

SPRINT – 2 PROJECT DOCUMENT

Date	12 November 2022
Team ID	PNT2022TMID13084
Project Name	Flight Delay Prediction Using Machine Learning

DEVELOPMENT PHASE:

SPRINT-2:

Creating IBM cloud account & Required Resources

Deploy our model in IBM Watson

Creating Dashboard using HTML/CSS

Create web app and Hosting in flask

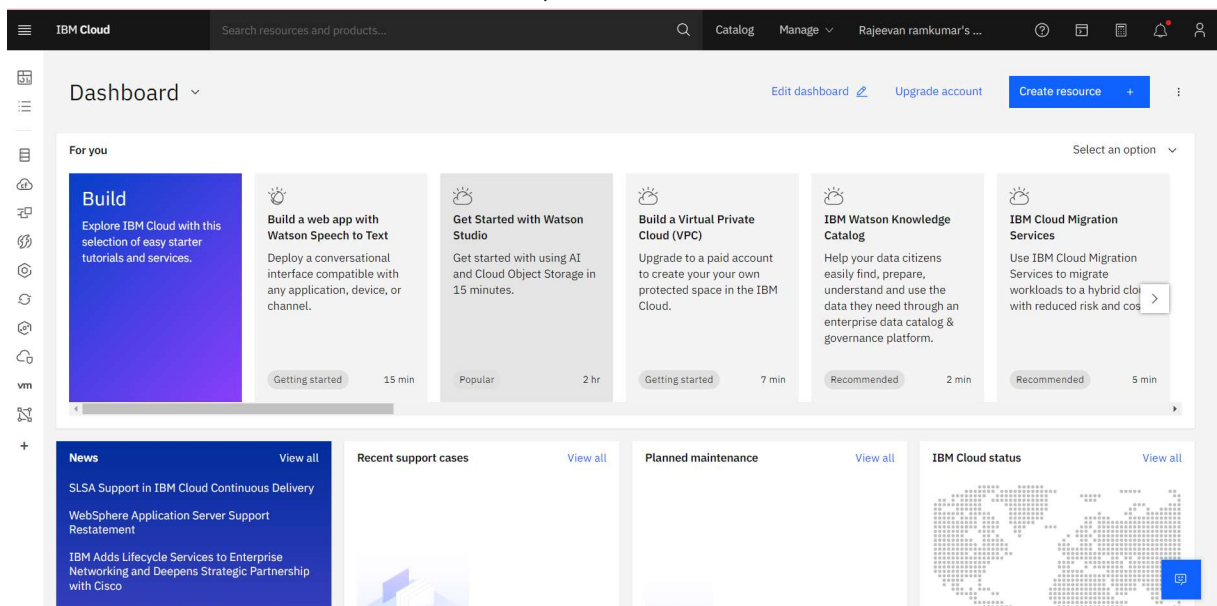
Testing web app

Creating IBM cloud account & Required Resources:

Creating IBM cloud account:

First, need to create IBM Cloud account by using SI Mail Id and SI Password which is provided by IBM in profile.

Below dashboard of an account after created,



Creating IBM Cloud Required Resources:

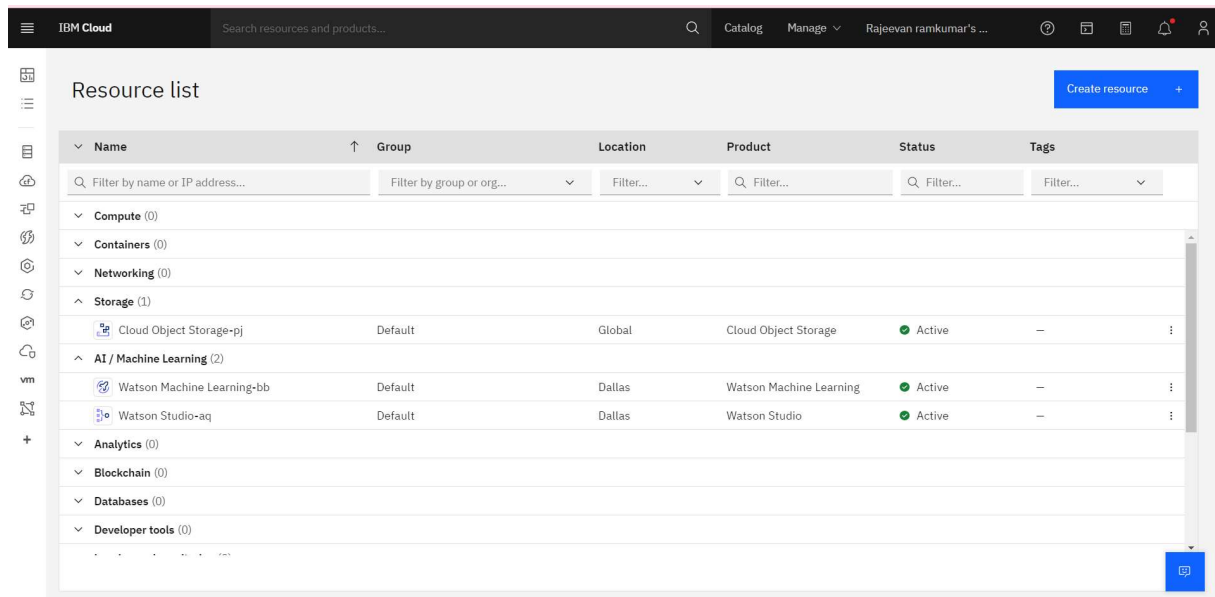
After creating IBM cloud account, to deploy ML model, need to create following resources such as,

Cloud Object Storage

Watson Machine Learning

Watson Studio

After created above resources Resource List of an account is displayed as follow,



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-pj	Default	Global	Cloud Object Storage	Active	—
AI / Machine Learning (2)					
Watson Machine Learning-bb	Default	Dallas	Watson Machine Learning	Active	—
Watson Studio-aq	Default	Dallas	Watson Studio	Active	—
Analytics (0)					
Blockchain (0)					
Databases (0)					
Developer tools (0)					

All the resource are in active state.

All the required cloud resources are created successfully.

Deploy our model in IBM Watson:

To deploy ML model in IBM cloud, need to create project in IBM Watson. After successful creation of project import .ipynb file of sprint-1 which ML models are build in Jupyter notebook.

Upload required datasets and import it.

Deploy model using following code,

```
!pip install -U ibm-watson-machine-learning from
ibm_watson_machine_learning import APIClient
import json import numpy as np
wml_credentials = {
    "apikey": "UcLivhHTTfB4iebNB-BWzL3XrtMNT9_bDLi3qw0rosnB",
    "url": "https://us-south.ml.cloud.ibm.com"
}
```

```
wml_clients=APIClient(wml_cred) wml_clients.spaces.list()
space_id="5a7700b2-ea31-42e3-b588-b2e077f7c0cc"
```

```
wml_clients.set.default_space(space_id)
wml_clients.software_specifications.list(500)
model_name="demo_model"
deployment_name="demo_deploy"
model=dc
software_spec_uid=wml_client.software_specifications.get_id_by_name("runtime-22.1-py3.9")
```

In [87]:

```
model_props={
    wml_client.repository.ModelMetaNames.NAME : model_name,
    wml_client.repository.ModelMetaNames.TYPE : "scikit-learn_1.0",
    wml_client.repository.ModelMetaNames.SOFTWARE_SPEC_UID : software_spec_uid
}
```

In [88]:

```
model_details= wml_client.repository.store_model(
    model=model,
    meta_props=model_props,
    training_data=x_train,
    training_target=y_train
)
```

In [89]:

model_details

NOTE: APIKey must need to create to deploy and connect API

After successful of deployment,

In [89]: model_details

```
Out[89]: {'entity': {'hybrid_pipeline_software_specs': [],
  'label_column': 'NDELAY',
  'schemas': {'input': [{'fields': [{'name': 'QUARTER', 'type': 'int64'},
    {'name': 'MONTH', 'type': 'int64'},
    {'name': 'DAY_OF_MONTH', 'type': 'int64'},
    {'name': 'DAY_OF_WEEK', 'type': 'int64'},
    {'name': 'FL_NUM', 'type': 'int64'},
    {'name': 'ORIGIN', 'type': 'int64'},
    {'name': 'DEST', 'type': 'int64'},
    {'name': 'CRS_DEP_TIME', 'type': 'int64'},
    {'name': 'CRS_ARR_TIME', 'type': 'int64'},
    {'name': 'CRS_ELAPSED_TIME', 'type': 'int64'},
    {'name': 'ACTUAL_ELAPSED_TIME', 'type': 'float64'},
    {'name': 'DISTANCE', 'type': 'int64'},
    {'name': 'SEASON', 'type': 'int64'}]},
    'id': '1',
    'type': 'struct'}],
  'output': []},
  'software_spec': {'id': '12b83a17-24d8-5082-900f-0ab31fbfd3cb',
    'name': 'runtime-22.1-py3.9'},
  'type': 'scikit-learn_1.0'},
  'metadata': {'created_at': '2022-11-15T09:35:49.505Z',
    'id': '8f8521cd-a7c9-4c8d-a77b-bb0c185e674b',
    'modified_at': '2022-11-15T09:35:51.926Z',
    'name': 'demo_model',
    'owner': 'IBMid-6650020D5Q',
    'resource_key': 'ff14804e-0dfc-4fc9-86e2-889f0b4ead8a',
    'space_id': '5a7700b2-ea31-42e3-b588-b2e077f7c0cc'},
  'system': {'warnings': []}}
```

Model details:

IBM Watson Studio

Search in your workspaces

Buy

Rajeevan ramkumar's Acco...

Dallas

BR

Deployments / flight_deploy /

demo_model

Deployments

Model details

Input (1)

Column	Type
ACTUAL_ELAPSED_TIME	float64
CRS_ARR_TIME	int64
CRS_DEP_TIME	int64
CRS_ELAPSED_TIME	int64
DAY_OF_MONTH	int64
DAY_OF_WEEK	int64
DEST	int64
DISTANCE	int64
FL_NUM	int64

demo_model

Created

Nov 15, 2022, 3:05 PM

Type

scikit-learn_1.0

Model ID

8f8521cd-a7c9-4c8d-a77b-bb0c1...

Software specification

runtime-22.1-py3.9

Description

No description provided.

Tags

Add tags to make assets easier to find.