DATA+AI SUMMIT BY databricks

10x Easier Development Using Databricks Connect

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Who prefers to develop in:

1) a Notebook?
2) an IDE?

And why?

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IDE-BASED DEVELOPMENT W/ DATABRICKS

Why do Databricks users love developing in an IDE?

- Meet developers where they are… muscle memory!
- Software engineering best practises: debugging, code modularization, unit testing, etc.

Why users love DB Connect:

- With any IDE,
- Interactive debugging of Spark code on Databricks cluster,
- High production fidelity: debug & run on target platform,
- Application development: Use DB Connect as a “Python-native JDBC driver”.

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WALK-THROUGH

HOW TO USE DB CONNECT AND PYCHARM

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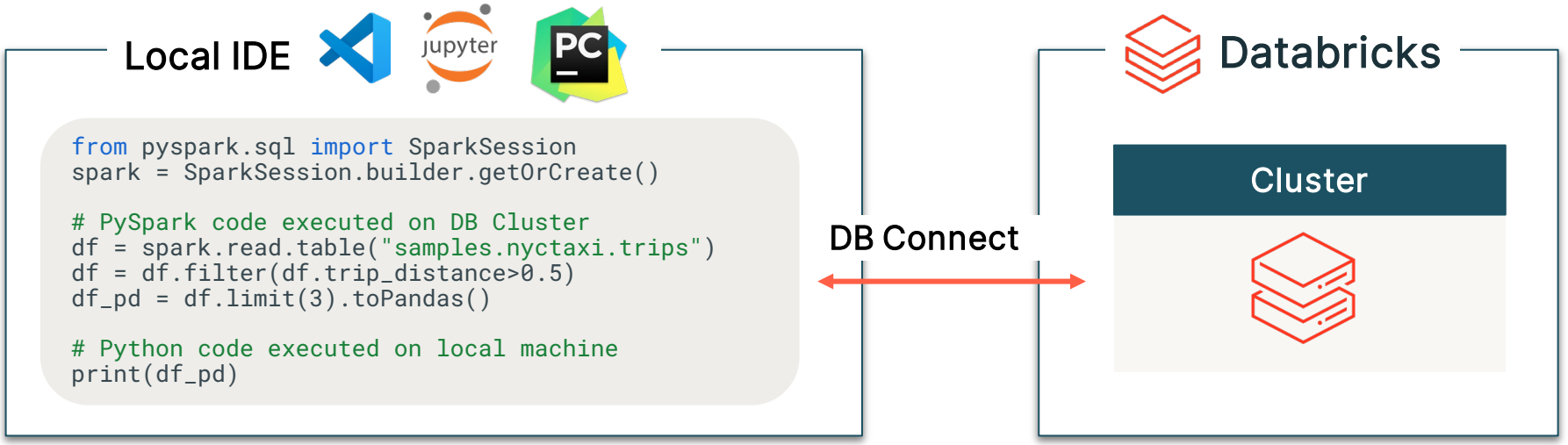
DEVELOPMENT FROM THE IDE WITH DB CONNECT



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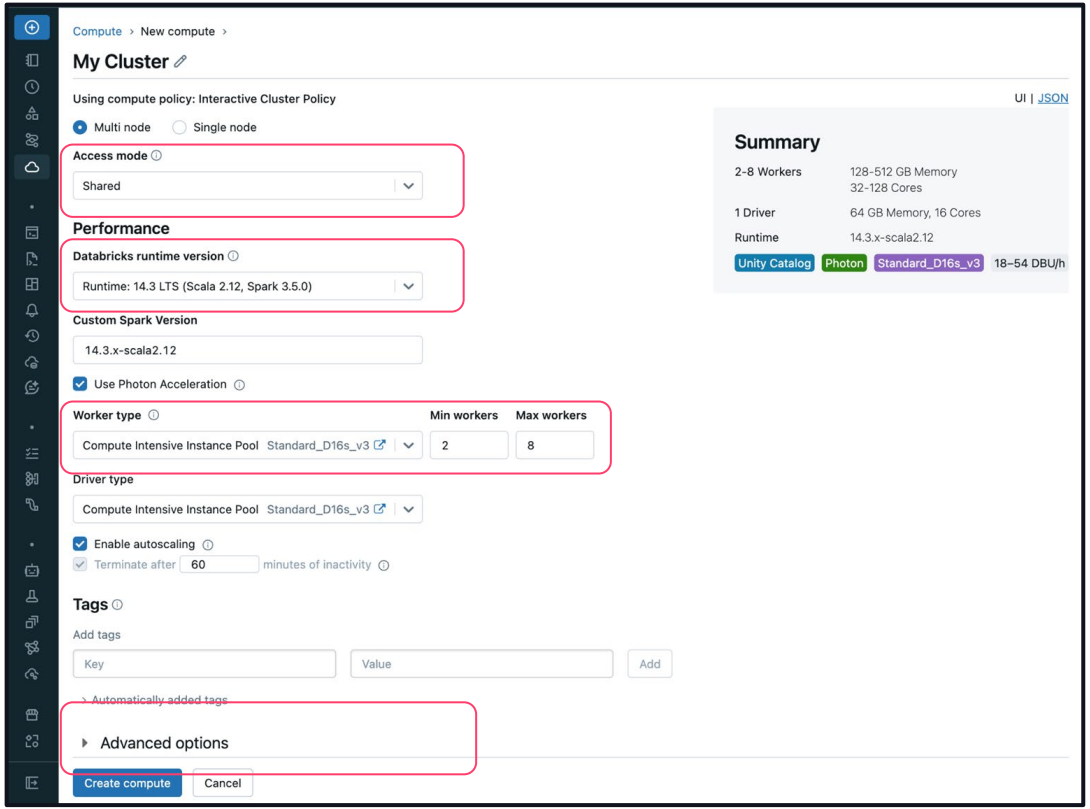
DEVELOPMENT FROM THE IDE WITH DB CONNECT

Install DB Connect and configure my Spark session

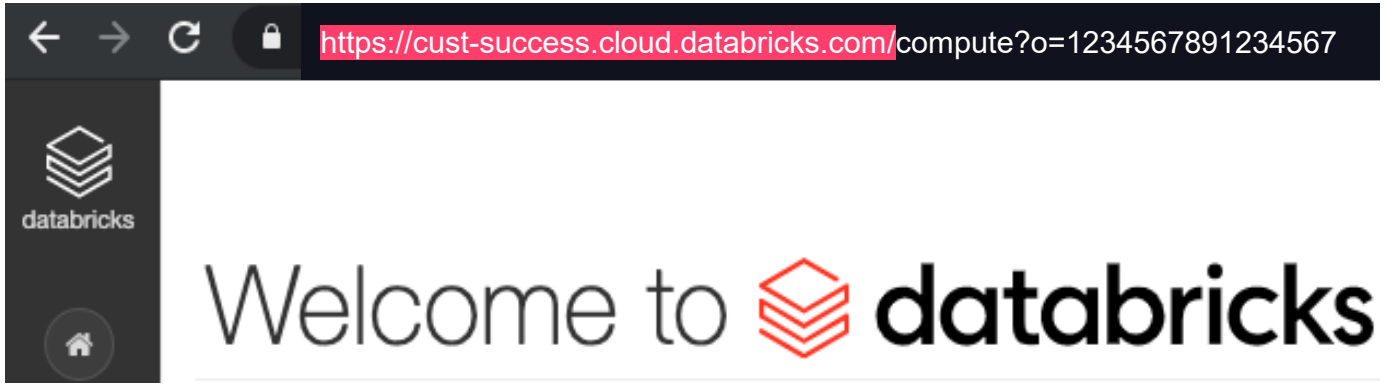
> 1. I create a cluster



DEVELOPMENT FROM THE IDE WITH DB CONNECT

Install DB Connect and configure my Spark session

✓ 1. I create a cluster
> 2. I copy my workspace URL



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DEVELOPMENT FROM THE IDE WITH DB CONNECT

Install DB Connect and configure my Spark session

✓ 1. I create a cluster
✓ 2. I copy my workspace URL
> 3. Install Python package. `pip install databricks-connect==14.3`

```
$ python3.10 -m venv ./venv
$ source ./venv/bin/activate
(venv)$ pip3 install --upgrade "databricks-connect==14.3.*"
```


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DEVELOPMENT FROM THE IDE WITH DB CONNECT

Install DB Connect and configure my Spark session

✓ 1. I create a cluster
✓ 2. I copy my workspace URL
✓ 3. Install Python package, `pip install databricks-connect==14.3`
> 4. Create a config profile (workspace & cluster ID, auth token)

```
$ brew install databricks
$ databricks auth login --configure-cluster --host https://cust-success.cloud.databricks.com
```

- Choose profile name: DEFAULT
- Authenticate with OAuth
- Select cluster -> cluster ID

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DEVELOPMENT FROM THE IDE WITH DB CONNECT

Install DB Connect and configure my Spark session

✓ 1. I create a cluster
✓ 2. I copy my workspace URL
✓ 3. Install Python package, `pip install databricks-connect==14.3`
✓ 4. Create a config profile (workspace & cluster ID, auth token)

```
$ brew install databricks
$ databricks auth login --configure-cluster --host https://cust-success.cloud.databricks.com
```

> 5. Open my IDE and I create my Spark session using a config profile

```
from databricks.connect import DatabricksSession
spark = DatabricksSession.builder.profile("DEFAULT").getOrCreate()
```


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DEVELOPMENT FROM THE IDE WITH DB CONNECT

Install DB Connect and configure my Spark session

✓ 1. I create a cluster
✓ 2. I copy my workspace URL
✓ 3. Install Python package, `pip install databricks-connect==14.3`
✓ 4. Create a config profile (workspace & cluster ID, auth token)

```
$ brew install databricks
$ databricks auth login --configure-cluster --host https://cust-success.cloud.databricks.com
```

✓ 5. Open my IDE and I create my Spark session using a config profile

```
from databricks.connect import DatabricksSession
spark = DatabricksSession.builder.profile("DEFAULT").getOrCreate()
```

> 6. Develop, debug and run my *application!*

```
df = spark.read.table("samples.nyctaxi.trips")
df.where(df.trip_distance < 10).show(10)
```


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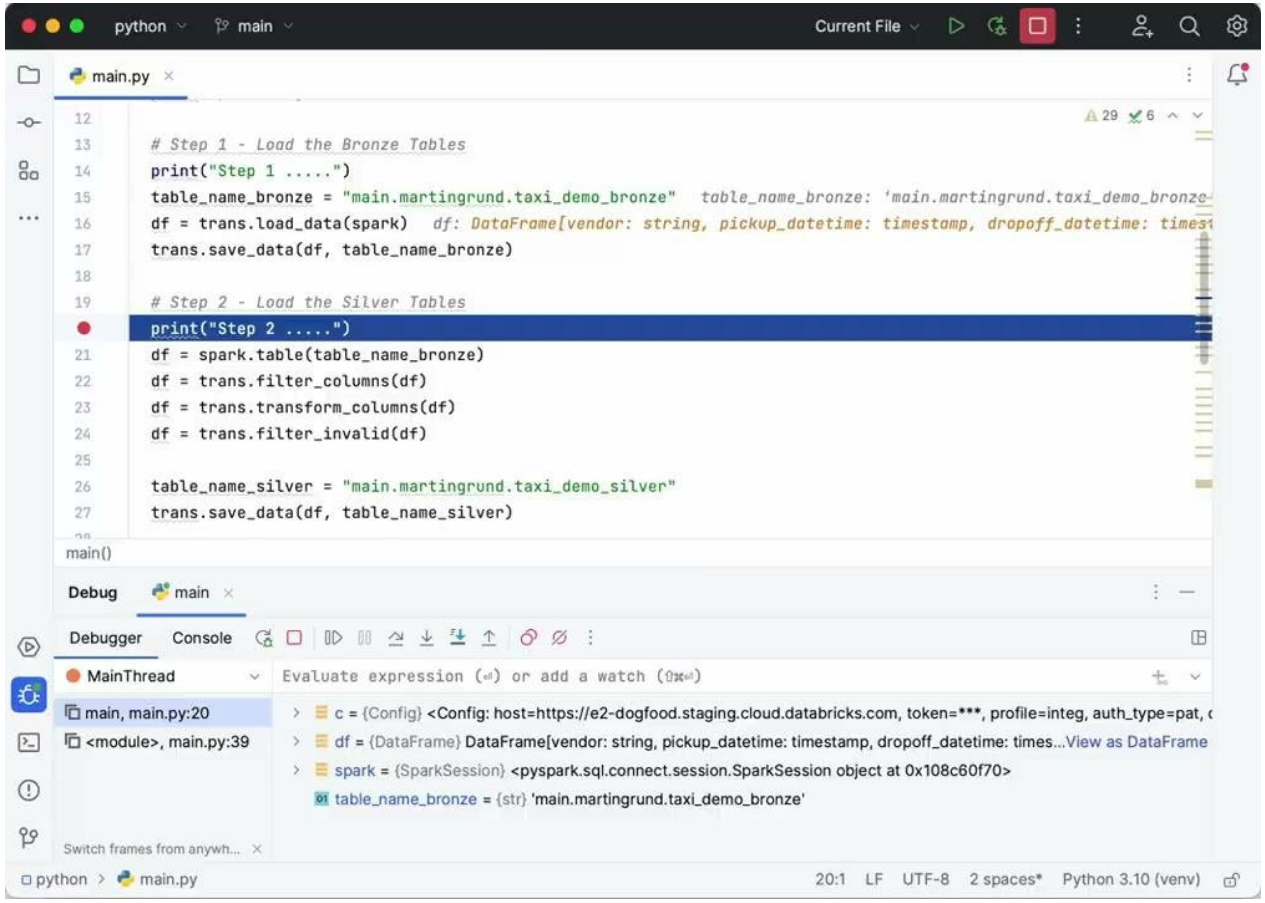
DEVELOPMENT FROM THE IDE WITH DB CONNECT



BUT HOW DOES IT WORK

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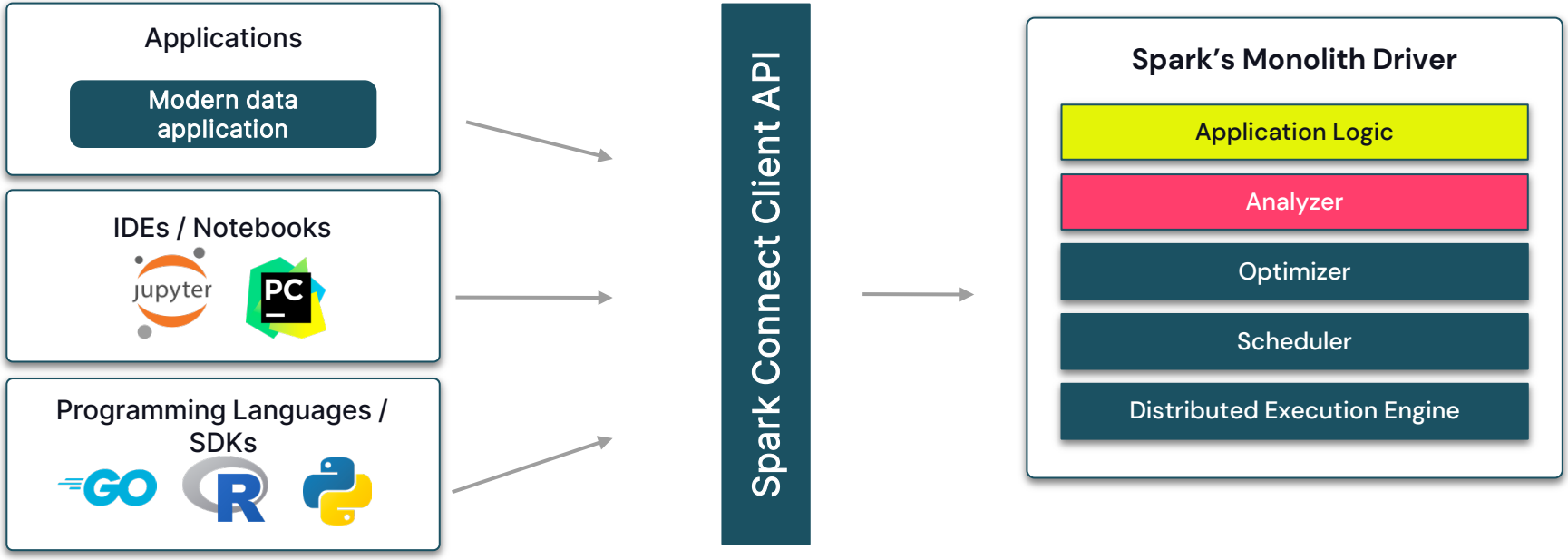
SPARK CONNECT

Remote Connectivity: thin client, full power of Apache Spark



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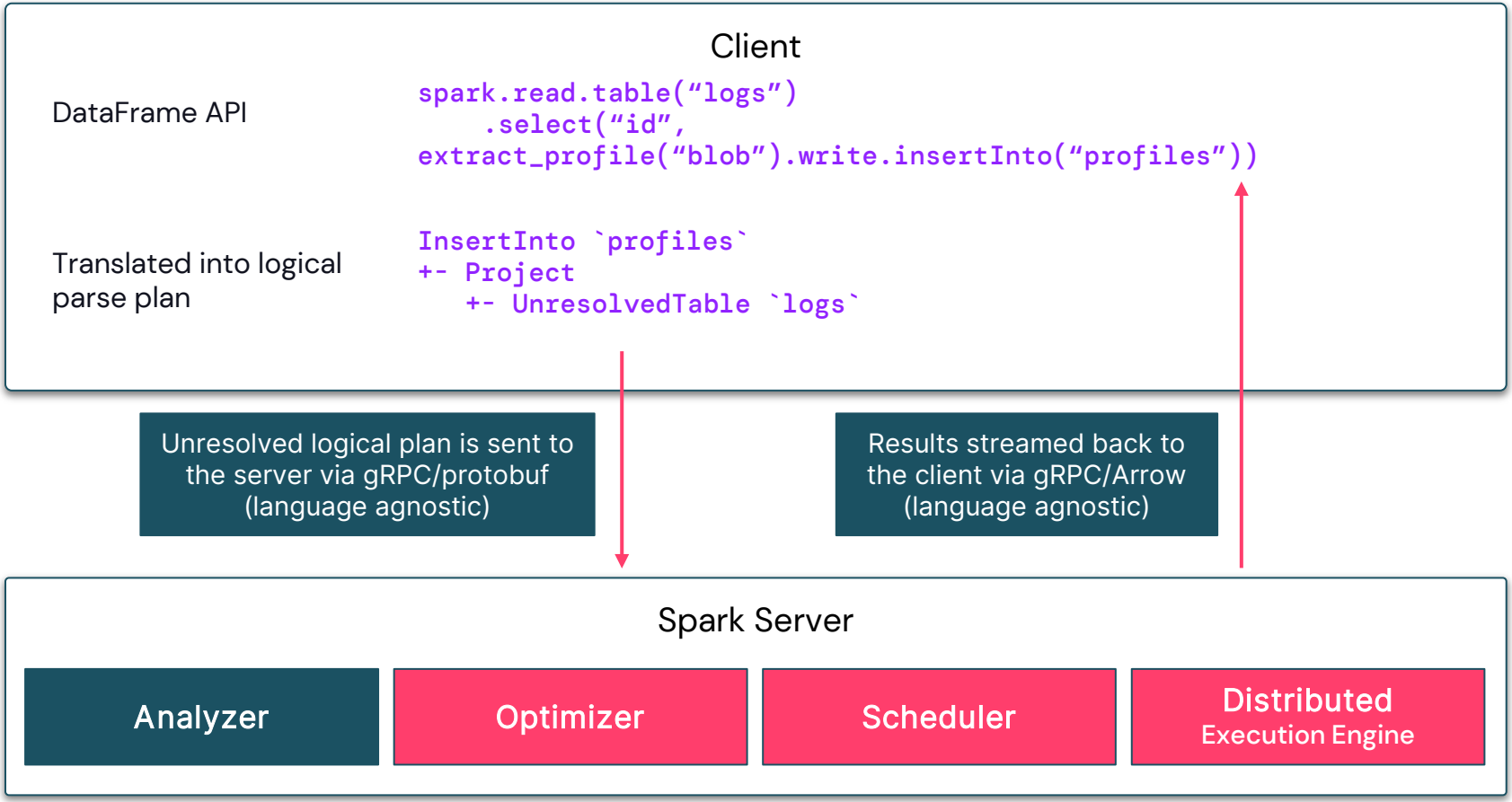

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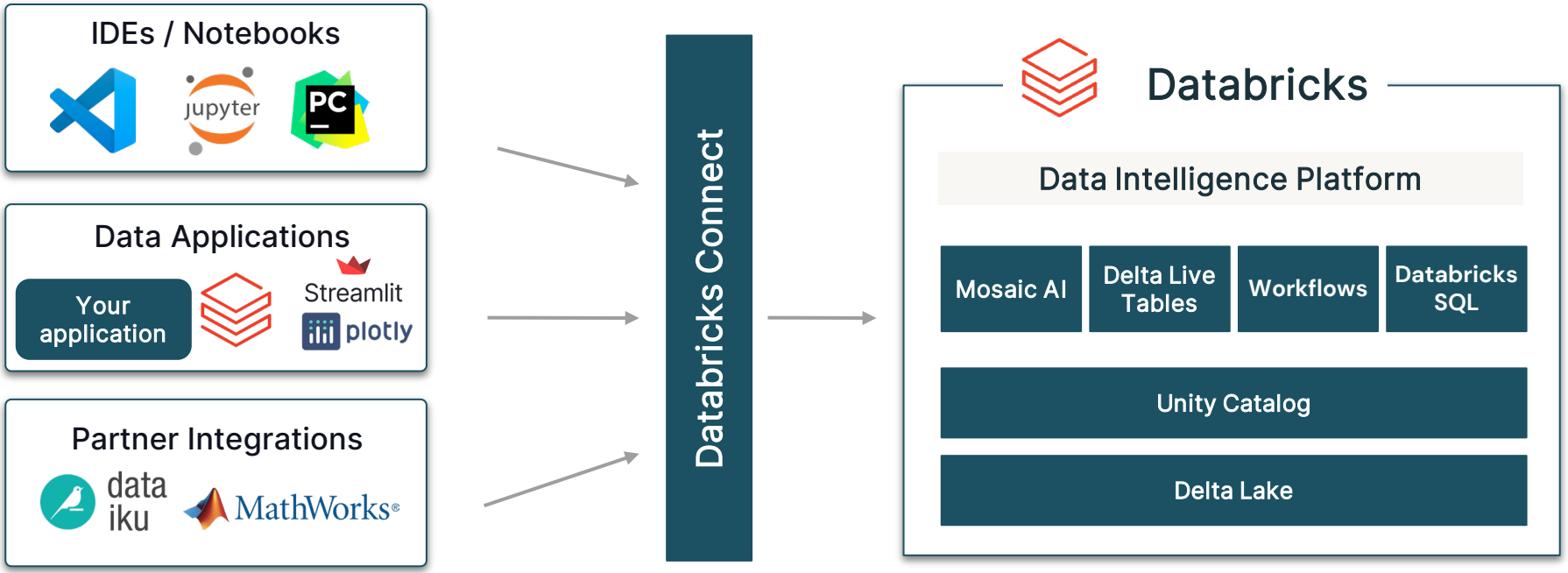
DATABRICKS CONNECT USES SPARK CONNECT

Connect to Databricks from anywhere!



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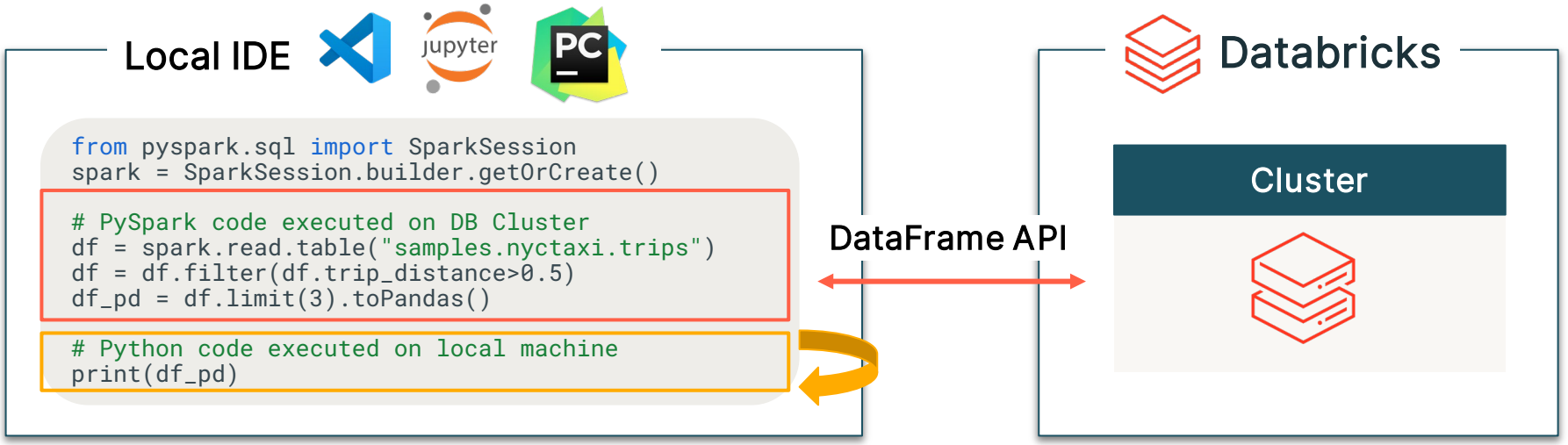
HOW DATABRICKS CONNECT WORKS

Build on Spark Connect



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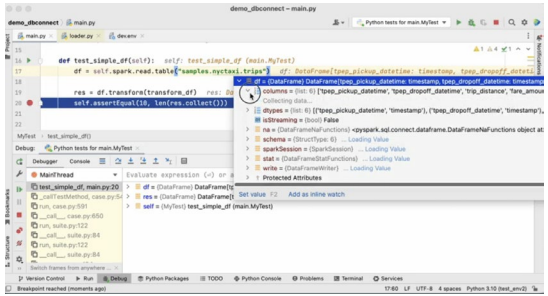
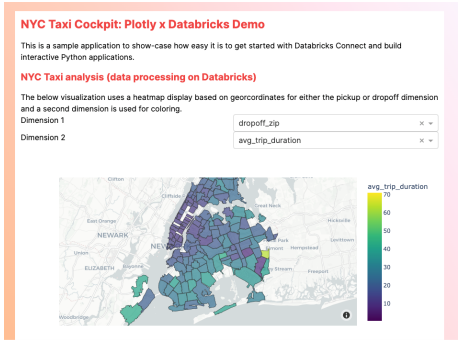
USE DATABRICKS FROM ANYWHERE!

It's more than debugging: Remote Connectivity to Databricks

Interactively develop & debug from IDE



Interactive Data Apps with a few lines of code!



Partner integrations made easy!

Dataframe API (Python, Scala, R)
UDFs, Streaming
ETL github example

Databricks Lakhouse APPs!

Plotly app github example

Dataiku Demo

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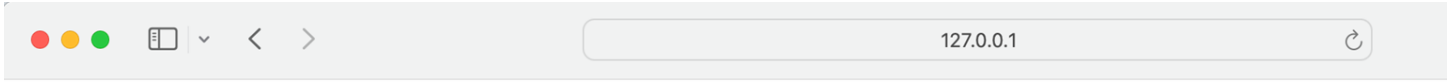
YOUR APPS WITH DB CONNECT



	index	tpep_pickup_datetime	tpep_dropoff_datetime	trip_distance	fare_amount	pickup_zip	dropoff_zip
0	0	2016-02-16 22:40:45	2016-02-16 22:59:25	5.35	18.5	10003	11238
1	1	2016-02-05 16:06:44	2016-02-05 16:26:03	6.50	21.5	10282	10001
2	2	2016-02-08 07:39:25	2016-02-08 07:44:14	0.90	5.5	10119	10003
3	3	2016-02-29 22:25:33	2016-02-29 22:38:09	3.50	13.5	10001	11222
4	4	2016-02-03 17:21:02	2016-02-03 17:23:24	0.30	3.5	10028	10028
5	5	2016-02-10 00:47:44	2016-02-10 00:53:04	0.00	5.0	10038	10005
6	6	2016-02-19 03:24:25	2016-02-19 03:44:56	6.57	21.5	10001	11377
7	7	2016-02-02 14:05:23	2016-02-02 14:23:07	1.08	11.5	10103	10167
8	8	2016-02-20 15:42:20	2016-02-20 15:50:40	0.80	7.0	10003	10011
9	9	2016-02-14 16:19:53	2016-02-14 16:32:10	1.30	9.0	10199	10020
10	10	2016-02-16 21:01:22	2016-02-16 21:11:29	2.74	11.0	10002	11211
11	11	2016-02-22 20:13:11	2016-02-22 20:27:35	2.09	11.5	10012	10009
12	12	2016-02-12 11:35:59	2016-02-12 11:50:53	2.80	13.5	10103	10016
13	13	2016-02-27 07:50:33	2016-02-27 07:56:38	1.00	6.0	10022	10110
14	14	2016-02-28 12:04:09	2016-02-28 12:07:01	0.70	4.5	10065	10021
15	16	2016-02-11 12:44:24	2016-02-11 13:07:43	3.80	18.0	10021	10027
16	17	2016-02-28 18:25:18	2016-02-28 18:31:08	0.98	6.0	10119	10009
17	18	2016-02-13 20:00:15	2016-02-13 20:17:20	2.83	13.5	10003	10282
18	19	2016-02-21 01:07:04	2016-02-21 01:09:43	0.60	4.0	10018	10018
19	20	2016-02-27 15:56:56	2016-02-27 16:04:51	1.53	8.0	10023	10025
20	21	2016-02-18 07:40:28	2016-02-18 07:49:00	0.93	7.0	10020	10167

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YOUR APPS WITH DB CONNECT

Avoid Impedance Mismatch

```
@app.route("/")
def main():
 table = "samples.nyctaxi.trips"
 df = spark.table(table)

 if request.args.get('bounds'):
    filter = request.args.get('bounds')
    df = df.where(df.trip_distance < filter)

 if request.args.get('limit'):
    df = df.limit(int(request.args.get("limit")))
 else:
    df = df.limit(100)

 return str(df.toPandas().to_html())
```

```
@app.route("/")
def main():
 con = sqlite3.connect("data.db")
 query  = "select * from trips"

 bounds = None; has_filter = False; params = []
 if request.args.get('bounds'):
    has_filter = True
    query += " where trip_distance < :1"
    params.append(request.args.get('bounds'))

 limit = 100
 if request.args.get('limit'):
    limit = int(request.args.get("limit"))

 query += " limit :2"
 params.append(limit)
 pdf = pd.read_sql(query, con, params=params)
 return str(pdf.to_html())
```


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YOUR APPS WITH DB CONNECT

Avoid Impedance Mismatch

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@app.route("/")
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 if request.args.get('limit'):
    df = df.limit(int(request.args.get("limit")))
 else:
    df = df.limit(100)

 return str(df.toPandas().to_html())
```

String concatenation!

Significant whitespace!

```
@app.route("/")
def main():
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 bounds = None; has_filter = False; params = []
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 limit = 100
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 query += " limit :2"
 params.append(limit)
 pdf = pd.read_sql(query, con, params=params)
 return str(pdf.to_html())
```


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YOUR APPS WITH DB CONNECT

Debugging!

```python
@app.route("/")
def main():
 table = "samples.nyctaxi.trips"
 df = spark.table(table)

 if request.args.get('bounds'):
    filter = request.args.get('bounds')
    df = df.where(df.trip_distance < filter)

 if request.args.get('limit'):
    df = df.limit(int(request.args.get("limit")))
 else:
    df = df.limit(100)

 return str(df.toPandas().to_html())
```

```python
@app.route("/")
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    query += " where trip_distance < :1"
    params.append(request.args.get('bounds'))

 limit = 100
 if request.args.get('limit'):
    limit = int(request.args.get("limit"))

 query += " limit :2"
 params.append(limit)
 pdf = pd.read_sql(query, con, params=params)
 return str(pdf.to_html())
```


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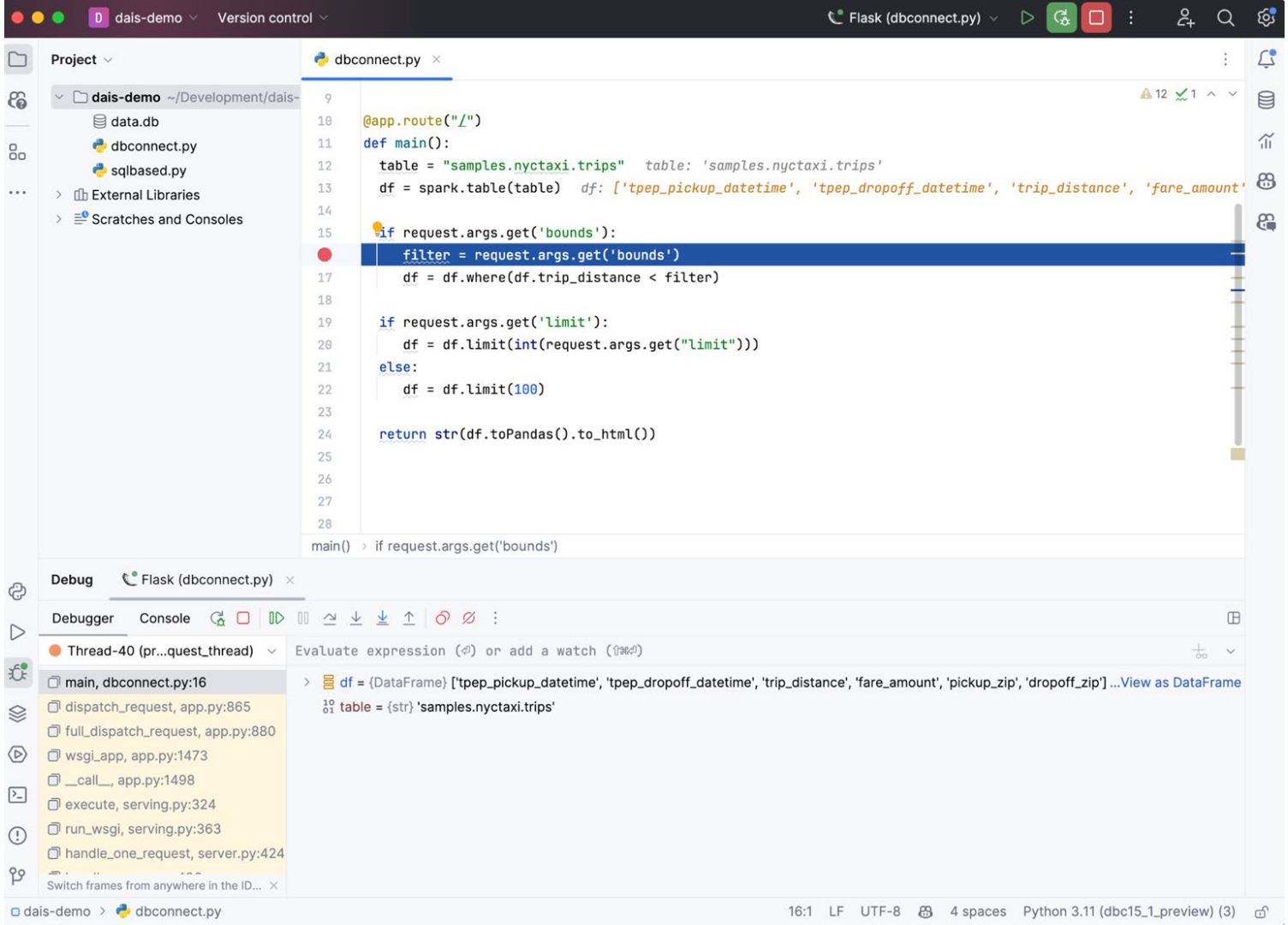
dais-demo
Version control
Flask (dbconnect.py)
Project
dais-demo ~/Development/dais-
data.db
dbconnect.py
sqlbased.py
External Libraries
Scratches and Consoles
dbconnect.py
@app.route("/")
def main():
table = "samples.nyctaxi.trips" table: 'samples.nyctaxi.trips'
df = spark.table(table) df: ['tpep_pickup_datetime', 'tpep_dropoff_datetime', 'trip_distance', 'fare_amount'
if request.args.get('bounds'):
filter = request.args.get('bounds')
df = df.where(df.trip_distance < filter)
if request.args.get('limit'):
df = df.limit(int(request.args.get("limit")))
else:
df = df.limit(100)
return str(df.toPandas().to_html())
main() › if request.args.get('bounds')
Debug
Flask (dbconnect.py)
Debugger
Console
Thread-40 (pr...quest_thread)
Evaluate expression (⏎) or add a watch (⇧⌘⏎)
main, dbconnect.py:16
dispatch_request, app.py:865
full_dispatch_request, app.py:880
wsgi_app, app.py:1473
__call__, app.py:1498
execute, serving.py:324
run_wsgi, serving.py:363
handle_one_request, server.py:424
Switch frames from anywhere in the ID...
df = {DataFrame} ['tpep_pickup_datetime', 'tpep_dropoff_datetime', 'trip_distance', 'fare_amount', 'pickup_zip', 'dropoff_zip'] ...View as DataFrame
table = {str} 'samples.nyctaxi.trips'
dais-demo › dbconnect.py
16:1
LF
UTF-8
4 spaces
Python 3.11 (dbc15_1_preview) (3)

HOW CAN I BE EVEN MORE EFFICIENT?

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What if you never had to wait for the cluster to startup?

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Serverless Compute

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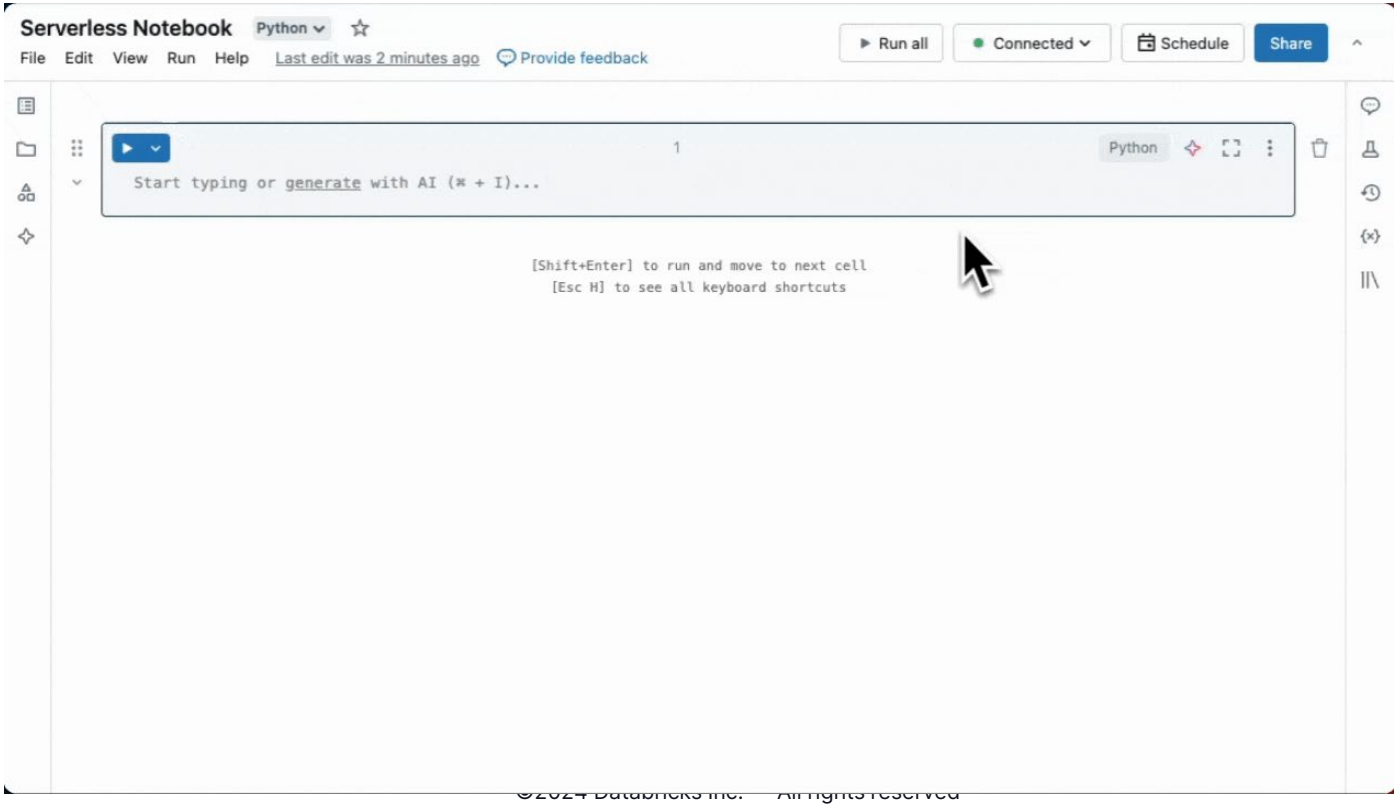
SERVERLESS NOTEBOOKS

Public Preview

So simple, it's hard to show!



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Imagine you connect from the IDE and it just runs….

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INTRODUCING

SERVERLESS DATABRICKS CONNECT

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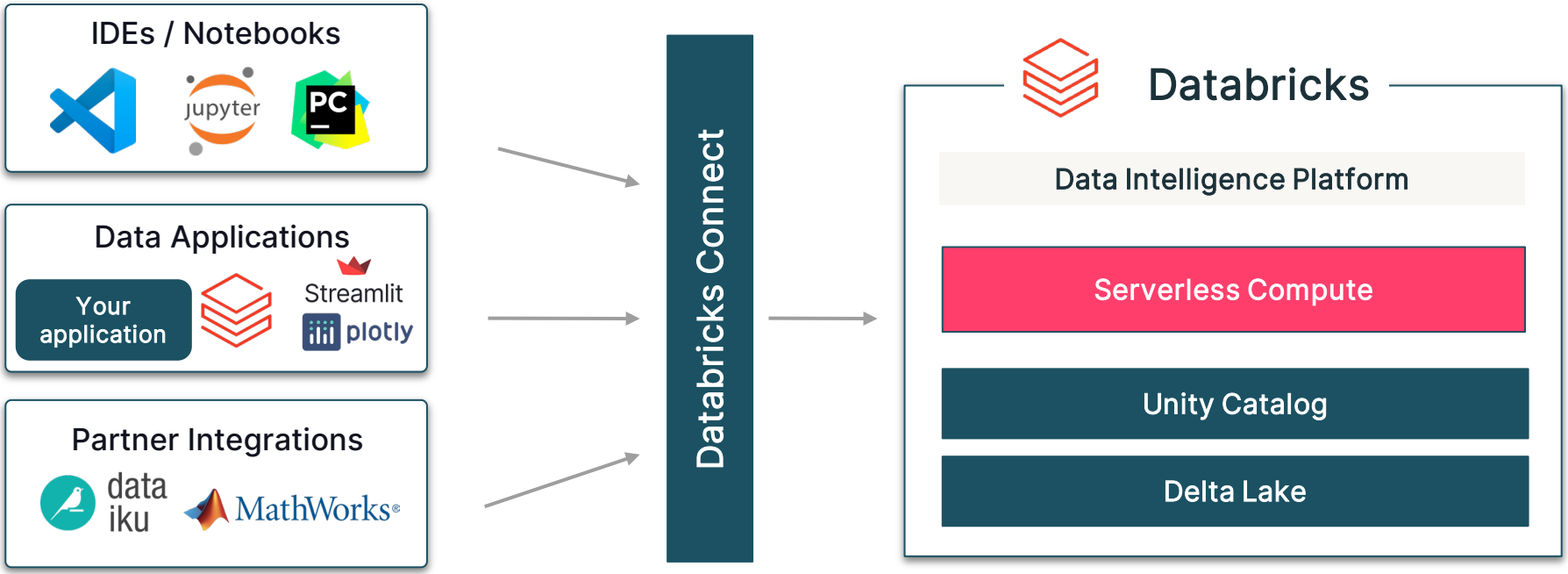
RUN ON SERVERLESS COMPUTE FROM ANYWHERE WITH DB CONNECT!

Public Preview (Soon)



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SERVERLESS DB CONNECT

- Serverless enabled in your workspace
- Use your existing code
- Use your existing profiles
- Simply use “serverless()”

Local IDE


```
from databricks.connect import DatabricksSession

spark = DatabricksSession.builder.serverless().getOrCreate()


df = spark.read.table("samples.nyctaxi.trips")
df.count()
```


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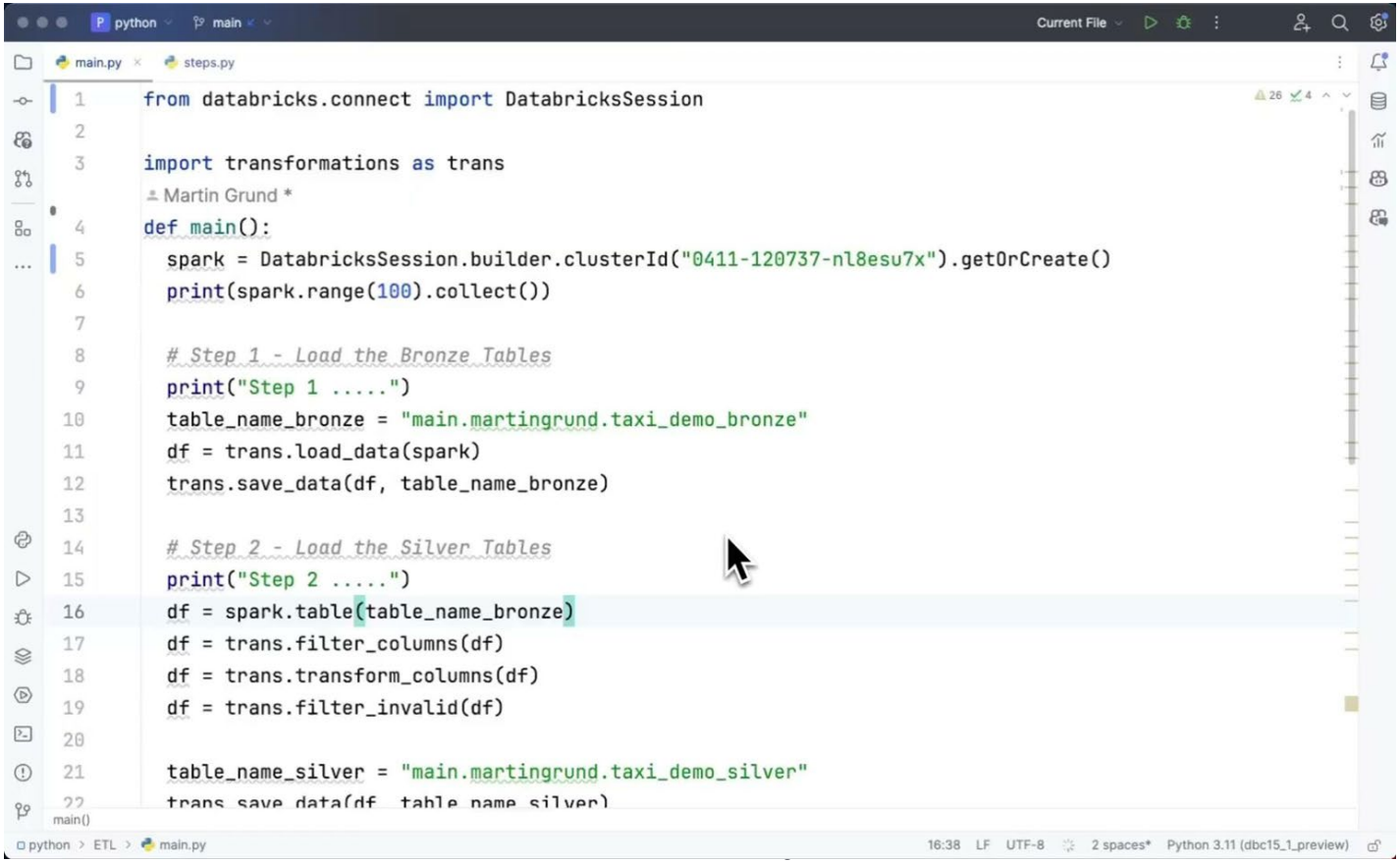
PYCHARM WITH SERVERLESS DB CONNECT



BENEFITS OF SERVERLESS DB CONNECT

Easy setup

- No need to create a cluster
- No cluster Id

Efficient everyday use

- Instant access with no idle time
- Dynamically adjust to workload and data size

Pay only for what you use

- Same cost as for

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USE DB CONNECT FROM REALLY EVERYWHERE

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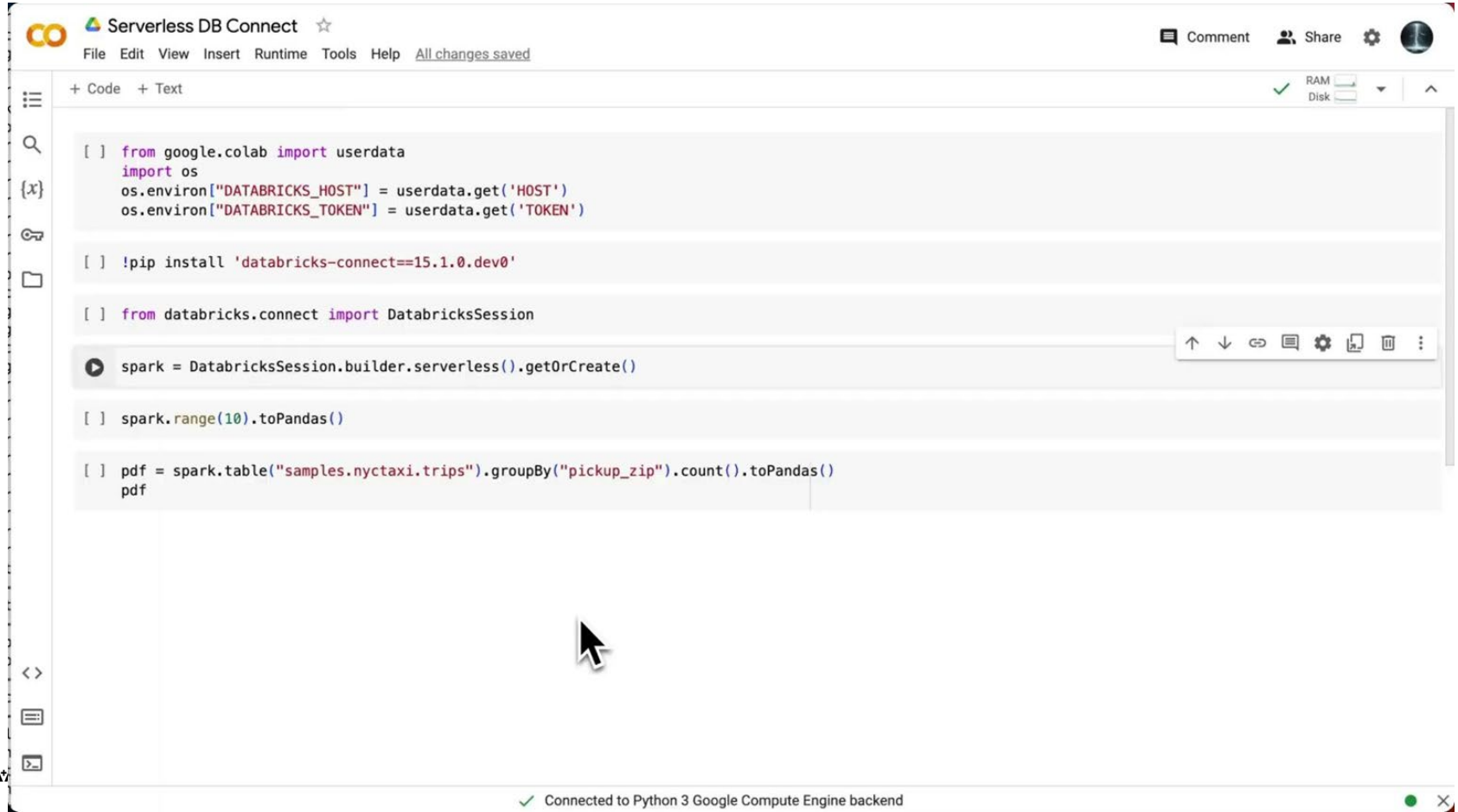
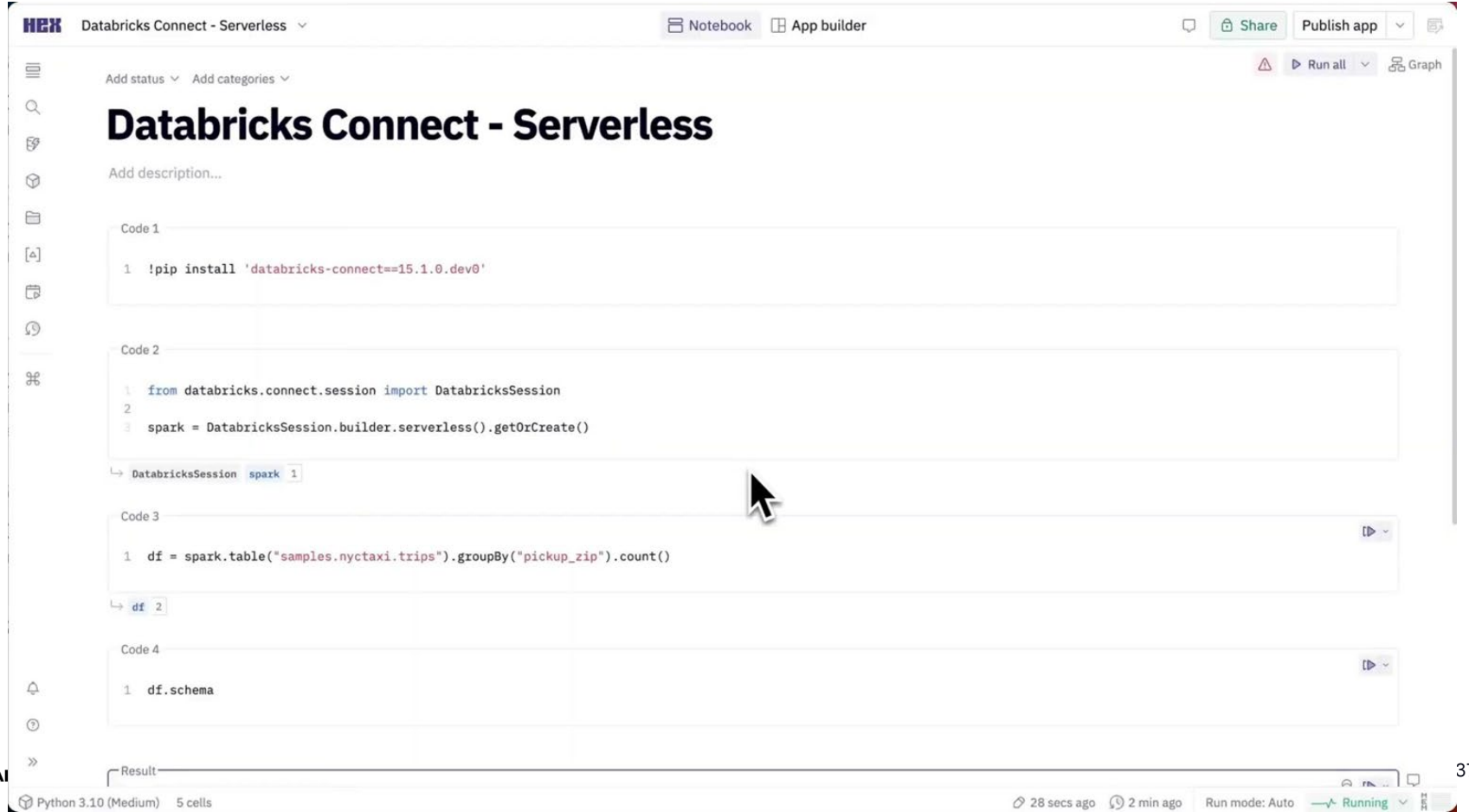
Google Collab Databricks Connect



Hex ❤ Databricks Connect



SUMMARY

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BUILD ON YOUR LAKEHOUSE FAST AND EFFICIENTLY

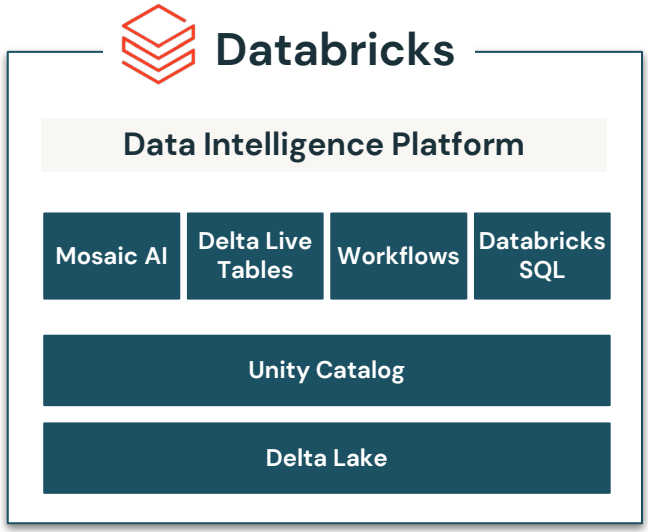
Databricks Connect + Serverless

DB Connect: Full power of Spark from anywhere

- Governance with Unity Catalog
- Authentication (OAuth, Azure AD, PAT)

Serverless: Fast and efficient

- No Cluster, No Cluster ID
- Immediate response & Scalability



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SERVERLESS DATABRICKS CONNECT

Call to Action

Try DB Connect git examples:

- Develop ETL pipeline with DB Connect
- Build your first APP with DB Connect

Sign up to Serverless DB Connect Preview -> form in QR code

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Questions?

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