
influxdb*client*

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1.1 Query

```
from influxdb_client import InfluxDBClient, Point
from influxdb_client.client.write_api import SYNCHRONOUS

bucket = "my-bucket"

client = InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org")

write_api = client.write_api(write_options=SYNCHRONOUS)
query_api = client.query_api()

p = Point("my_measurement").tag("location", "Prague").field("temperature", 25.3)

write_api.write(bucket=bucket, record=p)

## using Table structure
tables = query_api.query('from(bucket:"my-bucket") |> range(start: -10m)')

for table in tables:
    print(table)
    for row in table.records:
        print (row.values)

## using csv library
csv_result = query_api.query_csv('from(bucket:"my-bucket") |> range(start: -10m)')
val_count = 0
for row in csv_result:
    for cell in row:
        val_count += 1
```

1.2 Pandas DataFrame

Note: For DataFrame querying you should install Pandas dependency via `pip install 'influxdb-client[extra]'`.

Note: Note that if a query returns more than one table then the client generates a DataFrame for each of them.

The client is able to retrieve data in `Pandas DataFrame` format through `query_data_frame`:

```
from influxdb_client import InfluxDBClient, Point, Dialect
from influxdb_client.client.write_api import SYNCHRONOUS

client = InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org")

write_api = client.write_api(write_options=SYNCHRONOUS)
query_api = client.query_api()

"""
Prepare data
```

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```

"""
_point1 = Point("my_measurement").tag("location", "Prague").field("temperature", 25.3)
_point2 = Point("my_measurement").tag("location", "New York").field("temperature", 24.
↪3)

write_api.write(bucket="my-bucket", record=[_point1, _point2])

"""
Query: using Pandas DataFrame
"""
data_frame = query_api.query_data_frame('from(bucket:"my-bucket") '
                                         '|> range(start: -10m) '
                                         '|> pivot(rowKey:["_time"], columnKey: ["_
↪field"], valueColumn: "_value") '
                                         '|> keep(columns: ["location", "temperature"])
↪')
print(data_frame.to_string())

"""
Close client
"""
client.close()

```

Output:

1.3 Write

The `WriteApi` supports synchronous, asynchronous and batching writes into InfluxDB 2.0. The data should be passed as a `InfluxDB Line Protocol`, `Data Point` or `Observable` stream.

Important: The `WriteApi` in batching mode (default mode) is suppose to run as a singleton. To flush all your data you should wrap the execution using “with client.write_api(...) as write_api:” statement or call “_write_client.close()” at the end of your script.

The default instance of WriteApi use batching.

1.3.1 The data could be written as

1. string or bytes that is formatted as a InfluxDB’s line protocol
2. `Data Point` structure
3. Dictionary style mapping with keys: measurement, tags, fields and time
4. List of above items
5. A batching type of write also supports an `Observable` that produce one of an above item
6. `Pandas DataFrame`

1.3.2 Batching

The batching is configurable by `write_options`:

Property	Description	Default Value
batch_size	number of data points to collect in a batch	1000
flush_interval	number of milliseconds before the batch is written	1000
jitter_interval	the number of milliseconds to increase the batch flush interval by a random amount	0
retry_interval	number of milliseconds to retry first unsuccessful write. The next retry delay is computed using exponential random backoff. The retry interval is used when the InfluxDB server does not specify "Retry-After" header.	5000
max_retry_time	total retry timeout in milliseconds.	180_000
max_retries	number of max retries when write fails	5
max_retry_delay	maximum delay between each retry attempt in milliseconds	125_000
exponential_base	the base for the exponential retry delay, the next delay is computed using random exponential backoff as a random value within the interval $\text{retry_interval} * \text{exponential_base}^{(\text{attempts}-1)}$ and $\text{retry_interval} * \text{exponential_base}^{(\text{attempts})}$. Example for <code>retry_interval=5_000</code> , <code>exponential_base=2</code> , <code>max_retry_delay=125_000</code> , <code>total=5</code> Retry delays are random distributed values within the ranges of <code>[5_000-10_000, 10_000-20_000, 20_000-40_000, 40_000-80_000, 80_000-125_000]</code>	2

```

from datetime import datetime, timedelta

import pandas as pd
import rx
from pytz import UTC
from rx import operators as ops

from influxdb_client import InfluxDBClient, Point, WriteOptions

with InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org") as _
    client:

        with _client.write_api(write_options=WriteOptions(batch_size=500,
                                                            flush_interval=10_000,
                                                            jitter_interval=2_000,
                                                            retry_interval=5_000,
                                                            max_retries=5,
                                                            max_retry_delay=30_000,
                                                            exponential_base=2)) as _write_client:

            """
            Write Line Protocol formatted as string
            """
            _write_client.write("my-bucket", "my-org", "h2o_feet,location=coyote_creek_
            water_level=1.0 1")
            _write_client.write("my-bucket", "my-org", ["h2o_feet,location=coyote_creek_
            water_level=2.0 2",
                                                         "h2o_feet,location=coyote_creek_
            water_level=3.0 3"])

            """
            Write Line Protocol formatted as byte array

```

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```

        """
        _write_client.write("my-bucket", "my-org", "h2o_feet,location=coyote_creek_
↪water_level=1.0 1".encode())
        _write_client.write("my-bucket", "my-org", ["h2o_feet,location=coyote_creek_
↪water_level=2.0 2".encode(),
                                                    "h2o_feet,location=coyote_creek_
↪water_level=3.0 3".encode()])

        """
        Write Dictionary-style object
        """
        _write_client.write("my-bucket", "my-org", {"measurement": "h2o_feet", "tags
↪": {"location": "coyote_creek"},
                                                    "fields": {"water_level": 1.0},
↪"time": 1})
        _write_client.write("my-bucket", "my-org", [{"measurement": "h2o_feet", "tags
↪": {"location": "coyote_creek"},
                                                    "fields": {"water_level": 2.0},
↪"time": 2},
                                                    {"measurement": "h2o_feet", "tags
↪": {"location": "coyote_creek"},
                                                    "fields": {"water_level": 3.0},
↪"time": 3}])

        """
        Write Data Point
        """
        _write_client.write("my-bucket", "my-org",
                            Point("h2o_feet").tag("location", "coyote_creek").field(
↪"water_level", 4.0).time(4))
        _write_client.write("my-bucket", "my-org",
                            [Point("h2o_feet").tag("location", "coyote_creek").field(
↪"water_level", 5.0).time(5),
                            Point("h2o_feet").tag("location", "coyote_creek").field(
↪"water_level", 6.0).time(6)])

        """
        Write Observable stream
        """
        _data = rx \
            .range(7, 11) \
            .pipe(ops.map(lambda i: "h2o_feet,location=coyote_creek water_level={0}.0
↪{0}".format(i)))

        _write_client.write("my-bucket", "my-org", _data)

        """
        Write Pandas DataFrame
        """
        _now = datetime.now(UTC)
        _data_frame = pd.DataFrame(data=[["coyote_creek", 1.0], ["coyote_creek", 2.
↪0]],
                                   index=[_now, _now + timedelta(hours=1)],
                                   columns=["location", "water_level"])

        _write_client.write("my-bucket", "my-org", record=_data_frame, data_frame_
↪measurement_name='h2o_feet',

```

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```
data_frame_tag_columns=['location'])
```

1.3.3 Default Tags

Sometimes is useful to store same information in every measurement e.g. hostname, location, customer. The client is able to use static value or env property as a tag value.

The expressions:

- California Miner - static value
- \${env.hostname} - environment property

Via API

```
point_settings = PointSettings()
point_settings.add_default_tag("id", "132-987-655")
point_settings.add_default_tag("customer", "California Miner")
point_settings.add_default_tag("data_center", "${env.data_center}")

self.write_client = self.client.write_api(write_options=SYNCHRONOUS, point_
↳ settings=point_settings)
```

```
self.write_client = self.client.write_api(write_options=SYNCHRONOUS,
                                          point_settings=PointSettings(**{"id":
↳ "132-987-655",
↳ "customer": "California Miner"}))
```

Via Configuration file

In a `init` configuration file you are able to specify default tags by tags segment.

```
self.client = InfluxDBClient.from_config_file("config.ini")
```

You could also use a `TOML` format for the configuration file.

Via Environment Properties

You are able to specify default tags by environment properties with prefix `INFLUXDB_V2_TAG_`.

Examples:

- `INFLUXDB_V2_TAG_ID`
- `INFLUXDB_V2_TAG_HOSTNAME`

```
self.client = InfluxDBClient.from_env_properties()
```

1.3.4 Asynchronous client

Data are writes in an asynchronous HTTP request.

```
from influxdb_client import InfluxDBClient, Point
from influxdb_client.client.write_api import ASYNCHRONOUS

client = InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org")
write_api = client.write_api(write_options=ASYNCHRONOUS)

_point1 = Point("my_measurement").tag("location", "Prague").field("temperature", 25.3)
_point2 = Point("my_measurement").tag("location", "New York").field("temperature", 24.
↪ 3)

async_result = write_api.write(bucket="my-bucket", record=[_point1, _point2])
async_result.get()

client.close()
```

1.3.5 Synchronous client

Data are writes in a synchronous HTTP request.

```
from influxdb_client import InfluxDBClient, Point
from influxdb_client.client.write_api import SYNCHRONOUS

client = InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org")
write_api = client.write_api(write_options=SYNCHRONOUS)

_point1 = Point("my_measurement").tag("location", "Prague").field("temperature", 25.3)
_point2 = Point("my_measurement").tag("location", "New York").field("temperature", 24.
↪ 3)

write_api.write(bucket="my-bucket", record=[_point1, _point2])

client.close()
```

1.4 Delete data

The `delete_api.py` supports deletes points from an InfluxDB bucket.

```
from influxdb_client import InfluxDBClient

client = InfluxDBClient(url="http://localhost:8086", token="my-token")

delete_api = client.delete_api()

"""
Delete Data
"""
start = "1970-01-01T00:00:00Z"
stop = "2021-02-01T00:00:00Z"
delete_api.delete(start, stop, '_measurement="my_measurement"', bucket='my-bucket',
↪ org='my-org')
```

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```
"""
Close client
"""
client.close()
```

1.5 Gzip support

InfluxDBClient does not enable gzip compression for http requests by default. If you want to enable gzip to reduce transfer data's size, you can call:

```
from influxdb_client import InfluxDBClient

_db_client = InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org",
    enable_gzip=True)
```

1.6 Debugging

For debug purpose you can enable verbose logging of http requests. Both request header and body will be logged to standard output.

```
_client = InfluxDBClient(url="http://localhost:8086", token="my-token", debug=True,
    org="my-org")
```

1.7 Examples

1.7.1 How to efficiently import large dataset

The following example shows how to import dataset with dozen megabytes. If you would like to import gigabytes of data then use our multiprocessing example: `import_data_set_multiprocessing.py` for use a full capability of your hardware.

- sources - `import_data_set.py`

```
"""
Import VIX - CBOE Volatility Index - from "vix-daily.csv" file into InfluxDB 2.0
https://datahub.io/core/finance-vix#data
"""

from collections import OrderedDict
from csv import DictReader

import rx
from rx import operators as ops

from influxdb_client import InfluxDBClient, Point, WriteOptions
```

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```

def parse_row(row: OrderedDict):
    """Parse row of CSV file into Point with structure:

        financial-analysis,type=ily close=18.47,high=19.82,low=18.28,open=19.82_
    ↪ 11981952000000000000

    CSV format:
        Date,VIX Open,VIX High,VIX Low,VIX Close\n
        2004-01-02,17.96,18.68,17.54,18.22\n
        2004-01-05,18.45,18.49,17.44,17.49\n
        2004-01-06,17.66,17.67,16.19,16.73\n
        2004-01-07,16.72,16.75,15.5,15.5\n
        2004-01-08,15.42,15.68,15.32,15.61\n
        2004-01-09,16.15,16.88,15.57,16.75\n
        ...

    :param row: the row of CSV file
    :return: Parsed csv row to [Point]
    """

    """
    For better performance is sometimes useful directly create a LineProtocol to_
    ↪ avoid unnecessary escaping overhead:
    """
    # from pytz import UTC
    # import ciso8601
    # from influxdb_client.client.write.point import EPOCH
    #
    # time = (UTC.localize(ciso8601.parse_datetime(row["Date"])) - EPOCH).total_
    ↪ seconds() * 1e9
    # return f"financial-analysis,type=vix-daily" \
    #         f" close={float(row['VIX Close'])},high={float(row['VIX High'])},low=
    ↪ {float(row['VIX Low'])},open={float(row['VIX Open'])} " \
    #         f" {int(time)}"

    return Point("financial-analysis") \
        .tag("type", "vix-daily") \
        .field("open", float(row['VIX Open'])) \
        .field("high", float(row['VIX High'])) \
        .field("low", float(row['VIX Low'])) \
        .field("close", float(row['VIX Close'])) \
        .time(row['Date'])

    """
    Converts vix-daily.csv into sequence of datad point
    """
    data = rx \
        .from_iterable(DictReader(open('vix-daily.csv', 'r'))) \
        .pipe(ops.map(lambda row: parse_row(row)))

    client = InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org",_
    ↪ debug=True)

    """
    Create client that writes data in batches with 50_000 items.
    """

```

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```

write_api = client.write_api(write_options=WriteOptions(batch_size=50_000, flush_
↪interval=10_000))

"""
Write data into InfluxDB
"""
write_api.write(bucket="my-bucket", record=data)
write_api.close()

"""
Querying max value of CBOE Volatility Index
"""
query = 'from(bucket:"my-bucket")' \
        '|> range(start: 0, stop: now())' \
        '|> filter(fn: (r) => r._measurement == "financial-analysis")' \
        '|> max()'
result = client.query_api().query(query=query)

"""
Processing results
"""
print()
print("=== results ===")
print()
for table in result:
    for record in table.records:
        print('max {0:5} = {1}'.format(record.get_field(), record.get_value()))

"""
Close client
"""
client.close()

```

1.7.2 Efficiency write data from IOT sensor

- sources - iot_sensor.py

```

"""
Efficiency write data from IOT sensor - write changed temperature every minute
"""
import atexit
import platform
from datetime import timedelta

import psutil as psutil
import rx
from rx import operators as ops

from influxdb_client import InfluxDBClient, WriteApi, WriteOptions

def on_exit(db_client: InfluxDBClient, write_api: WriteApi):
    """Close clients after terminate a script.

    :param db_client: InfluxDB client
    :param write_api: WriteApi
    """

```

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```

        :return: nothing
        """
        write_api.close()
        db_client.close()

def sensor_temperature():
    """Read a CPU temperature. The [psutil] doesn't support MacOS so we use [sysctl].

    :return: actual CPU temperature
    """
    os_name = platform.system()
    if os_name == 'Darwin':
        from subprocess import check_output
        output = check_output(["sysctl", "machdep.xcpm.cpu_thermal_level"])
        import re
        return re.findall(r'\d+', str(output))[0]
    else:
        return psutil.sensors_temperatures()["coretemp"][0]

def line_protocol(temperature):
    """Create a InfluxDB line protocol with structure:

        iot_sensor,hostname=mine_sensor_12,type=temperature value=68

    :param temperature: the sensor temperature
    :return: Line protocol to write into InfluxDB
    """

    import socket
    return 'iot_sensor,hostname={},type=temperature value={}'.format(socket.
↪gethostname(), temperature)

"""
Read temperature every minute; distinct_until_changed - produce only if temperature_
↪change
"""
data = rx\
    .interval(period=timedelta(seconds=60))\
    .pipe(ops.map(lambda t: sensor_temperature()),
          ops.distinct_until_changed(),
          ops.map(lambda temperature: line_protocol(temperature)))

_db_client = InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org
↪", debug=True)

"""
Create client that writes data into InfluxDB
"""
_write_api = _db_client.write_api(write_options=WriteOptions(batch_size=1))
_write_api.write(bucket="my-bucket", record=data)

"""
Call after terminate a script

```

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```
"""
atexit.register(on_exit, _db_client, _write_api)

input()
```

1.7.3 Connect to InfluxDB Cloud

The following example demonstrate a simplest way how to write and query data with the InfluxDB Cloud.

At first point you should create an authentication token as is described [here](#).

After that you should configure properties: `influx_cloud_url`, `influx_cloud_token`, `bucket` and `org` in a `influx_cloud.py` example.

The last step is run a python script via: `python3 influx_cloud.py`.

- sources - `influx_cloud.py`

```
"""
Connect to InfluxDB 2.0 - write data and query them
"""

from datetime import datetime

from influxdb_client import Point, InfluxDBClient
from influxdb_client.client.write_api import SYNCHRONOUS

"""
Configure credentials
"""
influx_cloud_url = 'https://us-west-2-1.aws.cloud2.influxdata.com'
influx_cloud_token = '...'
bucket = '...'
org = '...'

client = InfluxDBClient(url=influx_cloud_url, token=influx_cloud_token)
try:
    kind = 'temperature'
    host = 'host1'
    device = 'opt-123'

    """
    Write data by Point structure
    """
    point = Point(kind).tag('host', host).tag('device', device).field('value', 25.3).
    time(time=datetime.utcnow())

    print(f'Writing to InfluxDB cloud: {point.to_line_protocol()} ...')

    write_api = client.write_api(write_options=SYNCHRONOUS)
    write_api.write(bucket=bucket, org=org, record=point)

    print()
    print('success')
    print()
    print()
```

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```

"""
Query written data
"""
query = f'from(bucket: "{bucket}") |> range(start: -1d) |> filter(fn: (r) => r._
↪measurement == "{kind}")'
print(f'Querying from InfluxDB cloud: "{query}" ...')
print()

query_api = client.query_api()
tables = query_api.query(query=query, org=org)

for table in tables:
    for row in table.records:
        print(f'{row.values["_time"]}: host={row.values["host"]}, device={row.
↪values["device"]} '
              f'{row.values["_value"]} °C')

print()
print('success')

except Exception as e:
    print(e)
finally:
    client.close()

```

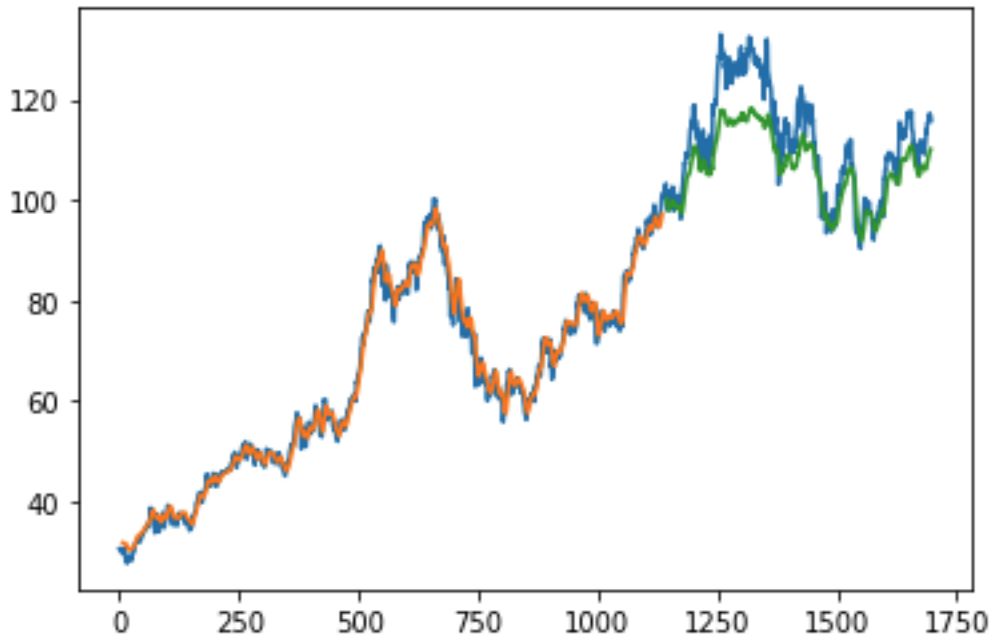
1.7.4 How to use Jupyter + Pandas + InfluxDB 2

The first example shows how to use client capabilities to predict stock price via [Keras](#), [TensorFlow](#), [sklearn](#):

The example is taken from [Kaggle](#).

- sources - [stock-predictions.ipynb](#)

Result:



The second example shows how to use client capabilities to realtime visualization via [hvPlot](#), [Streamz](#), [RxPY](#):

- sources - [realtime-stream.ipynb](#)

1.7.5 Other examples

You could find all examples at GitHub: [influxdb-client-python/examples](#).

- *InfluxDBClient*
- *QueryApi*
- *WriteApi*
- *BucketsApi*
- *LabelsApi*
- *OrganizationsApi*
- *UsersApi*
- *TasksApi*
- *DeleteApi*

2.1 InfluxDBClient

```
class influxdb_client.InfluxDBClient(url, token, debug=None, timeout=10000, enable_gzip=False, org: str = None, default_tags: dict = None, **kwargs)
```

InfluxDBClient is client for InfluxDB v2.

Initialize defaults.

Parameters

- **url** – InfluxDB server API url (ex. <http://localhost:8086>).
- **token** – auth token
- **debug** – enable verbose logging of http requests

- **timeout** – HTTP client timeout setting for a request specified in milliseconds. If one number provided, it will be total request timeout. It can also be a pair (tuple) of (connection, read) timeouts.
- **enable_gzip** – Enable Gzip compression for http requests. Currently only the “Write” and “Query” endpoints supports the Gzip compression.
- **org** – organization name (used as a default in query and write API)

Key bool verify_ssl Set this to false to skip verifying SSL certificate when calling API from https server.

Key str ssl_ca_cert Set this to customize the certificate file to verify the peer.

Key str proxy Set this to configure the http proxy to be used (ex. <http://localhost:3128>)

Key int connection_pool_maxsize Number of connections to save that can be reused by urllib3. Defaults to “multiprocessing.cpu_count() * 5”.

Key urllib3.util.retry.Retry retries Set the default retry strategy that is used for all HTTP requests except batching writes. As a default there is no one retry strategy.

Key bool auth_basic Set this to true to enable basic authentication when talking to a InfluxDB 1.8.x that does not use auth-enabled but is protected by a reverse proxy with basic authentication. (defaults to false, don’t set to true when talking to InfluxDB 2)

Key list[str] profilers list of enabled Flux profilers

authorizations_api() → influxdb_client.client.authorizations_api.AuthorizationsApi
Create the Authorizations API instance.

Returns authorizations api

buckets_api() → influxdb_client.client.bucket_api.BucketsApi
Create the Bucket API instance.

Returns buckets api

close()
Shutdown the client.

delete_api() → influxdb_client.client.delete_api.DeleteApi
Get the delete metrics API instance.

Returns delete api

classmethod from_config_file(*config_file: str = 'config.ini', debug=None, enable_gzip=False*)

Configure client via configuration file. The configuration has to be under ‘influx’ section.

The supported formats:

- <https://docs.python.org/3/library/configparser.html>
- <https://toml.io/en/>

Configuration options:

- url
- org
- token
- timeout,
- verify_ssl

- ssl_ca_cert
- connection_pool_maxsize
- auth_basic
- profilers

config.ini example:

```
[influx2]
url=http://localhost:8086
org=my-org
token=my-token
timeout=6000
connection_pool_maxsize=25
auth_basic=false
profilers=query,operator

[tags]
id = 132-987-655
customer = California Miner
data_center = ${env.data_center}
```

config.toml example:

```
[influx2]
  url = "http://localhost:8086"
  token = "my-token"
  org = "my-org"
  timeout = 6000
  connection_pool_maxsize = 25
  auth_basic = false
  profilers="query, operator"

[tags]
  id = "132-987-655"
  customer = "California Miner"
  data_center = "${env.data_center}"
```

classmethod from_env_properties (*debug=None, enable_gzip=False*)

Configure client via environment properties.

Supported environment properties:

- INFLUXDB_V2_URL
- INFLUXDB_V2_ORG
- INFLUXDB_V2_TOKEN
- INFLUXDB_V2_TIMEOUT
- INFLUXDB_V2_VERIFY_SSL
- INFLUXDB_V2_SSL_CA_CERT
- INFLUXDB_V2_CONNECTION_POOL_MAXSIZE
- INFLUXDB_V2_AUTH_BASIC

health () → influxdb_client.domain.health_check.HealthCheck

Get the health of an instance.

Returns HealthCheck

labels_api () → influxdb_client.client.labels_api.LabelsApi
Create the Labels API instance.

Returns labels api

organizations_api () → influxdb_client.client.organizations_api.OrganizationsApi
Create the Organizations API instance.

Returns organizations api

query_api (query_options: *influxdb_client.client.query_api.QueryOptions* = *<influxdb_client.client.query_api.QueryOptions object>*) → *influxdb_client.client.query_api.QueryApi*
Create a Query API instance.

Parameters **query_options** – optional query api configuration

Returns Query api instance

ready () → influxdb_client.domain.ready.Ready
Get The readiness of the InfluxDB 2.0.

Returns Ready

tasks_api () → influxdb_client.client.tasks_api.TasksApi
Create the Tasks API instance.

Returns tasks api

users_api () → influxdb_client.client.users_api.UsersApi
Create the Users API instance.

Returns users api

write_api (write_options=*<influxdb_client.client.write_api.WriteOptions object>*, point_settings=*<influxdb_client.client.write_api.PointSettings object>*) → *influxdb_client.client.write_api.WriteApi*
Create a Write API instance.

Parameters

- **point_settings** –
- **write_options** – write api configuration

Returns write api instance

2.2 QueryApi

class influxdb_client.**QueryApi** (influxdb_client, query_options=*<influxdb_client.client.query_api.QueryOptions object>*)

Implementation for '/api/v2/query' endpoint.

Initialize query client.

Parameters **influxdb_client** – influxdb client

query (query: str, org=None, params: dict = None) → List[influxdb_client.client.flux_table.FluxTable]
Execute synchronous Flux query and return result as a List['FluxTable'].

Parameters

- **query** – the Flux query
- **Organization org** (*str*,) – specifies the organization for executing the query; take the ID, Name or Organization; if it's not specified then is used default from client.org.
- **params** – bind parameters

Returns

query_csv (*query: str, org=None, dialect: influxdb_client.domain.dialect.Dialect = {'annotations': ['datatype', 'group', 'default'], 'comment_prefix': '#', 'date_time_format': 'RFC3339', 'delimiter': ',', 'header': True}, params: dict = None*)

Execute the Flux query and return results as a CSV iterator. Each iteration returns a row of the CSV file.

Parameters

- **query** – a Flux query
- **Organization org** (*str*,) – specifies the organization for executing the query; take the ID, Name or Organization; if it's not specified then is used default from client.org.
- **dialect** – csv dialect format
- **params** – bind parameters

Returns The returned object is an iterator. Each iteration returns a row of the CSV file (which can span multiple input lines).

query_data_frame (*query: str, org=None, data_frame_index: List[str] = None, params: dict = None*)

Execute synchronous Flux query and return Pandas DataFrame.

Note that if a query returns more than one table then the client generates a DataFrame for each of them.

Parameters

- **query** – the Flux query
- **Organization org** (*str*,) – specifies the organization for executing the query; take the ID, Name or Organization; if it's not specified then is used default from client.org.
- **data_frame_index** – the list of columns that are used as DataFrame index
- **params** – bind parameters

Returns

query_data_frame_stream (*query: str, org=None, data_frame_index: List[str] = None, params: dict = None*)

Execute synchronous Flux query and return stream of Pandas DataFrame as a Generator['pd.DataFrame'].

Note that if a query returns more than one table then the client generates a DataFrame for each of them.

Parameters

- **query** – the Flux query
- **Organization org** (*str*,) – specifies the organization for executing the query; take the ID, Name or Organization; if it's not specified then is used default from client.org.
- **data_frame_index** – the list of columns that are used as DataFrame index
- **params** – bind parameters

Returns

query_raw (*query*: str, *org*=None, *dialect*={'annotations': ['datatype', 'group', 'default'], 'comment_prefix': '#', 'date_time_format': 'RFC3339', 'delimiter': ',', 'header': True}, *params*: dict = None)

Execute synchronous Flux query and return result as raw unprocessed result as a str.

Parameters

- **query** – a Flux query
- **Organization org** (*str*,) – specifies the organization for executing the query; take the ID, Name or Organization; if it's not specified then is used default from client.org.
- **dialect** – csv dialect format
- **params** – bind parameters

Returns

query_stream (*query*: str, *org*=None, *params*: dict = None) → Generator[[influxdb_client.client.flux_table.FluxRecord, Any], None]

Execute synchronous Flux query and return stream of FluxRecord as a Generator[FluxRecord].

Parameters

- **query** – the Flux query
- **Organization org** (*str*,) – specifies the organization for executing the query; take the ID, Name or Organization; if it's not specified then is used default from client.org.
- **params** – bind parameters

Returns

2.3 WriteApi

```
class influxdb_client.WriteApi (influxdb_client, write_options: influxdb_client.client.write_api.WriteOptions = <influxdb_client.client.write_api.WriteOptions object>, point_settings: influxdb_client.client.write_api.PointSettings = <influxdb_client.client.write_api.PointSettings object>)
```

Implementation for '/api/v2/write' endpoint.

Initialize defaults.

close ()

Flush data and dispose a batching buffer.

flush ()

Flush data.

write (*bucket*: str, *org*: str = None, *record*: Union[str, Iterable[str], influxdb_client.client.write.point.Point, Iterable[Point], dict, Iterable[dict], bytes, Iterable[bytes], rx.core.observable.observable.Observable] = None, *write_precision*: influxdb_client.domain.write_precision.WritePrecision = 'ns', **kwargs) → Any

Write time-series data into InfluxDB.

Parameters

- **Organization org** (*str*,) – specifies the destination organization for writes; take the ID, Name or Organization; if it's not specified then is used default from client.org.
- **bucket** (*str*) – specifies the destination bucket for writes (required)

- **write_precision** (*WritePrecision*) – specifies the precision for the unix timestamps within the body line-protocol. The precision specified on a Point has precedence and is used for write.
- **record** – Points, line protocol, Pandas DataFrame, RxPY Observable to write

Key data_frame_measurement_name name of measurement for writing Pandas DataFrame

Key data_frame_tag_columns list of DataFrame columns which are tags, rest columns will be fields

2.4 BucketsApi

class `influxdb_client.BucketsApi` (*influxdb_client*)

Implementation for '/api/v2/buckets' endpoint.

Initialize defaults.

create_bucket (*bucket=None, bucket_name=None, org_id=None, retention_rules=None, description=None, org=None*) → `influxdb_client.domain.bucket.Bucket`

Create a bucket.

Parameters

- **bucket** (*Bucket*) – bucket to create
- **bucket_name** – bucket name
- **description** – bucket description
- **org_id** – org_id
- **bucket_name** – bucket name
- **retention_rules** – retention rules array or single `BucketRetentionRules`
- **Organization org** (*str*,) – specifies the organization for create the bucket; take the ID, Name or Organization; if it's not specified then is used default from `client.org`.

Returns `Bucket` If the method is called asynchronously, returns the request thread.

delete_bucket (*bucket*)

Delete a bucket.

Parameters **bucket** – bucket id or `Bucket`

Returns `Bucket` If the method is called asynchronously, returns the request thread.

find_bucket_by_id (*id*)

Find bucket by ID.

Parameters **id** –

Returns

find_bucket_by_name (*bucket_name*)

Find bucket by name.

Parameters **bucket_name** – bucket name

Returns `Bucket`

find_buckets (***kwargs*)

List buckets.

Key int offset Offset for pagination

Key int limit Limit for pagination

Key str after The last resource ID from which to seek from (but not including). This is to be used instead of *offset*.

Key str org The organization name.

Key str org_id The organization ID.

Key str name Only returns buckets with a specific name.

Returns Buckets

```
class influxdb_client.domain.Bucket (links=None, id=None, type='user', name=None,
                                     description=None, org_id=None, rp=None,
                                     schema_type=None, created_at=None, up-
                                     dated_at=None, retention_rules=None, labels=None)
```

NOTE: This class is auto generated by OpenAPI Generator.

Ref: <https://openapi-generator.tech>

Do not edit the class manually.

Bucket - a model defined in OpenAPI.

created_at

Get the created_at of this Bucket.

Returns The created_at of this Bucket.

Return type datetime

description

Get the description of this Bucket.

Returns The description of this Bucket.

Return type str

id

Get the id of this Bucket.

Returns The id of this Bucket.

Return type str

labels

Get the labels of this Bucket.

Returns The labels of this Bucket.

Return type list[Label]

links

Get the links of this Bucket.

Returns The links of this Bucket.

Return type BucketLinks

name

Get the name of this Bucket.

Returns The name of this Bucket.

Return type str

org_id
Get the org_id of this Bucket.
Returns The org_id of this Bucket.
Return type `str`

retention_rules
Get the retention_rules of this Bucket.
Rules to expire or retain data. No rules means data never expires.
Returns The retention_rules of this Bucket.
Return type `list[BucketRetentionRules]`

rp
Get the rp of this Bucket.
Returns The rp of this Bucket.
Return type `str`

schema_type
Get the schema_type of this Bucket.
Returns The schema_type of this Bucket.
Return type `SchemaType`

to_dict()
Return the model properties as a dict.

to_str()
Return the string representation of the model.

type
Get the type of this Bucket.
Returns The type of this Bucket.
Return type `str`

updated_at
Get the updated_at of this Bucket.
Returns The updated_at of this Bucket.
Return type `datetime`

2.5 LabelsApi

class `influxdb_client.LabelsApi` (*influxdb_client*)
Implementation for '/api/v2/labels' endpoint.
Initialize defaults.

clone_label (*cloned_name: str, label: influxdb_client.domain.label.Label*) → *influxdb_client.domain.label.Label*
Create the new instance of the label as a copy existing label.

Parameters

- **cloned_name** – new label name

- **label** – existing label

Returns cloned Label

create_label (*name: str, org_id: str, properties: Dict[str, str] = None*) → influxdb_client.domain.label.Label
Create a new label.

Parameters

- **name** – label name
- **org_id** – organization id
- **properties** – optional label properties

Returns created label

delete_label (*label: Union[str, influxdb_client.domain.label.Label]*)
Delete the label.

Parameters **label** – label id or Label

find_label_by_id (*label_id: str*)
Retrieve the label by id.

Parameters **label_id** –

Returns Label

find_label_by_org (*org_id*) → List[influxdb_client.domain.label.Label]
Get the list of all labels for given organization.

Parameters **org_id** – organization id

Returns list of labels

find_labels (***kwargs*) → List[influxdb_client.domain.label.Label]
Get all available labels.

Key **str org_id** The organization ID.

Returns labels

update_label (*label: influxdb_client.domain.label.Label*)
Update an existing label name and properties.

Parameters **label** – label

Returns the updated label

2.6 OrganizationsApi

class influxdb_client.OrganizationsApi (*influxdb_client*)
Implementation for '/api/v2/orgs' endpoint.

Initialize defaults.

create_organization (*name: str = None, organization: influxdb_client.domain.organization.Organization = None*) → influxdb_client.domain.organization.Organization
Create an organization.

delete_organization (*org_id: str*)
Delete an organization.

find_organization (*org_id*)

Retrieve an organization.

find_organizations (***kwargs*)

List all organizations.

Key int offset Offset for pagination

Key int limit Limit for pagination

Key bool descending

Key str org Filter organizations to a specific organization name.

Key str org_id Filter organizations to a specific organization ID.

Key str user_id Filter organizations to a specific user ID.

me ()

Return the current authenticated user.

```
class influxdb_client.domain.Organization (links=None, id=None, name=None, de-
                                         scription=None, created_at=None, up-
                                         dated_at=None, status='active')
```

NOTE: This class is auto generated by OpenAPI Generator.

Ref: <https://openapi-generator.tech>

Do not edit the class manually.

Organization - a model defined in OpenAPI.

created_at

Get the created_at of this Organization.

Returns The created_at of this Organization.

Return type datetime

description

Get the description of this Organization.

Returns The description of this Organization.

Return type str

id

Get the id of this Organization.

Returns The id of this Organization.

Return type str

links

Get the links of this Organization.

Returns The links of this Organization.

Return type OrganizationLinks

name

Get the name of this Organization.

Returns The name of this Organization.

Return type str

status

Get the status of this Organization.

If inactive the organization is inactive.

Returns The status of this Organization.

Return type `str`

to_dict()

Return the model properties as a dict.

to_str()

Return the string representation of the model.

updated_at

Get the updated_at of this Organization.

Returns The updated_at of this Organization.

Return type `datetime`

2.7 UsersApi

class `influxdb_client.UsersApi` (`influxdb_client`)

Implementation for '/api/v2/users' endpoint.

Initialize defaults.

create_user (`name: str`) → `influxdb_client.domain.user.User`

Create a user.

me () → `influxdb_client.domain.user.User`

Return the current authenticated user.

class `influxdb_client.domain.User` (`id=None, oauth_id=None, name=None, status='active'`)

NOTE: This class is auto generated by OpenAPI Generator.

Ref: <https://openapi-generator.tech>

Do not edit the class manually.

User - a model defined in OpenAPI.

id

Get the id of this User.

Returns The id of this User.

Return type `str`

name

Get the name of this User.

Returns The name of this User.

Return type `str`

oauth_id

Get the oauth_id of this User.

Returns The oauth_id of this User.

Return type `str`

status

Get the status of this User.

If inactive the user is inactive.

Returns The status of this User.

Return type `str`

to_dict()

Return the model properties as a dict.

to_str()

Return the string representation of the model.

2.8 TasksApi

class `influxdb_client.TasksApi` (`influxdb_client`)

Implementation for '/api/v2/tasks' endpoint.

Initialize defaults.

add_label (`label_id: str, task_id: str`) → `influxdb_client.domain.label_response.LabelResponse`

Add a label to a task.

add_member (`member_id, task_id`)

Add a member to a task.

add_owner (`owner_id, task_id`)

Add an owner to a task.

cancel_run (`task_id: str, run_id: str`)

Cancel a currently running run.

Parameters

- **task_id** –

- **run_id** –

clone_task (`task: influxdb_client.domain.task.Task`) → `influxdb_client.domain.task.Task`

Clone a task.

create_task (`task: influxdb_client.domain.task.Task = None, task_create_request: influxdb_client.domain.task_create_request.TaskCreateRequest = None`) → `influxdb_client.domain.task.Task`

Create a new task.

create_task_cron (`name: str, flux: str, cron: str, org_id: str`) → `influxdb_client.domain.task.Task`

Create a new task with cron repetition schedule.

create_task_every (`name, flux, every, organization`) → `influxdb_client.domain.task.Task`

Create a new task with every repetition schedule.

delete_label (`label_id: str, task_id: str`)

Delete a label from a task.

delete_member (`member_id, task_id`)

Remove a member from a task.

delete_owner (`owner_id, task_id`)

Remove an owner from a task.

delete_task (*task_id: str*)

Delete a task.

find_task_by_id (*task_id*) → influxdb_client.domain.task.Task

Retrieve a task.

find_tasks (**kwargs)

List all tasks.

Key str name only returns tasks with the specified name

Key str after returns tasks after specified ID

Key str user filter tasks to a specific user ID

Key str org filter tasks to a specific organization name

Key str org_id filter tasks to a specific organization ID

Key int limit the number of tasks to return

Returns Tasks

find_tasks_by_user (*task_user_id*)

List all tasks by user.

get_labels (*task_id*)

List all labels for a task.

get_logs (*task_id: str*) → List[influxdb_client.domain.log_event.LogEvent]

Retrieve all logs for a task.

Parameters task_id – task id

get_members (*task_id: str*)

List all task members.

get_owners (*task_id*)

List all owners of a task.

get_run (*task_id: str, run_id: str*) → influxdb_client.domain.run.Run

Get run record for specific task and run id.

Parameters

- **task_id** – task id

- **run_id** – run id

Returns Run for specified task and run id

get_run_logs (*task_id: str, run_id: str*) → List[influxdb_client.domain.log_event.LogEvent]

Retrieve all logs for a run.

get_runs (*task_id, **kwargs*) → List[influxdb_client.domain.run.Run]

Retrieve list of run records for a task.

Parameters

- **task_id** – task id

- **after** (*str*) – returns runs after specified ID

- **limit** (*int*) – the number of runs to return

- **after_time** (*datetime*) – filter runs to those scheduled after this time, RFC3339

- **before_time** (*datetime*) – filter runs to those scheduled before this time, RFC3339

retry_run (*task_id: str, run_id: str*)

Retry a task run.

Parameters

- **task_id** – task id
- **run_id** – run id

run_manually (*task_id: str, scheduled_for: <module 'datetime' from 'home/docs/.pyenv/versions/3.6.12/lib/python3.6/datetime.py'> = None*)

Manually start a run of the task now overriding the current schedule.

Parameters

- **task_id** –
- **scheduled_for** – planned execution

update_task (*task: influxdb_client.domain.task.Task*) → influxdb_client.domain.task.Task

Update a task.

update_task_request (*task_id, task_update_request: influxdb_client.domain.task_update_request.TaskUpdateRequest*) → influxdb_client.domain.task.Task

Update a task.

```
class influxdb_client.domain.Task(id=None, type=None, org_id=None, org=None,
                                  name=None, description=None, status=None, labels=None,
                                  authorization_id=None, flux=None, every=None,
                                  cron=None, offset=None, last_completed=None,
                                  last_run_status=None, last_run_error=None,
                                  created_at=None, updated_at=None, links=None)
```

NOTE: This class is auto generated by OpenAPI Generator.

Ref: <https://openapi-generator.tech>

Do not edit the class manually.

Task - a model defined in OpenAPI.

authorization_id

Get the authorization_id of this Task.

The ID of the authorization used when this task communicates with the query engine.

Returns The authorization_id of this Task.

Return type str

created_at

Get the created_at of this Task.

Returns The created_at of this Task.

Return type datetime

cron

Get the cron of this Task.

A task repetition schedule in the form ‘* * * * *’; parsed from Flux.

Returns The cron of this Task.

Return type str

description

Get the description of this Task.

An optional description of the task.

Returns The description of this Task.

Return type `str`

every

Get the every of this Task.

A simple task repetition schedule; parsed from Flux.

Returns The every of this Task.

Return type `str`

flux

Get the flux of this Task.

The Flux script to run for this task.

Returns The flux of this Task.

Return type `str`

id

Get the id of this Task.

Returns The id of this Task.

Return type `str`

labels

Get the labels of this Task.

Returns The labels of this Task.

Return type `list[Label]`

last_run_error

Get the last_run_error of this Task.

Returns The last_run_error of this Task.

Return type `str`

last_run_status

Get the last_run_status of this Task.

Returns The last_run_status of this Task.

Return type `str`

latest_completed

Get the latest_completed of this Task.

Timestamp of latest scheduled, completed run, RFC3339.

Returns The latest_completed of this Task.

Return type `datetime`

links

Get the links of this Task.

Returns The links of this Task.

Return type TaskLinks

name

Get the name of this Task.

The name of the task.

Returns The name of this Task.

Return type str

offset

Get the offset of this Task.

Duration to delay after the schedule, before executing the task; parsed from flux, if set to zero it will remove this option and use 0 as the default.

Returns The offset of this Task.

Return type str

org

Get the org of this Task.

The name of the organization that owns this Task.

Returns The org of this Task.

Return type str

org_id

Get the org_id of this Task.

The ID of the organization that owns this Task.

Returns The org_id of this Task.

Return type str

status

Get the status of this Task.

Returns The status of this Task.

Return type TaskStatusType

to_dict()

Return the model properties as a dict.

to_str()

Return the string representation of the model.

type

Get the type of this Task.

The type of task, this can be used for filtering tasks on list actions.

Returns The type of this Task.

Return type str

updated_at

Get the updated_at of this Task.

Returns The updated_at of this Task.

Return type datetime

2.9 DeleteApi

class influxdb_client.DeleteApi (influxdb_client)

Implementation for '/api/v2/delete' endpoint.

Initialize defaults.

delete (start: <module 'datetime' from '/home/docs/.pyenv/versions/3.6.12/lib/python3.6/datetime.py'>, stop: object, predicate: object, bucket: str, org: str) → None
Delete Time series data from InfluxDB.

Parameters

- **start** – start time
- **stop** – stop time
- **predicate** – predicate
- **bucket** – bucket id or name from which data will be deleted
- **org** – organization id or name

Returns

class influxdb_client.domain.DeletePredicateRequest (start=None, stop=None, predicate=None)

NOTE: This class is auto generated by OpenAPI Generator.

Ref: <https://openapi-generator.tech>

Do not edit the class manually.

DeletePredicateRequest - a model defined in OpenAPI.

predicate

Get the predicate of this DeletePredicateRequest.

InfluxQL-like delete statement

Returns The predicate of this DeletePredicateRequest.

Return type str

start

Get the start of this DeletePredicateRequest.

RFC3339Nano

Returns The start of this DeletePredicateRequest.

Return type datetime

stop

Get the stop of this DeletePredicateRequest.

RFC3339Nano

Returns The stop of this DeletePredicateRequest.

Return type datetime

to_dict()

Return the model properties as a dict.

to_str()

Return the string representation of the model.

This repository contains the Python client library for the InfluxDB 2.0.

Note: Use this client library with InfluxDB 2.x and InfluxDB 1.8+. For connecting to InfluxDB 1.7 or earlier instances, use the [influxdb-python](#) client library. The API of the **influxdb-client-python** is not the backwards-compatible with the old one - **influxdb-python**.

CHAPTER 3

Documentation

This section contains links to the client library documentation.

- [Product documentation, *Getting Started*](#)
- [Examples](#)
- [API Reference](#)
- [Changelog](#)

InfluxDB 2.0 client features

- **Querying data**
 - using the Flux language
 - into csv, raw data, `flux_table` structure, Pandas DataFrame
 - *How to queries*
- **Writing data using**
 - Line Protocol
 - Data Point
 - RxPY Observable
 - Pandas DataFrame
 - *How to writes*
- **InfluxDB 2.0 API client for management**
 - the client is generated from the `swagger` by using the `openapi-generator`
 - organizations & users management
 - buckets management
 - tasks management
 - authorizations
 - health check
 - ...
- **‘InfluxDB 1.8 API compatibility’_**
- **Examples**
 - **‘Connect to InfluxDB Cloud’_**
 - **‘How to efficiently import large dataset’_**

- ‘Efficiency write data from IOT sensor’_
 - ‘How to use Jupyter + Pandas + InfluxDB 2’_
- **Advanced Usage**
 - ‘Gzip support’_
 - ‘Delete data’_

CHAPTER 5

Installation

InfluxDB python library uses [RxPY](#) - The Reactive Extensions for Python (RxPY).

Python 3.6 or later is required.

Note: It is recommended to use `ciso8601` with `client` for parsing dates. `ciso8601` is much faster than built-in Python `datetime`. Since it's written as a C module the best way is build it from sources:

Windows:

You have to install [Visual C++ Build Tools 2015](#) to build `ciso8601` by `pip`.

conda:

Install from sources: `conda install -c conda-forge/label/cf202003 ciso8601`.

5.1 pip install

The python package is hosted on [PyPI](#), you can install latest version directly:

```
pip install 'influxdb-client[ciso]'
```

Then import the package:

```
import influxdb_client
```

5.2 Setuptools

Install via [Setuptools](#).

```
python setup.py install --user
```

(or `sudo python setup.py install` to install the package for all users)

CHAPTER 6

Getting Started

Please follow the *Installation* and then run the following:

```
from influxdb_client import InfluxDBClient, Point
from influxdb_client.client.write_api import SYNCHRONOUS

bucket = "my-bucket"

client = InfluxDBClient(url="http://localhost:8086", token="my-token", org="my-org")

write_api = client.write_api(write_options=SYNCHRONOUS)
query_api = client.query_api()

p = Point("my_measurement").tag("location", "Prague").field("temperature", 25.3)

write_api.write(bucket=bucket, record=p)

## using Table structure
tables = query_api.query('from(bucket:"my-bucket") |> range(start: -10m)')

for table in tables:
    print(table)
    for row in table.records:
        print(row.values)

## using csv library
csv_result = query_api.query_csv('from(bucket:"my-bucket") |> range(start: -10m)')
val_count = 0
for row in csv_result:
    for cell in row:
        val_count += 1
```


7.1 Via File

A client can be configured via *.ini file in segment influx2.

The following options are supported:

- `url` - the url to connect to InfluxDB
- `org` - default destination organization for writes and queries
- `token` - the token to use for the authorization
- `timeout` - socket timeout in ms (default value is 10000)
- `verify_ssl` - set this to false to skip verifying SSL certificate when calling API from https server
- `ssl_ca_cert` - set this to customize the certificate file to verify the peer
- `connection_pool_maxsize` - set the number of connections to save that can be reused by urllib3
- `auth_basic` - enable http basic authentication when talking to a InfluxDB 1.8.x without authentication but is accessed via reverse proxy with basic authentication (defaults to false)
- `profilers` - set the list of enabled [Flux profilers](#)

```
self.client = InfluxDBClient.from_config_file("config.ini")
```

7.2 Via Environment Properties

A client can be configured via environment properties.

Supported properties are:

- `INFLUXDB_V2_URL` - the url to connect to InfluxDB
- `INFLUXDB_V2_ORG` - default destination organization for writes and queries

- INFLUXDB_V2_TOKEN - the token to use for the authorization
- INFLUXDB_V2_TIMEOUT - socket timeout in ms (default value is 10000)
- INFLUXDB_V2_VERIFY_SSL - set this to false to skip verifying SSL certificate when calling API from https server
- INFLUXDB_V2_SSL_CA_CERT - set this to customize the certificate file to verify the peer
- INFLUXDB_V2_CONNECTION_POOL_MAXSIZE - set the number of connections to save that can be reused by urllib3
- INFLUXDB_V2_AUTH_BASIC - enable http basic authentication when talking to a InfluxDB 1.8.x without authentication but is accessed via reverse proxy with basic authentication (defaults to false)
- INFLUXDB_V2_PROFILERS - set the list of enabled [Flux profilers](#)

```
self.client = InfluxDBClient.from_env_properties()
```

7.3 Profile query

The [Flux Profiler package](#) provides performance profiling tools for Flux queries and operations.

You can enable printing profiler information of the Flux query in client library by:

- set QueryOptions.profilers in QueryApi,
- set INFLUXDB_V2_PROFILERS environment variable,
- set profilers option in configuration file.

When the profiler is enabled, the result of flux query contains additional tables “profiler/*”. In order to have consistent behaviour with enabled/disabled profiler, FluxCSVParser excludes “profiler/*” measurements from result.

Example how to enable profilers using API:

```
q = '''
    from(bucket: stringParam)
      |> range(start: -5m, stop: now())
      |> filter(fn: (r) => r._measurement == "mem")
      |> filter(fn: (r) => r._field == "available" or r._field == "free" or r._field_
↪ == "used")
      |> aggregateWindow(every: 1m, fn: mean)
      |> pivot(rowKey:["_time"], columnKey: ["_field"], valueColumn: "_value")
'''
p = {
    "stringParam": "my-bucket",
}

query_api = client.query_api(query_options=QueryOptions(profilers=["query", "operator
↪ "]))
csv_result = query_api.query(query=q, params=p)
```

Example of a profiler output:

CHAPTER 8

Indices and tables

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- `modindex`
- `search`

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