after you create them. Learn more about how to get started.' and has a 'Create an app' button with a plus icon.
- Support cases:** This section has a 'View support' link. It has an icon of a document with a plus sign. It says 'You can view a summary of your support cases here after you submit them. Learn more about how to get support.'
- User access:** This section has a 'Manage users' link. It has an icon of three people with a plus sign. It says '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.' and has an 'Invite users' button with a plus icon.
- Learn:** This section has a 'View more' link. It lists 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'.



On the right side of the dashboard, there is a vertical 'FEEDBACK' button.



>

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

 IBM Cloud

Search resources and offerings...








 Catalog Docs Support Manage 

Resource list

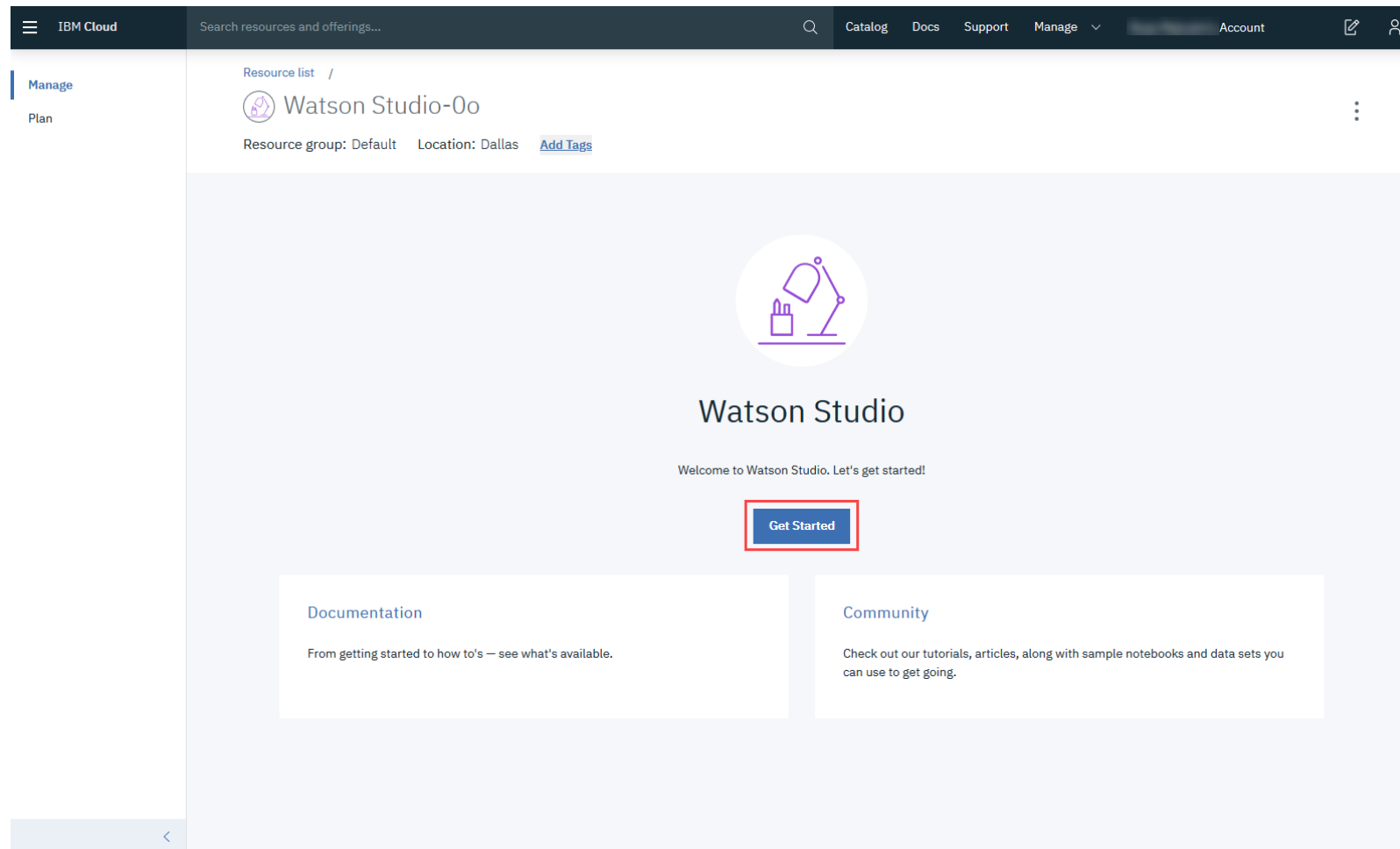
Create resource

[Collapse all](#) | [Expand all](#)

Name ▲	Group	Location	Offering	Status	Tags
 Filter by name or IP address...	 Filter by group or org...	 Filter...	 Filter...	 Filter...	 Filter...
> Devices (0)					
> VPC Infrastructure (0)					
> Clusters (0)					
> Cloud Foundry Apps (0)					
> Cloud Foundry Services (0)					
▼ Services (1)					
 Watson Studio-0o	Default	Dallas	Watson Studio	Provisioned	— ...
> Storage (1)					
> Network (0)					
> Cloud Foundry Enterprise Environments (0)					
> Functions Namespaces (0)					
> Apps (0)					
> Developer Tools (0)					

FEEDBACK

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

Upgrade

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
<input checked="" type="radio"/> Lite	1 COS Service Instance Storage up to 25 GB/mo. Up to 20,000 GET requests/mo. Up to 2,000 PUT requests/mo. Up to Data Retrieval 10 GB/mo. Up to 5GB Public Outbound Applies to aggregate total across all storage bucket classes	Free

The Lite service plan for Cloud Object Storage includes Regional and Cross Regional resiliency, flexible data classes, and built in security.

☐ Standard

There is no minimum fee, so you pay only for what you use.

Expand each section to view details

Cancel

Create

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

×

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**.

The screenshot displays the IBM Watson Studio web interface. At the top, a dark navigation bar contains the 'IBM Watson Studio' logo, an 'Upgrade' button, and a user profile icon. Below this, a light blue header bar shows the breadcrumb 'My Projects / Python Basics for Data Science Pr...' and a 'Launch IDE' dropdown. A red rectangle highlights the 'Add to project' button in the top right of this header. The main content area has a tabbed interface with 'Overview' selected. The project title 'Python Basics for Data Science Project' is prominently displayed, along with its last update date '28 Oct, 2019' and a 'Readme' link. To the right, statistics show '0 Assets' and '1 Collaborators'. The left sidebar provides details: 'Date created' (28 Oct, 2019), 'Description' (This is the Python Basics for Data Science Project.), 'Storage' (Cloud Object Storage, 0 Byte used), and 'Collaborators' (Admin). The 'Recent activity' section is currently empty. At the bottom, a 'Readme' section contains a text box with the instruction: 'Document your project using standard Markdown syntax. See the [Markdown cheatsheet](#).'

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

The screenshot displays the IBM Watson Studio web interface. At the top, the navigation bar includes 'My Projects' and 'Python Basics for Data Science Pr...'. The main header shows 'Python Basics for Data Science Project' with 'Last Updated: 28 Oct, 2019' and '0 Assets' and '1 Collaborators'. A 'Choose asset type' modal is open, showing a grid of asset types. The 'Notebook' option is highlighted with a red rectangle. Other asset types include Data, Connection, Connected data, AutoAI experiment, Dashboard, Visual Recognition, Natural Language Cl..., Watson Machine Lea..., Deep learning experi..., Modeler flow, Data Refinery flow, Streams flow, Synthesized neural n..., and Decision Optimizatio... A 'Get Started Quicker' sidebar is visible on the right, suggesting tools for different data types.

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 following URL: https://cocl.us/coursera_notebook_project

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)

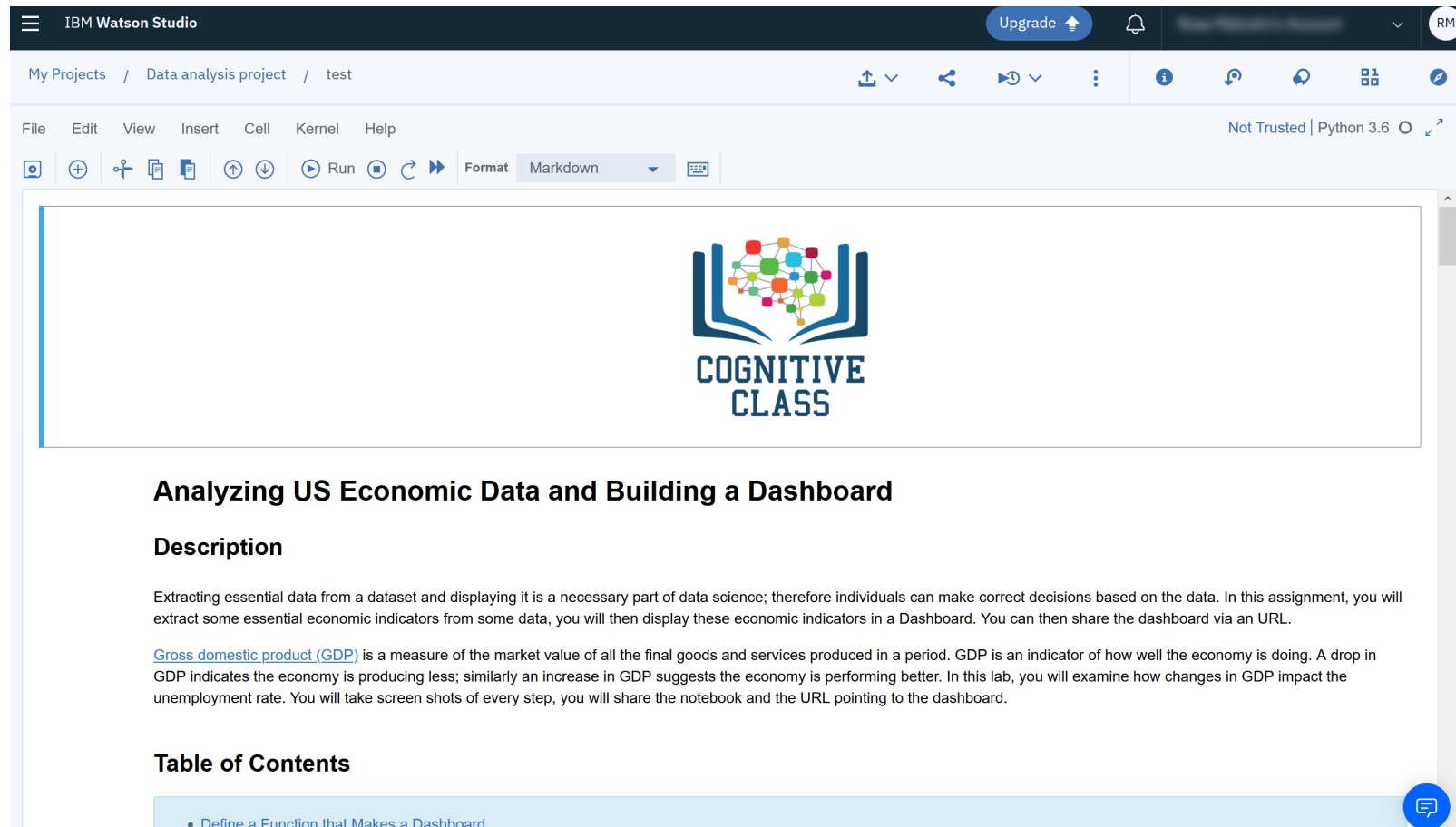
The selected runtime has 2 vCPU and 8 GB RAM and consumes 1 capacity unit per hour.
[Learn more](#) about capacity unit hours and Watson Studio pricing plans.

Notebook URL

https://cocl.us/PY0101EN43_EDX

Cancel Create Notebook

4. The **Analyzing US Economic Data and Building a Dashboard** notebook, which contains the instructions and information for the assignment, is loaded.



The screenshot shows the IBM Watson Studio web interface. At the top, there's a navigation bar with 'IBM Watson Studio' and an 'Upgrade' button. Below it, a breadcrumb trail shows 'My Projects / Data analysis project / test'. The main toolbar includes 'File', 'Edit', 'View', 'Insert', 'Cell', 'Kernel', and 'Help'. A status bar indicates 'Not Trusted | Python 3.6'. The notebook content area displays the 'COGNITIVE CLASS' logo, followed by the title 'Analyzing US Economic Data and Building a Dashboard'. Under the 'Description' section, it explains the task: extracting essential data from a dataset and displaying it in a dashboard. It also defines Gross Domestic Product (GDP) and mentions examining changes in GDP and unemployment rate. A 'Table of Contents' section lists 'Define a Function that Makes a Dashboard'.

Exercise 3: Perform the data analysis tasks in the Notebook

Scenario

In this exercise, you will extract some essential economic indicators from some data and then display these economic indicators on a Dashboard. A dashboard often provides a view of key performance indicators. You also have the option to store the Dashboard on IBM Object Storage so anyone can view the Dashboard, but you will not be marked on this aspect.

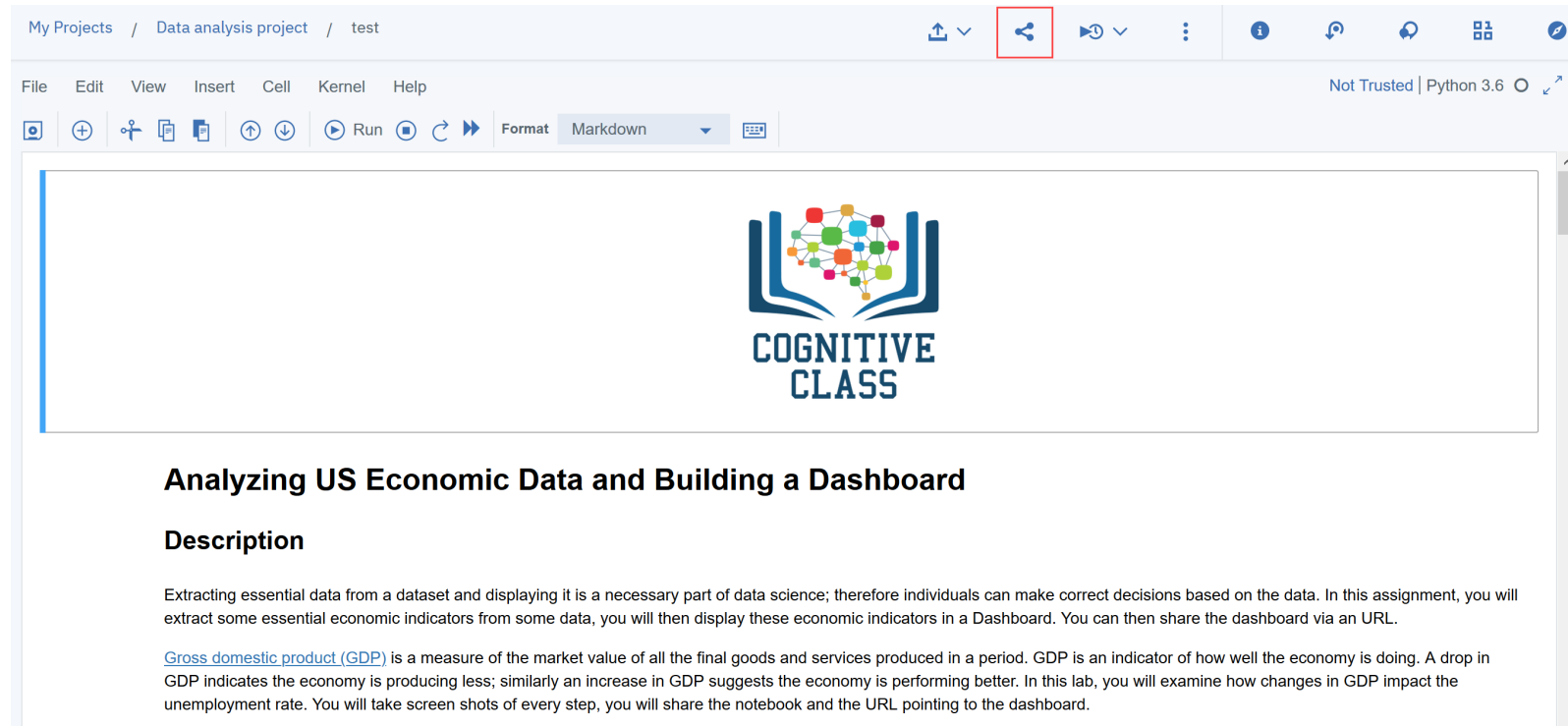
Once you complete your notebook you will share it to share your results.

Task 1: Extract economic indicators and display them on a dashboard

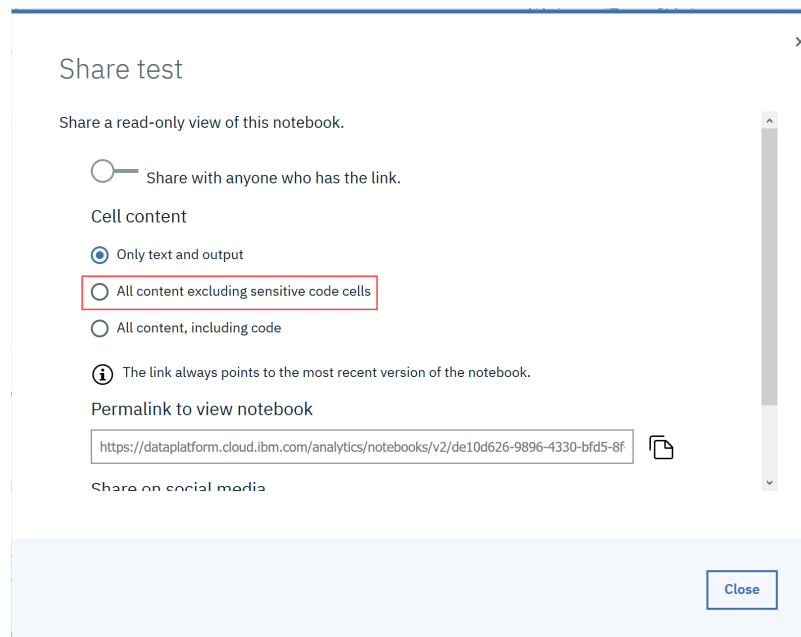
1. Follow the instructions in the Notebook to complete the assignment.

Task 2: Share your results

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



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



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

