AZUR WITH PYTHON

Step-1

install the packages

!pip install azure-storage-blob azure-identity

In [5]:
```
pip show azure-storage-blob
```

```
Name: azure-storage-blob
Version: 12.24.0
Summary: Microsoft Azure Blob Storage Client Library for Python
Home-page: https://github.com/Azure/azure-sdk-for-python/tree/main/sdk/storage/az
ure-storage-blob
Author: Microsoft Corporation
Author-email: ascl@microsoft.com
License: MIT License
Location: C:\Users\chitt\anaconda3\Lib\site-packages
Requires: azure-core, cryptography, isodate, typing-extensions
Required-by:
Note: you may need to restart the kernel to use updated packages.
```

Create Container

In [7]:
```
from azure.storage.blob import BlobServiceClient

print("Azure Blob Storage module imported successfully!")
```

```
Azure Blob Storage module imported successfully!
```

In [9]:
```
blob_account_url='https://azureaimlaccount.blob.core.windows.net'
# user must enter valid container name before .BLOB
storage_credential='IaGY5PbFbAuk9VrnE6TSJ0NvX+UqbN8RSnoZh7fnlVuPdmu4tb4SBzBQoQTy

blob_service_client=BlobServiceClient(account_url=blob_account_url,credential=st

blob_service_client
```

Out[9]:
```
<azure.storage.blob._blob_service_client.BlobServiceClient at 0x297a3684ad0>
```

Method-1

- we will create the container using blob service client

In [19]:
```
# Create the container
new_container=blob_service_client.create_container("nootbookcodecontainer",publi
new_container
```

Out[19]:
```
<azure.storage.blob._container_client.ContainerClient at 0x297bda342c0>
```

In [21]:
```
new_container.get_container_properties()
```

Out[21]:
```
{'name': 'nootbookcodecontainer', 'last_modified': datetime.datetime(2024, 11,
28, 11, 28, 8, tzinfo=datetime.timezone.utc), 'etag': '"0x8DD0F9FBC12B7F7"', 'l
ease': {'status': 'unlocked', 'state': 'available', 'duration': None}, 'public_
access': 'container', 'has_immutability_policy': False, 'deleted': None, 'versi
on': None, 'has_legal_hold': False, 'metadata': {}, 'encryption_scope': <azure.
storage.blob._models.ContainerEncryptionScope object at 0x00000297BFF235F0>, 'i
mmutable_storage_with_versioning_enabled': False}
```

List out All containers

In [23]:
```
all_containers=blob_service_client.list_containers()
all_containers
```

Out[23]:
```
<iterator object azure.core.paging.ItemPaged at 0x297bd61adb0>
```

In [25]:
```
# the variable is a iterator, you need to get outputs by using for loop
for container in all_containers:
    print(container)
```

```
{'name': 'azurecontainer', 'last_modified': datetime.datetime(2024, 11, 28, 3, 3
2, 39, tzinfo=datetime.timezone.utc), 'etag': '"0x8DD0F5D4F9B6A89"', 'lease': {'s
tatus': 'unlocked', 'state': 'available', 'duration': None}, 'public_access': 'co
ntainer', 'has_immutability_policy': False, 'deleted': None, 'version': None, 'ha
s_legal_hold': False, 'metadata': None, 'encryption_scope': <azure.storage.blob._
models.ContainerEncryptionScope object at 0x00000297BDA52B10>, 'immutable_storage
_with_versioning_enabled': False}
{'name': 'nootbookcodecontainer', 'last_modified': datetime.datetime(2024, 11, 2
8, 11, 28, 8, tzinfo=datetime.timezone.utc), 'etag': '"0x8DD0F9FBC12B7F7"', 'leas
e': {'status': 'unlocked', 'state': 'available', 'duration': None}, 'public_acces
s': 'container', 'has_immutability_policy': False, 'deleted': None, 'version': No
ne, 'has_legal_hold': False, 'metadata': None, 'encryption_scope': <azure.storag
e.blob._models.ContainerEncryptionScope object at 0x00000297BDA36150>, 'immutable
_storage_with_versioning_enabled': False}
{'name': 'vscodecontainer', 'last_modified': datetime.datetime(2024, 11, 28, 11,
23, 11, tzinfo=datetime.timezone.utc), 'etag': '"0x8DD0F9F0AFC0118"', 'lease':
{'status': 'unlocked', 'state': 'available', 'duration': None}, 'public_access':
'container', 'has_immutability_policy': False, 'deleted': None, 'version': None,
'has_legal_hold': False, 'metadata': None, 'encryption_scope': <azure.storage.blo
b._models.ContainerEncryptionScope object at 0x00000297BDA6D130>, 'immutable_stor
age_with_versioning_enabled': False}
```

In [27]:
```
all_containers=blob_service_client.list_containers()
list(all_containers)
```

Out[27]:
```
[{'name': 'azurecontainer', 'last_modified': datetime.datetime(2024, 11, 28, 3,
32, 39, tzinfo=datetime.timezone.utc), 'etag': '"0x8DD0F5D4F9B6A89"', 'lease':
{'status': 'unlocked', 'state': 'available', 'duration': None}, 'public_acces
s': 'container', 'has_immutability_policy': False, 'deleted': None, 'version':
None, 'has_legal_hold': False, 'metadata': None, 'encryption_scope': <azure.sto
rage.blob._models.ContainerEncryptionScope object at 0x00000297BDA52300>, 'immu
table_storage_with_versioning_enabled': False},
 {'name': 'nootbookcodecontainer', 'last_modified': datetime.datetime(2024, 11,
28, 11, 28, 8, tzinfo=datetime.timezone.utc), 'etag': '"0x8DD0F9FBC12B7F7"', 'l
ease': {'status': 'unlocked', 'state': 'available', 'duration': None}, 'public_
access': 'container', 'has_immutability_policy': False, 'deleted': None, 'versi
on': None, 'has_legal_hold': False, 'metadata': None, 'encryption_scope': <azur
e.storage.blob._models.ContainerEncryptionScope object at 0x00000297BFF23C50>,
'immutable_storage_with_versioning_enabled': False},
 {'name': 'vscodecontainer', 'last_modified': datetime.datetime(2024, 11, 28, 1
1, 23, 11, tzinfo=datetime.timezone.utc), 'etag': '"0x8DD0F9F0AFC0118"', 'leas
e': {'status': 'unlocked', 'state': 'available', 'duration': None}, 'public_acc
ess': 'container', 'has_immutability_policy': False, 'deleted': None, 'versio
n': None, 'has_legal_hold': False, 'metadata': None, 'encryption_scope': <azur
e.storage.blob._models.ContainerEncryptionScope object at 0x00000297BFF230B0>,
'immutable_storage_with_versioning_enabled': False}]
```

Delete the Container

In [29]:
```
all_containers=blob_service_client.list_containers()
for container in all_containers:
    print("deleting:",'nootbookcodecontainer')
    blob_service_client.delete_container('nootbookcodecontainer')
```

```
deleting: nootbookcodecontainer
deleting: nootbookcodecontainer
deleting: nootbookcodecontainer
```

Upload a blob

Create the container

In [31]:
```
blob_account_url='https://azureaimlaccount.blob.core.windows.net'
storage_credential="IaGY5PbFbAuk9VrnE6TSJ0NvX+UqbN8RSnoZh7fnlVuPdmu4tb4SBzBQoQTy

blob_service_client=BlobServiceClient(account_url=blob_account_url,
                                      credential=storage_credential)
new_container=blob_service_client.create_container('createcontainer',public_acce
new_container
```

Out[31]:
```
<azure.storage.blob._container_client.ContainerClient at 0x297bff22870>
```

Text-File

In [34]:
```
# Create a BlobClient instance for the specified blob
blob_name='sample.txt'
file_path=r"C:\Users\chitt\Downloads\sample.txt"
container_client = blob_service_client.get_container_client('createcontainer')
blob_client = container_client.get_blob_client(blob_name)

# Upload the file to the blob
with open(file_path, "rb") as data:
    blob_client.upload_blob(data, overwrite=True)
```

CSV File

In [37]:
```
blob_name='cleandata.csv'
file_path=r"C:\Users\chitt\Downloads\clean_data.csv"
container_client = blob_service_client.get_container_client('createcontainer')
blob_client = container_client.get_blob_client(blob_name)

# Upload the file to the blob
with open(file_path, "rb") as data:
    blob_client.upload_blob(data, overwrite=True)
```

Images

In [40]:
```
blob_name='horse.jpg'
file_path=r"C:\Users\chitt\Downloads\horse.jpg"
container_client = blob_service_client.get_container_client('createcontainer')
blob_client = container_client.get_blob_client(blob_name)

# Upload the file to the blob
with open(file_path, "rb") as data:
    blob_client.upload_blob(data, overwrite=True)
```

Access the blobs

In [43]:
```
container_client = blob_service_client.get_container_client('createcontainer')
for blob in container_client.list_blobs():
    print(blob)
```

{'name': 'cleandata.csv', 'container': 'createcontainer', 'snapshot': None, 'vers
ion_id': None, 'is_current_version': None, 'blob_type': <BlobType.BLOCKBLOB: 'Blo
ckBlob'>, 'metadata': {}, 'encrypted_metadata': None, 'last_modified': datetime.d
atetime(2024, 11, 28, 11, 45, 11, tzinfo=datetime.timezone.utc), 'etag': '0x8DD0F
A21DD358C4', 'size': 262, 'content_range': None, 'append_blob_committed_block_cou
nt': None, 'is_append_blob_sealed': None, 'page_blob_sequence_number': None, 'ser
ver_encrypted': True, 'copy': {'id': None, 'source': None, 'status': None, 'progr
ess': None, 'completion_time': None, 'status_description': None, 'incremental_cop
y': None, 'destination_snapshot': None}, 'content_settings': {'content_type': 'ap
plication/octet-stream', 'content_encoding': None, 'content_language': None, 'con
tent_md5': bytearray(b'i\xdb\x7f\x14\xb0\x95\x93)\xb9N(t\xe6\xe8\x9a\xe5'), 'cont
ent_disposition': None, 'cache_control': None}, 'lease': {'status': 'unlocked',
'state': 'available', 'duration': None}, 'blob_tier': 'Hot', 'rehydrate_priorit
y': None, 'blob_tier_change_time': None, 'blob_tier_inferred': True, 'deleted': N
one, 'deleted_time': None, 'remaining_retention_days': None, 'creation_time': dat
etime.datetime(2024, 11, 28, 11, 45, 11, tzinfo=datetime.timezone.utc), 'archive_
status': None, 'encryption_key_sha256': None, 'encryption_scope': None, 'request_
server_encrypted': None, 'object_replication_source_properties': [], 'object_repl
ication_destination_policy': None, 'last_accessed_on': None, 'tag_count': None,
'tags': None, 'immutability_policy': {'expiry_time': None, 'policy_mode': None},
'has_legal_hold': None, 'has_versions_only': None}
{'name': 'horse.jpg', 'container': 'createcontainer', 'snapshot': None, 'version_
id': None, 'is_current_version': None, 'blob_type': <BlobType.BLOCKBLOB: 'BlockBl
ob'>, 'metadata': {}, 'encrypted_metadata': None, 'last_modified': datetime.datet
ime(2024, 11, 28, 11, 46, 25, tzinfo=datetime.timezone.utc), 'etag': '0x8DD0FA24A
2604AE', 'size': 81026, 'content_range': None, 'append_blob_committed_block_coun
t': None, 'is_append_blob_sealed': None, 'page_blob_sequence_number': None, 'serv
er_encrypted': True, 'copy': {'id': None, 'source': None, 'status': None, 'progre
ss': None, 'completion_time': None, 'status_description': None, 'incremental_cop
y': None, 'destination_snapshot': None}, 'content_settings': {'content_type': 'ap
plication/octet-stream', 'content_encoding': None, 'content_language': None, 'con
tent_md5': bytearray(b'\xe6,\xfd\x95\xa9\x8c\x87\xcbL\x89\x1dD\x83\xfb\xf1\x18'),
'content_disposition': None, 'cache_control': None}, 'lease': {'status': 'unlocke
d', 'state': 'available', 'duration': None}, 'blob_tier': 'Hot', 'rehydrate_prior
ity': None, 'blob_tier_change_time': None, 'blob_tier_inferred': True, 'deleted':
None, 'deleted_time': None, 'remaining_retention_days': None, 'creation_time': da
tetime.datetime(2024, 11, 28, 11, 46, 25, tzinfo=datetime.timezone.utc), 'archive
_status': None, 'encryption_key_sha256': None, 'encryption_scope': None, 'request
_server_encrypted': None, 'object_replication_source_properties': [], 'object_rep
lication_destination_policy': None, 'last_accessed_on': None, 'tag_count': None,
'tags': None, 'immutability_policy': {'expiry_time': None, 'policy_mode': None},
'has_legal_hold': None, 'has_versions_only': None}
{'name': 'sample.txt', 'container': 'createcontainer', 'snapshot': None, 'version
_id': None, 'is_current_version': None, 'blob_type': <BlobType.BLOCKBLOB: 'BlockB
lob'>, 'metadata': {}, 'encrypted_metadata': None, 'last_modified': datetime.date
time(2024, 11, 28, 11, 44, 5, tzinfo=datetime.timezone.utc), 'etag': '0x8DD0FA1F6
75F837', 'size': 5562, 'content_range': None, 'append_blob_committed_block_coun
t': None, 'is_append_blob_sealed': None, 'page_blob_sequence_number': None, 'serv
er_encrypted': True, 'copy': {'id': None, 'source': None, 'status': None, 'progre
ss': None, 'completion_time': None, 'status_description': None, 'incremental_cop
y': None, 'destination_snapshot': None}, 'content_settings': {'content_type': 'ap
plication/octet-stream', 'content_encoding': None, 'content_language': None, 'con
tent_md5': bytearray(b'\xeb\xdcd\x87\xb1~\xc0\x82\x1c\xebW\xaca8:K'), 'content_di
sposition': None, 'cache_control': None}, 'lease': {'status': 'unlocked', 'stat
e': 'available', 'duration': None}, 'blob_tier': 'Hot', 'rehydrate_priority': Non
e, 'blob_tier_change_time': None, 'blob_tier_inferred': True, 'deleted': None, 'd
eleted_time': None, 'remaining_retention_days': None, 'creation_time': datetime.d
atetime(2024, 11, 28, 11, 44, 5, tzinfo=datetime.timezone.utc), 'archive_status':
None, 'encryption_key_sha256': None, 'encryption_scope': None, 'request_server_en
crypted': None, 'object_replication_source_properties': [], 'object_replication_d

```
estination_policy': None, 'last_accessed_on': None, 'tag_count': None, 'tags': No
ne, 'immutability_policy': {'expiry_time': None, 'policy_mode': None}, 'has_legal
_hold': None, 'has_versions_only': None}
```

Access CSV data

In [45]:
```
blob_client=blob_service_client.get_blob_client('createcontainer','cleandata.csv
data=blob_client.download_blob()
import pandas as pd
pd.read_csv(data)
```

Out[45]:

	Unnamed: 0	Name	Domain	Age	Location	Salary	Exp
0	0	Mike	Datascience	34	Mumbai	5000	2
1	1	Teddy	Testing	45	Bangalore	10000	3
2	2	Umar	Dataanalyst	50	Bangalore	15000	4
3	3	Jane	Analytics	50	Hyderbad	20000	4
4	4	Uttam	Statistics	67	Bangalore	30000	5
5	5	Kim	NLP	55	Delhi	60000	10

Access Image data

In [47]:
```
blob_client=blob_service_client.get_blob_client('createcontainer','horse.jpg')
data=blob_client.download_blob()
from PIL import Image
Image.open(data)
```

Out[47]:

To acess text

In [49]:
```
# To access text

blob_client=blob_service_client.get_blob_client('createcontainer','sample.txt')
data=blob_client.download_blob()
import pandas as pd
pd.read_csv(data)
```

Out[49]:

	****Artificial Intelligence (AI)** refers to the simulation of human intelligence in machines that are programmed to think**	**learn**	**and solve problems. AI is an interdisciplinary field that draws from computer science**	**mathematics**	**cognitive science**	**a c ca**
0	### 1. **Narrow AI (Weak AI)**	NaN	NaN	NaN	NaN	
1	This type of AI is designed to perform a speci...	such as:	NaN	NaN	NaN	
2	- **Voice Assistants** like Siri or Alexa	NaN	NaN	NaN	NaN	
3	- **Recommendation Systems** (e.g.	Netflix or Amazon recommendations)	NaN	NaN	NaN	
4	- **Image Recognition** (e.g.	facial recognition)	NaN	NaN	NaN	
5	- **Autonomous Vehicles** (self-driving cars)	NaN	NaN	NaN	NaN	
6	### 2. **General AI (Strong AI)**	NaN	NaN	NaN	NaN	
7	This hypothetical form of AI would have the ab...	learn	and apply intelligence across a wide range of...	much like a human. General AI would not be re...	it is the subject of ongoing research.	
8	---	NaN	NaN	NaN	NaN	
9	### Key Concepts in AI	NaN	NaN	NaN	NaN	
10	#### 1. **Machine Learning (ML)**	NaN	NaN	NaN	NaN	
11	Machine Learning is a subset of AI where algor...	NaN	NaN	NaN	NaN	
12	- **Supervised Learning**: The model learns fr...	spam email detection).	NaN	NaN	NaN	
13	- **Unsupervised Learning**: The model identif...	customer segmentation).	NaN	NaN	NaN	
14	- **Reinforcement Learning**: The	often used in robotics and game	NaN	NaN	NaN	

	Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think	learn	and solve problems. AI is an interdisciplinary field that draws from computer science	mathematics	cognitive science	a c ca
	model learns...	playing.				
15	#### 2. **Deep Learning**	NaN	NaN	NaN	NaN	
16	Deep Learning is a specialized subset of machi...	image classification	and natural language processing. Popular tech...	NaN	NaN	
17	#### 3. **Natural Language Processing (NLP)**	NaN	NaN	NaN	NaN	
18	NLP focuses on the interaction between compute...	NaN	NaN	NaN	NaN	
19	- **Speech recognition**	NaN	NaN	NaN	NaN	
20	- **Sentiment analysis**	NaN	NaN	NaN	NaN	
21	- **Text translation**	NaN	NaN	NaN	NaN	
22	- **Chatbots (like GPT)**	NaN	NaN	NaN	NaN	
23	AI systems capable of NLP can understand	interpret	and generate human language in ways that are ...	translation services	and automated content generation.	
24	#### 4. **Computer Vision**	NaN	NaN	NaN	NaN	
25	Computer Vision enables machines to interpret ...	images	videos)	AI can perform tasks like object detection	facial recognition	
26	#### 5. **Robotics**	NaN	NaN	NaN	NaN	
27	AI is also integrated into robotics to create ...	healthcare	and even personal assistants. AI in robotics ...	make decisions	and learn from their actions.	

	Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think	learn	and solve problems. AI is an interdisciplinary field that draws from computer science	mathematics	cognitive science	a c ca
28	---	NaN	NaN	NaN	NaN	
29	### Applications of AI	NaN	NaN	NaN	NaN	
30	1. **Healthcare**: AI assists in diagnosing di...	analyzing medical images	predicting patient outcomes	and even discovering new drugs.	NaN	
31	2. **Finance**: AI models predict market trends	detect fraud	and automate financial advising.	NaN	NaN	
32	3. **Autonomous Vehicles**: AI powers self-dri...	helping them navigate roads	recognize obstacles	and make real-time decisions.	NaN	
33	4. **Entertainment**: AI recommends movies	music	or shows based on user preferences and behavior.	NaN	NaN	
34	5. **Manufacturing**: AI helps optimize produc...	predict equipment failures	and even design new products.	NaN	NaN	
35	6. **Education**: AI can personalize learning ...	adapting content to meet the needs of individ...	NaN	NaN	NaN	
36	---	NaN	NaN	NaN	NaN	
37	### Ethical Considerations and Challenges	NaN	NaN	NaN	NaN	
38	As AI continues to evolve	several ethical and societal concerns have em...	NaN	NaN	NaN	
39	- **Bias in AI**: AI systems can inherit biase...	leading to unfair or discriminatory outcomes.	NaN	NaN	NaN	
40	- **Job Displacement**: The automation of task...	raising concerns about unemployment and econo...	NaN	NaN	NaN	

	Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think	learn	and solve problems. AI is an interdisciplinary field that draws from computer science	mathematics	cognitive science	a c ca
41	- **Privacy**: AI systems	especially in surveillance and data analysis	can infringe upon individual privacy.	NaN	NaN	
42	- **AI Safety**: If AI becomes too advanced	there are concerns about its potential impact...	particularly with autonomous weapons or syste...	NaN	NaN	
43	---	NaN	NaN	NaN	NaN	
44	### Future of AI	NaN	NaN	NaN	NaN	
45	The future of AI holds immense potential:	NaN	NaN	NaN	NaN	
46	- **AI in creativity**: AI could be used in mu...	art generation	and content creation	offering new forms of creative expression.	NaN	
47	- **Enhanced human-machine collaboration**: AI...	amplifying human abilities rather than replac...	NaN	NaN	NaN	
48	- **General AI**: The long-term goal for many ...	NaN	NaN	NaN	NaN	
49	In short	AI is transforming industries	improving efficiency	NaN	NaN	
50	and enabling new capabilities	but it also brings with it challenges that ne...	NaN	NaN	NaN	

COMPLETED

In [ ]: