

TRAIN THE MODEL ON IBM

Date	19 November 2022
Team ID	PNT2022TMID04381
Project Name	Project - Early Detection of Chronic Kidney Disease Using Machine Learning

RESOURCE LIST:

Resource list - IBM Cloud

cloud.ibm.com/resources

Performance based... IBM

Other bookmarks

IBM Cloud

Search resources and products...

Catalog Manage Kowsalya S's Account

Resource list

Create resource

Name	Group	Location	Product	Status	Tags
Filter by name or IP address...					
Filter by group or org...		Filter...	Filter...	Filter...	Filter...
Compute (0)					
Containers (0)					
Networking (0)					
Storage (1)					
Cloud Object Storage-sd	Default	Global	Cloud Object Storage	Active	-
AI / Machine Learning (2)					
Watson Machine Learning-b7	Default	Dallas	Watson Machine Learning	Active	-
Watson Studio-pf	Default	Dallas	Watson Studio	Active	-
Analytics (0)					
Blockchain (0)					
Databases (0)					

Type here to search

23:49 17-11-2022

CREATED NEW PROJECT:

The screenshot shows the IBM Watson Studio dashboard. At the top, there's a navigation bar with the IBM logo and a search bar. Below the navigation bar, a large banner says "Welcome, Kowsalya!". To the left of the banner, there are three main sections: "Take a tutorial", "Work with data", and "Learn what's new". To the right of the banner, there's a 3D visualization of data cubes and a line graph. Below the banner, there are four main sections: "Quick start", "Projects", "Notifications", and "Deployments". The "Quick start" section has four items: "Create data pipelines with DataStage", "Build customer profiles with IBM Match 360 with Watson", "Catalog and govern data with Watson Knowledge Catalog", and "Build and manage ML models with Watson Studio". The "Projects" section shows a list of projects: "Early Detection of Chronic Kidney Disease Using Machine Learning" (created yesterday at 12:10 AM) and "Iris" (created Oct 20, 2022 at 07:34 PM). The "Notifications" section says "No notifications". The "Deployments" section shows a deployment named "model_ibm" created yesterday at 05:32 PM. At the bottom, there's a Windows taskbar with the search bar and various application icons.

PROJECT ASSETS:

The screenshot shows the IBM Watson Studio project assets page. The URL in the browser is "dataplatfrom.cloud.ibm.com/projects/ff7ec775-2c48-4396-9bcd-b89dc3aa0e7a/assets?context=cpdaas". The page has a navigation bar with "Overview", "Assets", "Jobs", and "Manage". The "Assets" tab is selected. On the left, there's a sidebar with "Find assets" and "Import assets" buttons. Below the sidebar, there's a list of assets. The "Assets" section shows 6 assets. The "Asset types" section shows "Data" (4) and "Notebooks" (2). The "All assets" table lists the following assets:

Name	Last modified
Kidney.ipynb application/octet-stream	1 day ago Modified by you
Kidney.pkl application/octet-stream	1 day ago Modified by you
Kidney_data.csv CSV	1 day ago Modified by you
iris.csv CSV	7 hours ago Modified by you
IBM_IRIS Prediction Notebook Notebook	6 hours ago Modified by you
model Notebook	6 hours ago Modified by you

At the bottom, there's a Windows taskbar with the search bar and various application icons.

WORKING WITH JUPYTER NOTEBOOK IN IBM CLOUD:

The screenshot shows the IBM Watson Studio Jupyter Notebook interface. The browser address bar displays the URL: `datapatform.cloud.ibm.com/analytics/notebooks/v2/b6c9d5e1-77f6-4dd2-862b-92710d393897?projectid=ff7ec775-2c48-4396-9bcd-b89dc3aa0e7a&context=cp...`. The notebook is titled "Early Detection of Chronic Kidne..." and is in the "Kidney" project. The code in the notebook includes:

```
In [1]: # Importing Libraries:
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

In [2]: # for displaying all feature from dataset:
pd.pandas.set_option('display.max_columns', None)

In [3]: # Reading Dataset:
dataset = pd.read_csv("Kidney_data.csv")
# Top 5 records:
dataset.head()

Out[3]:
```

	id	age	bp	sg	al	su	rbc	pc	pcc	ba	bgr	bu	sc	sod	pot	hemo	pcv	wc	rc	htn	dm	cad	appet	pe	ane	classification
0	0	48.0	80.0	1.020	1.0	0.0	NaN	normal	notpresent	notpresent	121.0	36.0	1.2	NaN	NaN	15.4	44	7800	5.2	yes	yes	no	good	no	no	ckd
1	1	7.0	50.0	1.020	4.0	0.0	NaN	normal	notpresent	notpresent	NaN	18.0	0.8	NaN	NaN	11.3	38	6000	NaN	no	no	no	good	no	no	ckd
2	2	62.0	80.0	1.010	2.0	3.0	normal	normal	notpresent	notpresent	423.0	53.0	1.8	NaN	NaN	9.6	31	7500	NaN	no	yes	no	poor	no	yes	ckd
3	3	48.0	70.0	1.005	4.0	0.0	normal	abnormal	present	notpresent	117.0	56.0	3.8	111.0	2.5	11.2	32	6700	3.9	yes	no	no	poor	yes	yes	ckd
4	4	51.0	80.0	1.010	2.0	0.0	normal	normal	notpresent	notpresent	106.0	26.0	1.4	NaN	NaN	11.6	35	7300	4.6	no	no	no	good	no	no	ckd

The notebook also shows the following code in In [4]:

```
# Dropping unnecessarv feature :
```

CREATION OF API KEYS:

The screenshot shows the IBM Cloud IAM API keys page. The browser address bar displays the URL: `cloud.ibm.com/iam/apikeys`. The page title is "API keys". The content includes:

Create, view, and work with API keys that you have access to manage. IBM Cloud API keys are associated with a user's identity and can be used to access cloud platform and classic infrastructure APIs, depending on the access that is assigned to the user. The following table displays a list of API keys created in this account. [Learn more.](#)

Looking for more options to manage API Keys? Try [IBM Cloud® Secrets Manager](#) for creating and leasing API keys dynamically and storing them securely in your own dedicated instance.

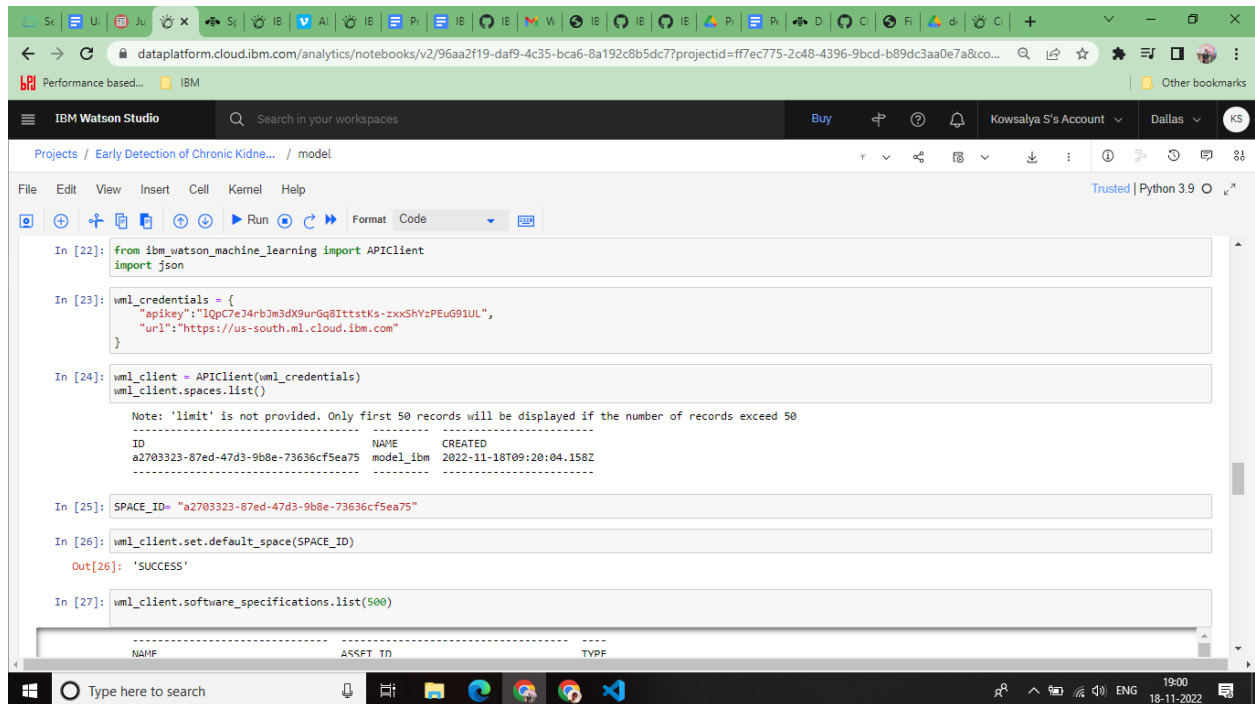
View:

API keys associated with a user's identity have the same access that the user is assigned across all accounts. To update the access for an API key, assign or remove access for the user.

Status	Name	Description	Date Created
	ibm_key		2022-11-18 09:13 GMT

Items per page: 25 1-25 items Page 1

ADDING API KEY:



The screenshot shows the IBM Watson Studio interface with a notebook titled 'Early Detection of Chronic Kidne...'. The code in the notebook is as follows:

```
In [22]: from ibm_watson_machine_learning import APIClient
import json

In [23]: wml_credentials = {
    "apikey": "lqpC7e34rbJm3dX9urGg8IttstKs-zxxSHyZPeuG91UL",
    "url": "https://us-south.ml.cloud.ibm.com"
}

In [24]: wml_client = APIClient(wml_credentials)
wml_client.spaces.list()

Note: 'limit' is not provided. Only first 50 records will be displayed if the number of records exceed 50
-----
ID              NAME      CREATED
a2703323-87ed-47d3-9b8e-73636cf5ea75 model_ibm 2022-11-18T09:20:04.158Z
-----

In [25]: SPACE_ID= "a2703323-87ed-47d3-9b8e-73636cf5ea75"

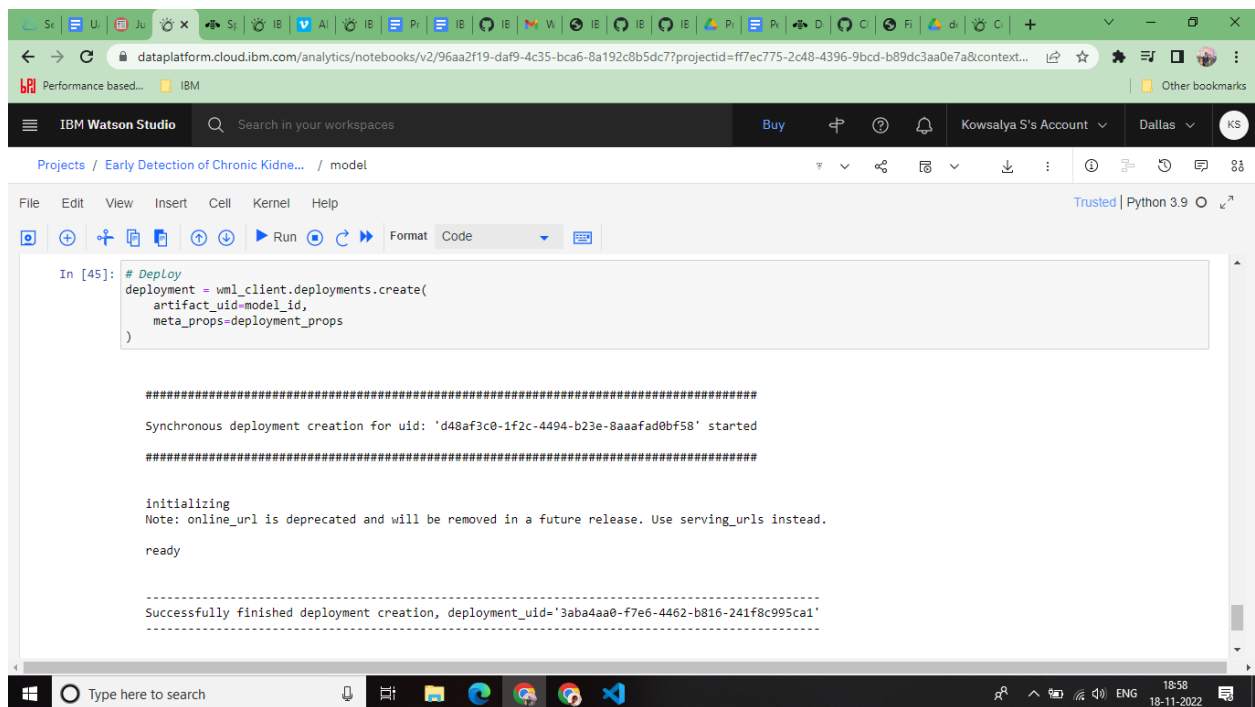
In [26]: wml_client.set.default_space(SPACE_ID)

Out[26]: 'SUCCESS'

In [27]: wml_client.software_specifications.list(500)
```

The output of the code shows a table of spaces with columns ID, NAME, and CREATED. The first row is a2703323-87ed-47d3-9b8e-73636cf5ea75, model_ibm, 2022-11-18T09:20:04.158Z.

DEPLOYMENT SUCCESSFUL:



The screenshot shows the IBM Watson Studio interface with a notebook titled 'Early Detection of Chronic Kidne...'. The code in the notebook is as follows:

```
In [45]: # Deploy
deployment = wml_client.deployments.create(
    artifact_uid=model_id,
    meta_props=deployment_props
)

#####

Synchronous deployment creation for uid: 'd48af3c0-1f2c-4494-b23e-8aaafad0bf58' started

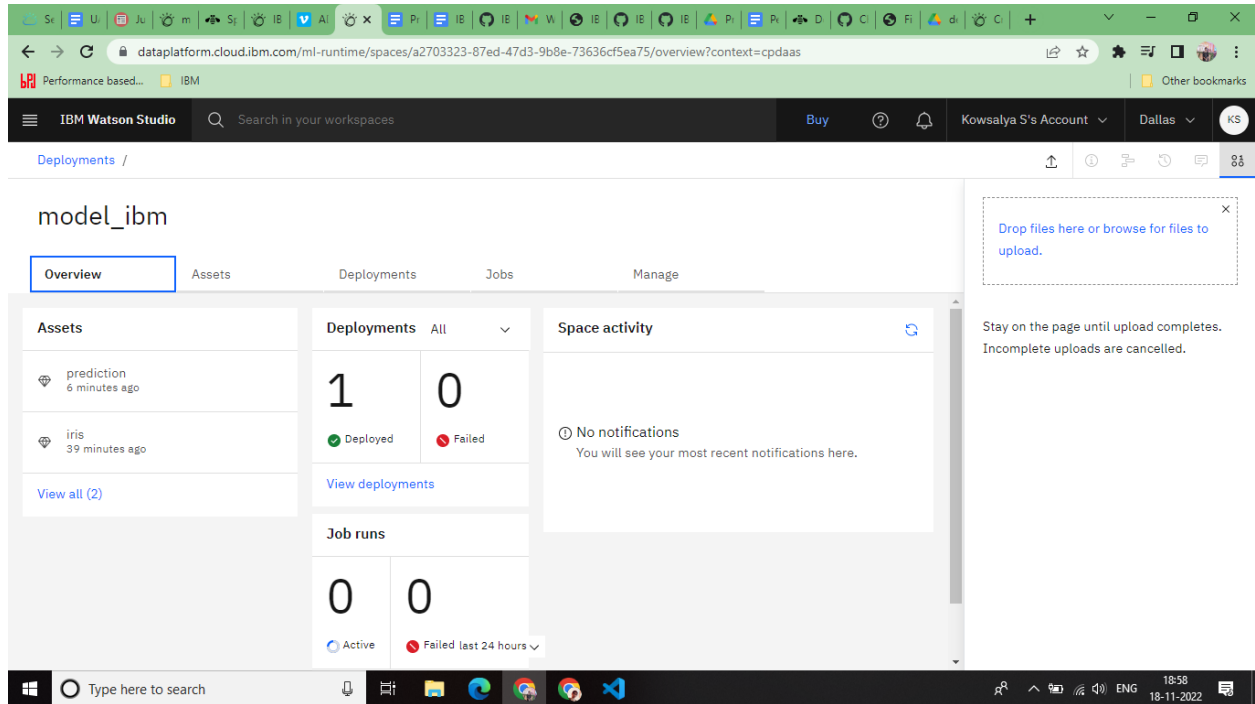
#####

initializing
Note: online_url is deprecated and will be removed in a future release. Use serving_urls instead.

ready

-----
Successfully finished deployment creation, deployment_uid='3aba4aa0-f7e6-4462-b816-241f8c995ca1'
-----
```

DEPLOYMENT OVERVIEW:



The screenshot shows the IBM Watson Studio interface for the 'model_ibm' space. The 'Overview' tab is selected, displaying a summary of assets, deployments, and job runs. The 'Assets' section lists two models: 'prediction' (6 minutes ago) and 'iris' (39 minutes ago). The 'Deployments' section shows 1 deployed and 0 failed. The 'Job runs' section shows 0 active and 0 failed. A 'Space activity' panel on the right indicates no notifications. A file upload prompt is visible on the right side of the page.

model_ibm

Overview | Assets | Deployments | Jobs | Manage

Assets

- prediction (6 minutes ago)
- iris (39 minutes ago)
- [View all \(2\)](#)

Deployments All

1 Deployed | 0 Failed

[View deployments](#)

Job runs

0 Active | 0 Failed last 24 hours

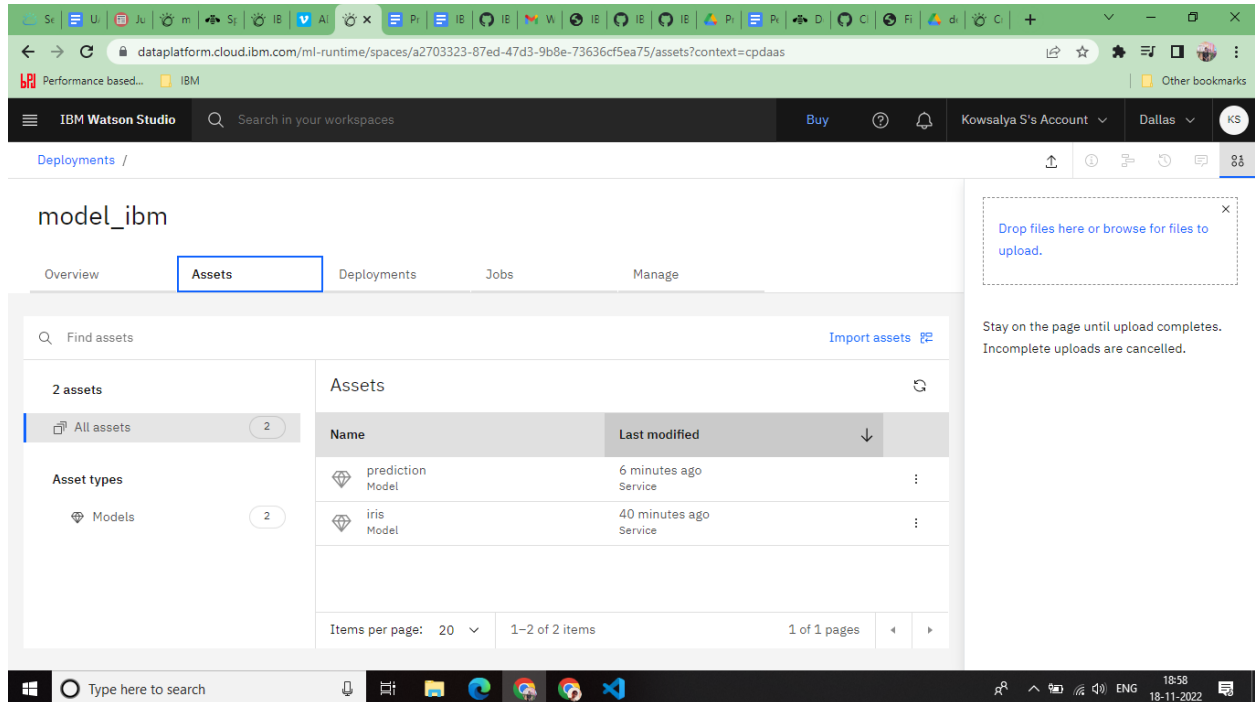
Space activity

No notifications
You will see your most recent notifications here.

Drop files here or browse for files to upload.

Stay on the page until upload completes. Incomplete uploads are cancelled.

DEPLOYMENT ASSETS:



The screenshot shows the IBM Watson Studio interface for the 'model_ibm' space, specifically the 'Assets' tab. It displays a list of two assets: 'prediction Model' and 'iris Model'. The 'prediction Model' was last modified 6 minutes ago, and the 'iris Model' was last modified 40 minutes ago. The interface includes a search bar, a filter for 'All assets', and a table with columns for 'Name' and 'Last modified'. A file upload prompt is visible on the right side of the page.

model_ibm

Overview | **Assets** | Deployments | Jobs | Manage

Find assets | [Import assets](#)

2 assets

All assets (2)

Asset types

Models (2)

Assets

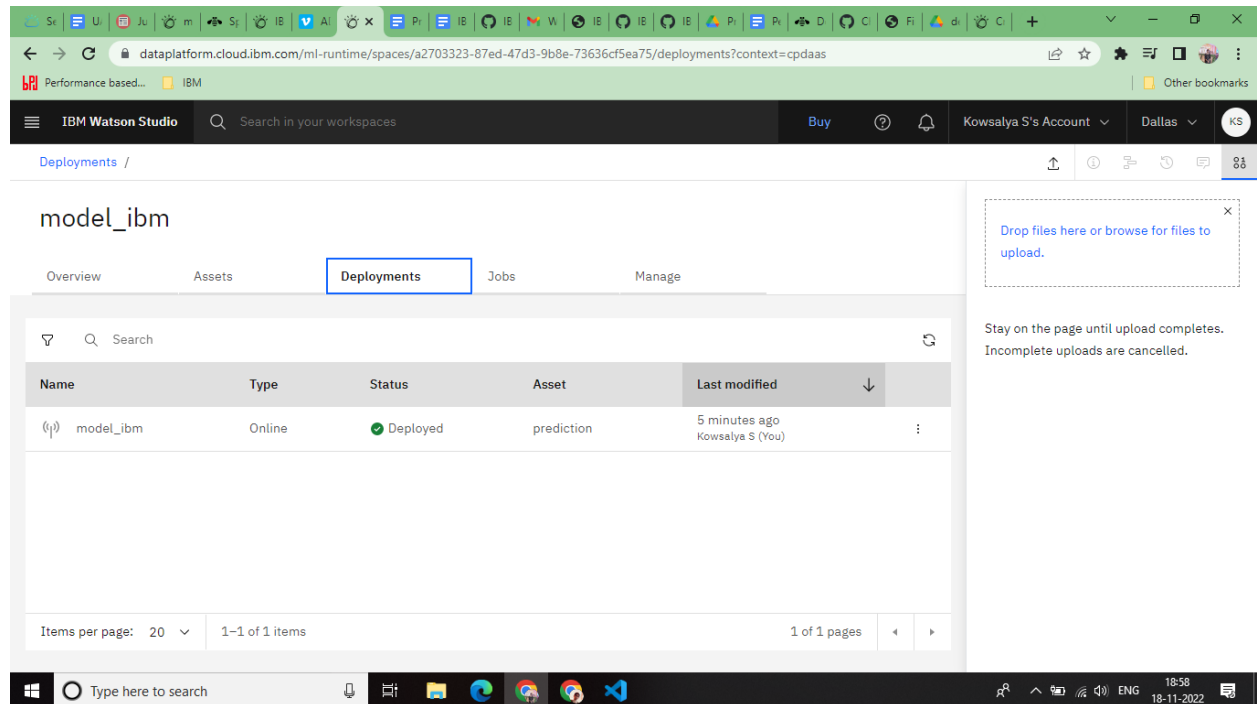
Name	Last modified
prediction Model	6 minutes ago Service
iris Model	40 minutes ago Service

Items per page: 20 | 1-2 of 2 items | 1 of 1 pages

Drop files here or browse for files to upload.

Stay on the page until upload completes. Incomplete uploads are cancelled.

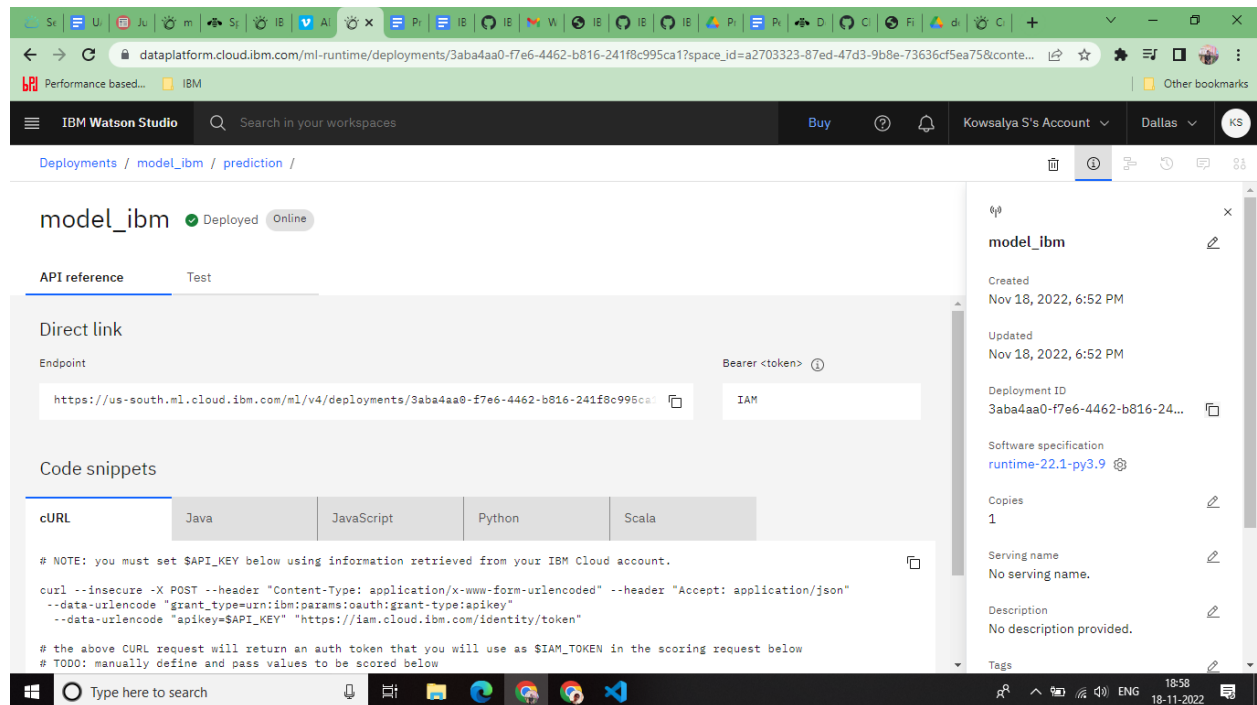
DEPLOYMENTS:



The screenshot shows the IBM Watson Studio interface. The top navigation bar includes the IBM logo, a search bar, and user account information. The main header shows the path "Deployments /". Below this, the "model_ibm" deployment is highlighted. The "Deployments" tab is active, displaying a table with one item: "model_ibm" (Type: Online, Status: Deployed, Asset: prediction, Last modified: 5 minutes ago). A sidebar on the right contains a file upload instruction: "Drop files here or browse for files to upload." and a note: "Stay on the page until upload completes. Incomplete uploads are cancelled."

Name	Type	Status	Asset	Last modified
model_ibm	Online	Deployed	prediction	5 minutes ago Kowsalya S (You)

DEPLOYMENT API REFERENCES:



The screenshot shows the IBM Watson Studio interface for the "model_ibm" deployment. The "API reference" tab is active, displaying the "Direct link" and "Code snippets" sections. The "Direct link" section shows the endpoint URL and the Bearer token. The "Code snippets" section shows the cURL command for the deployment. A sidebar on the right displays the deployment details, including the creation and update timestamps, the deployment ID, the software specification, the number of copies, the serving name, and the description.

Direct link

Endpoint: `https://us-south.ml.cloud.ibm.com/ml/v4/deployments/3aba4aa0-f7e6-4462-b816-241f8c995ca1?space_id=a2703323-87ed-47d3-9b8e-73636cf5ea75&context=cpdaas`

Bearer <token>: IAM

Code snippets

cURL

```
# NOTE: you must set $API_KEY below using information retrieved from your IBM Cloud account.
curl --insecure -X POST --header "Content-Type: application/x-www-form-urlencoded" --header "Accept: application/json" \
--data-urlencode "grant_type=urn:ibm:params:oauth:grant-type:apikey" \
--data-urlencode "apikey=$API_KEY" "https://iam.cloud.ibm.com/identity/token"

# the above CURL request will return an auth token that you will use as $IAM_TOKEN in the scoring request below
# TODO: manually define and pass values to be scored below
```

Deployment Details:

- Created: Nov 18, 2022, 6:52 PM
- Updated: Nov 18, 2022, 6:52 PM
- Deployment ID: 3aba4aa0-f7e6-4462-b816-24...
- Software specification: runtime-22.1-py3.9
- Copies: 1
- Serving name: No serving name.
- Description: No description provided.

DEPLOYMENT TEST:

IBM Watson Studio

Deployments / model_ibm / prediction /

model_ibm Deployed Online

API reference **Test**

Enter input data

Text input JSON input

Enter data manually or use a CSV file to populate the spreadsheet. Max file size is 50 MB.

[Download CSV template](#) [Browse local files](#) [Search in space](#) [Clear all](#)

	sc (float64)	sod (float64)	pot (float64)	hemo (float64)	wc (float64)	rc (float64)	htn (float64)	dm (float64)	cad (float64)	appet (float64)	pe (float64)	ane (float64)
1		138.0	4.4	15.4	7800.0	5.2	1.0	1.0	0.0	1.0	0.0	0.0
2												
3												
4												

1 row, 23 columns

Predict

DEPLOYMENT TEST RESULT:

IBM Watson Studio

Deployments / model_ibm / prediction /

Prediction results

Prediction type **Binary classification**

Prediction percentage

1 Record

Table view JSON view

	Prediction	Confidence
1	1	84%
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

Download