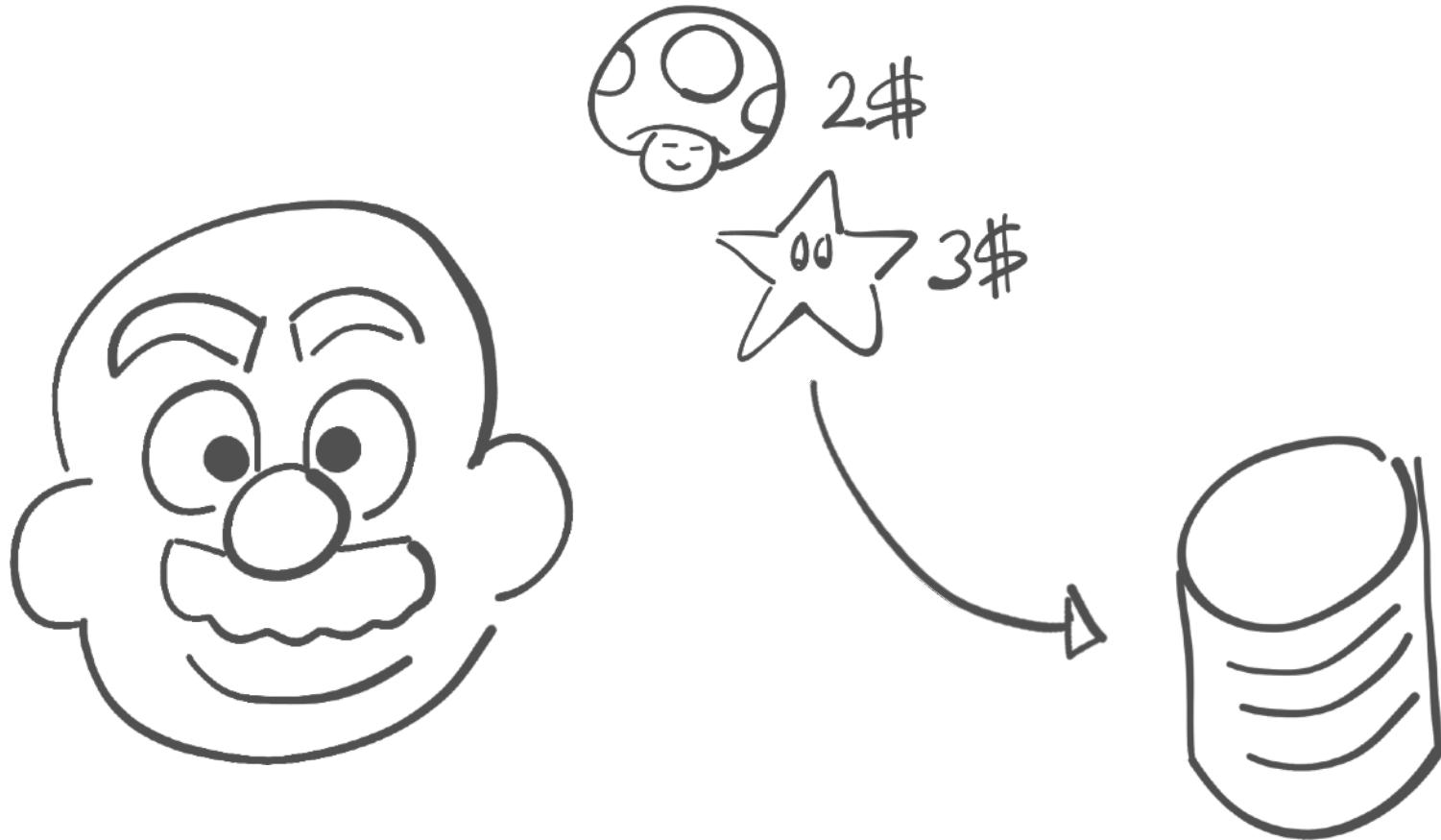
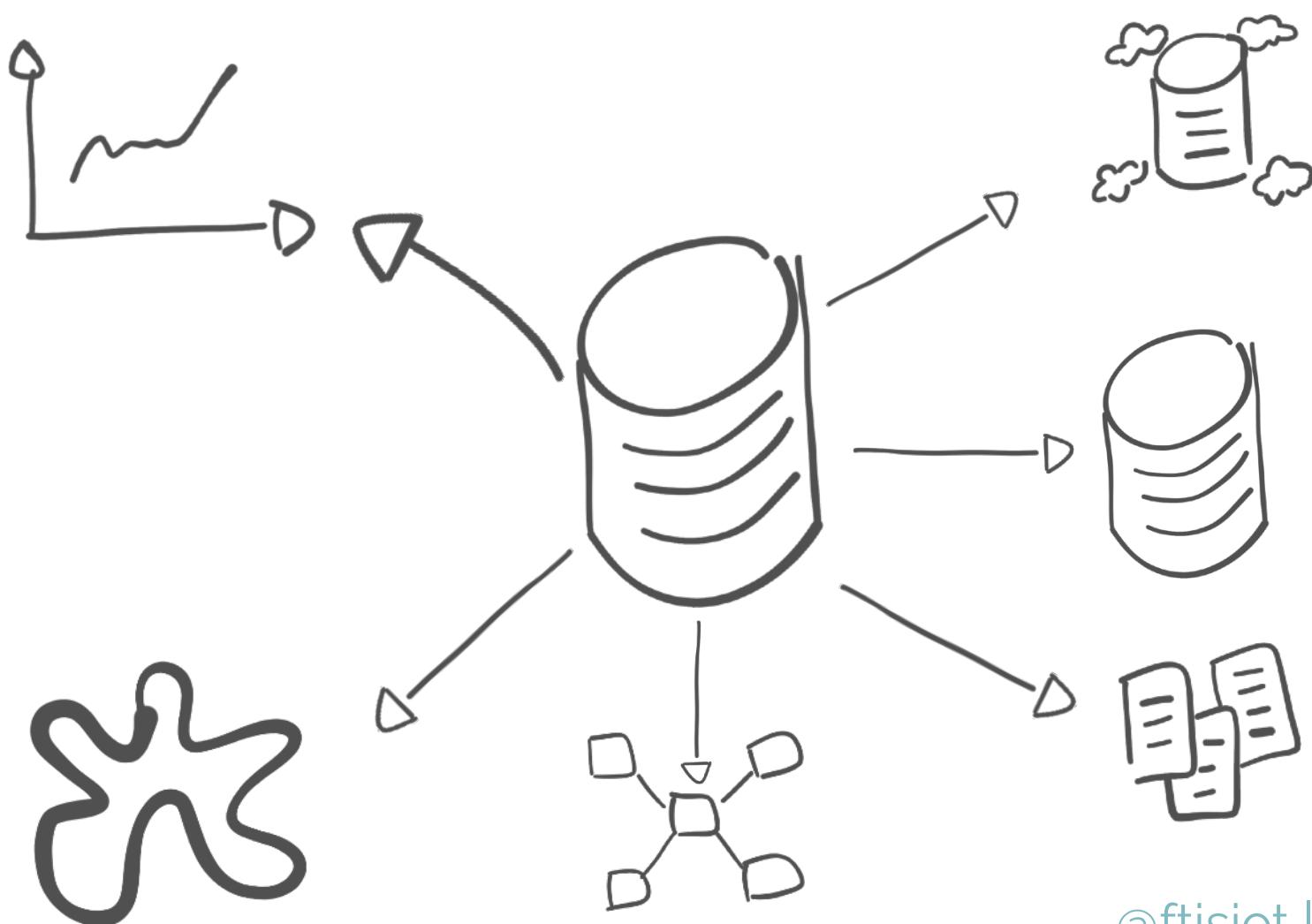


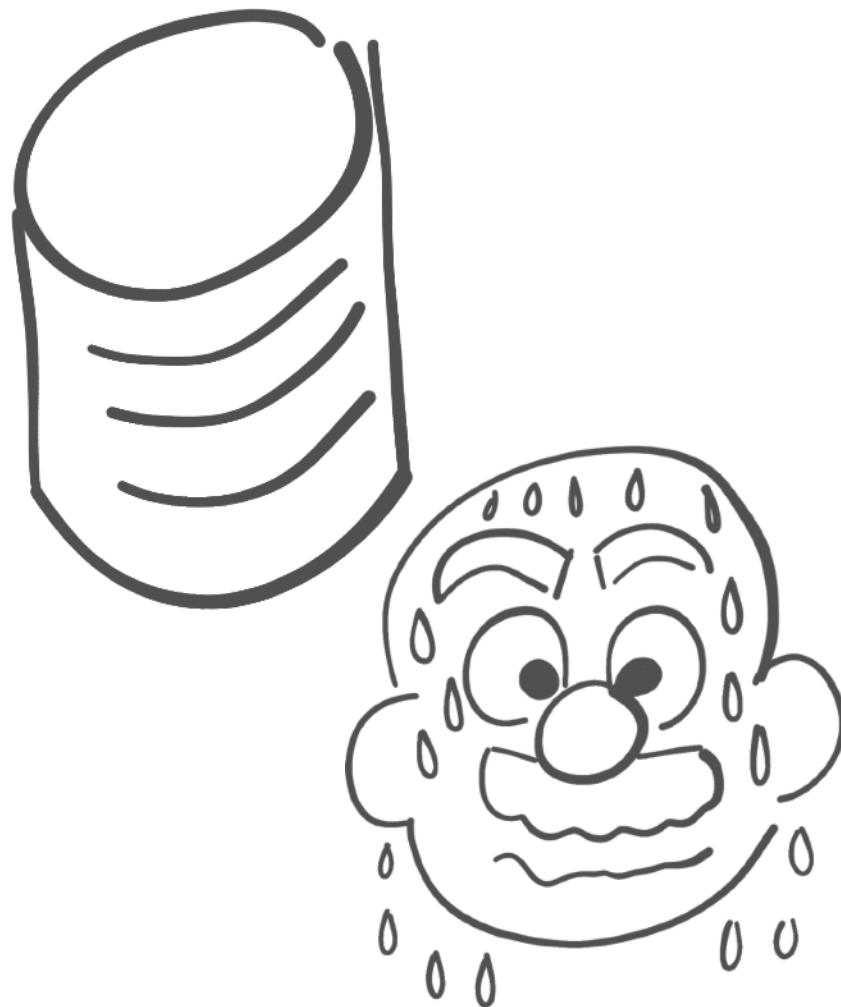
JDBC Source Connector



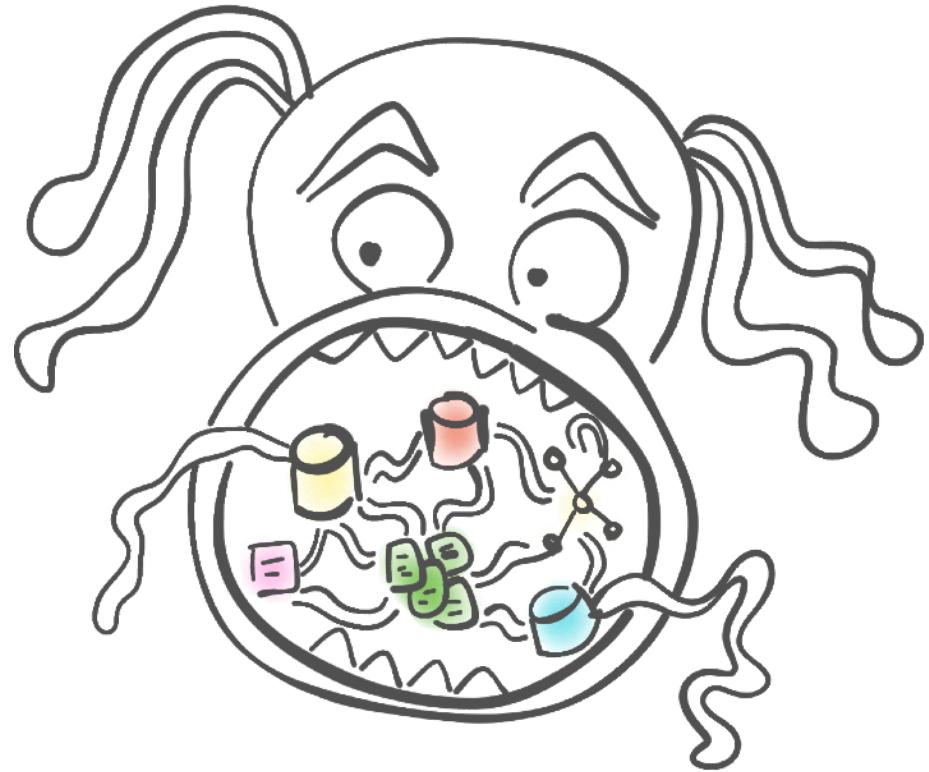
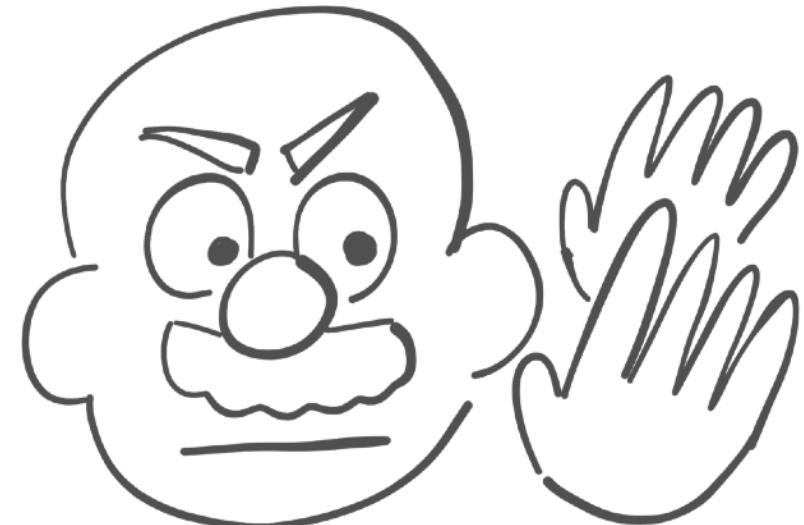
What Could Go Wrong?

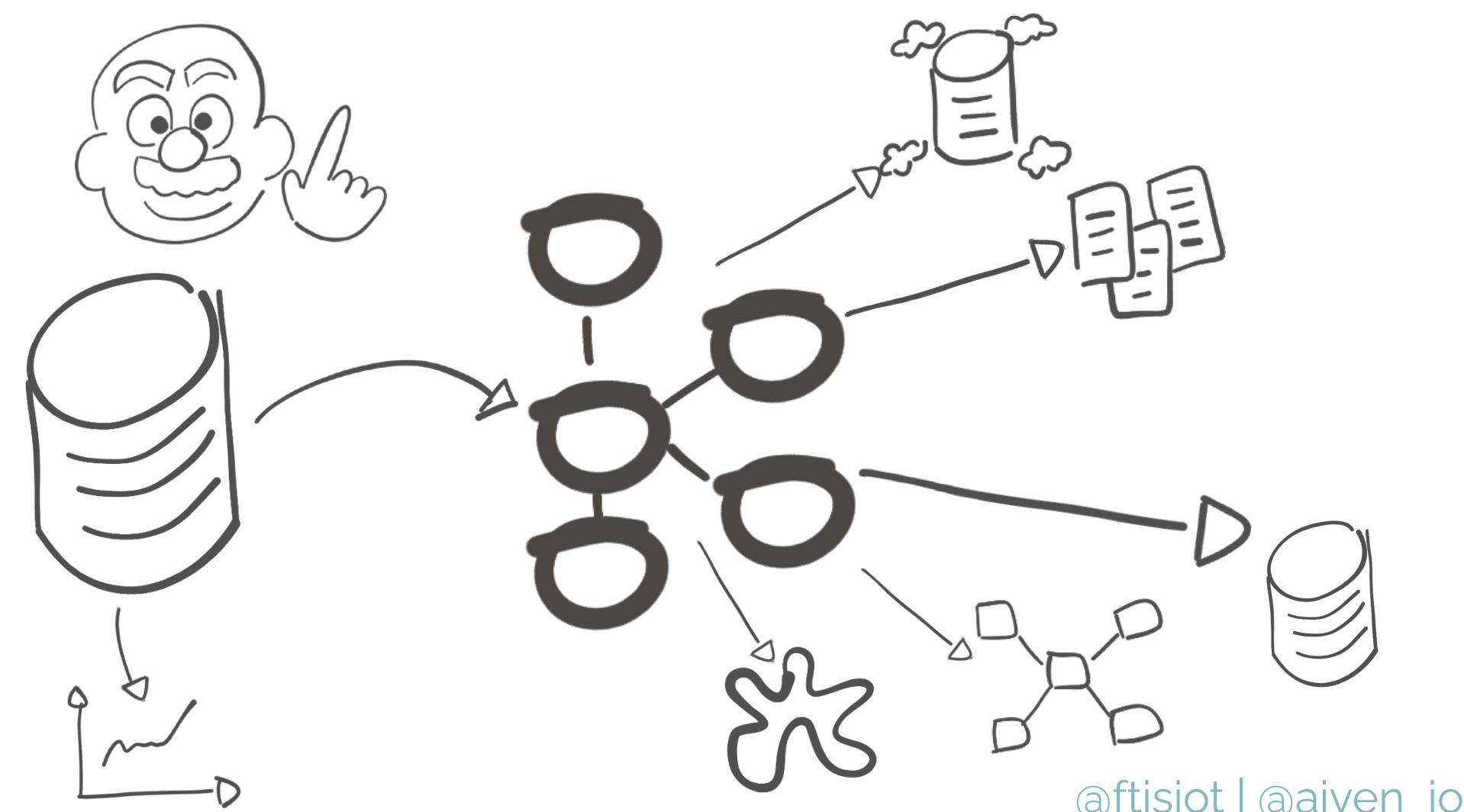




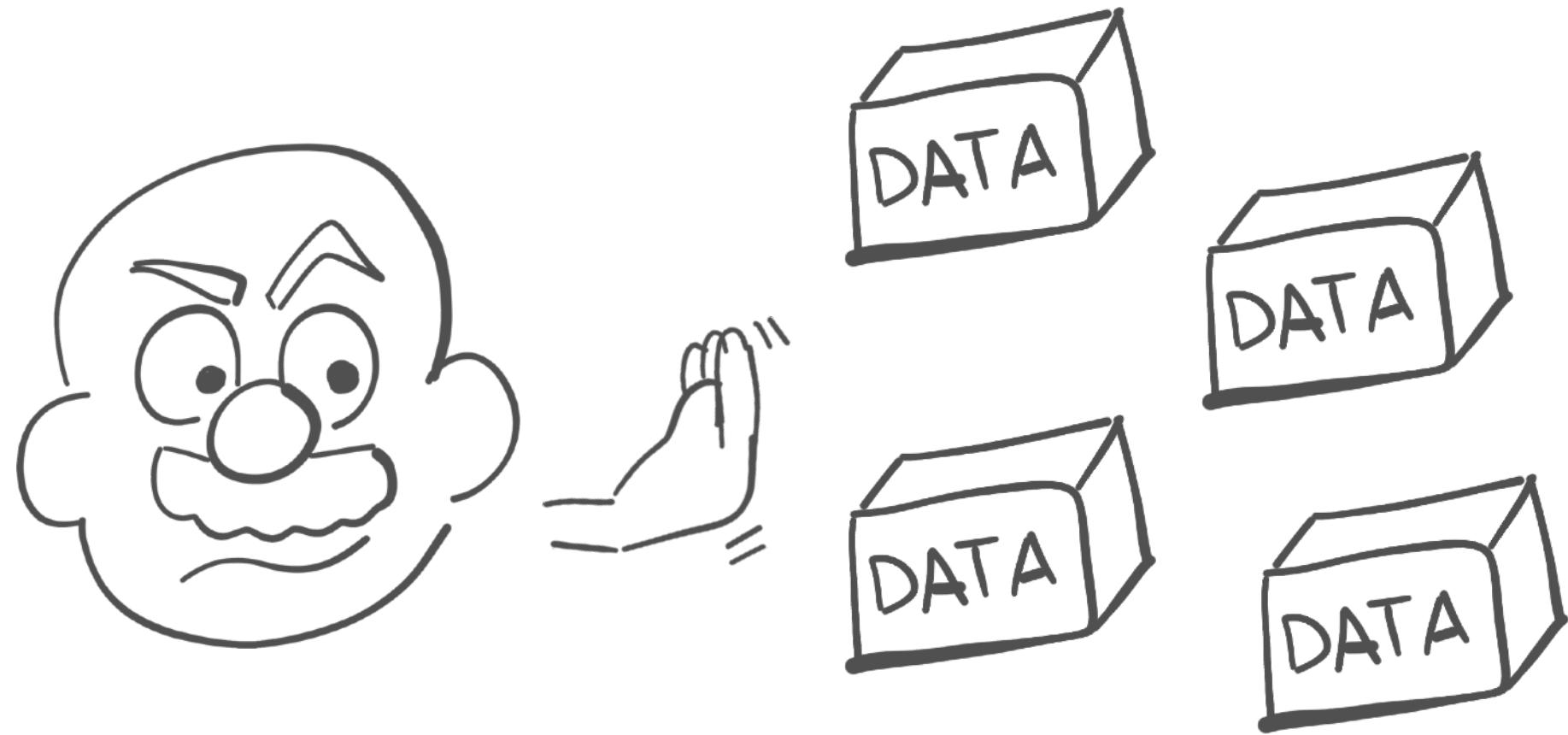


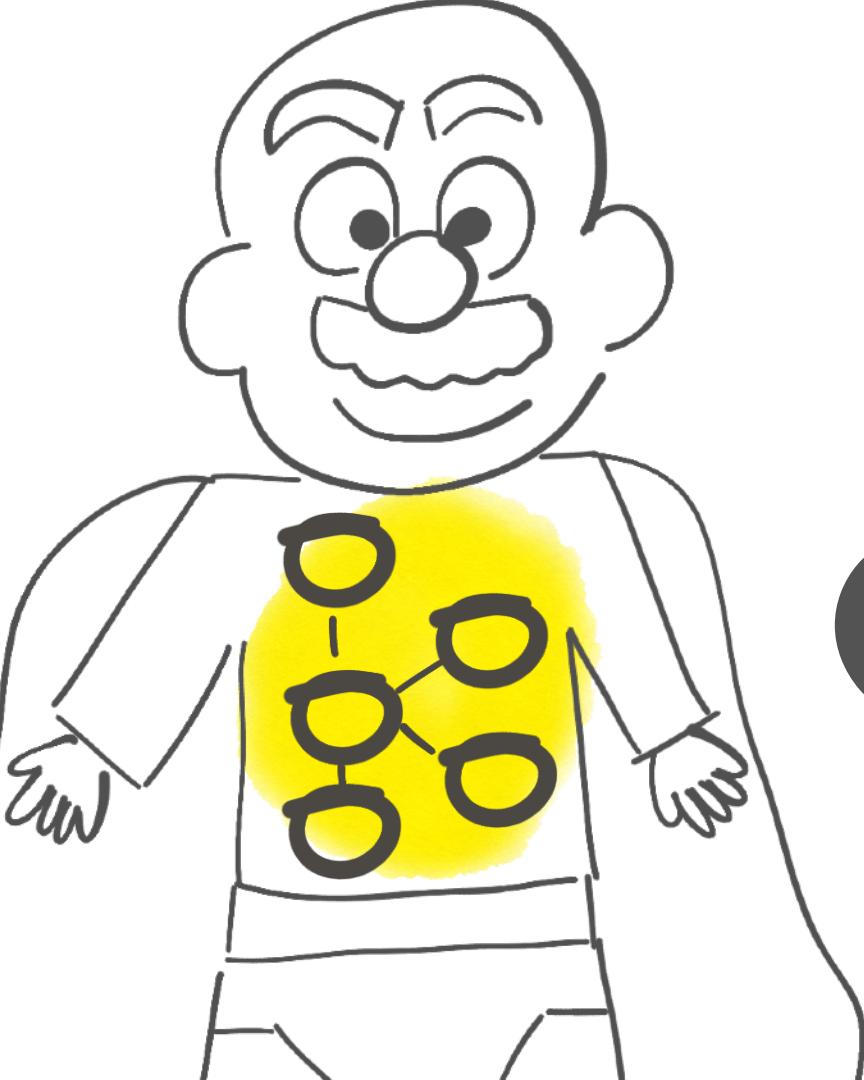
@ftisiot | @aiven_io



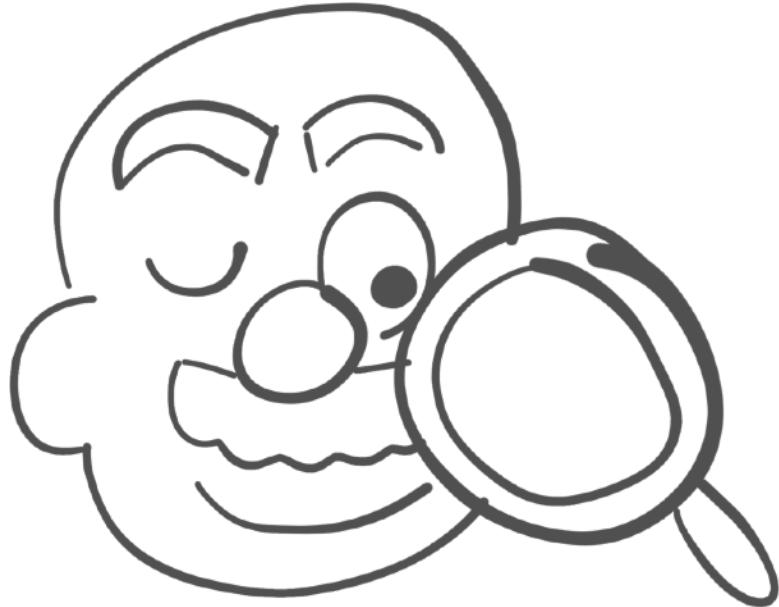


@ftisiot | @aiven_io



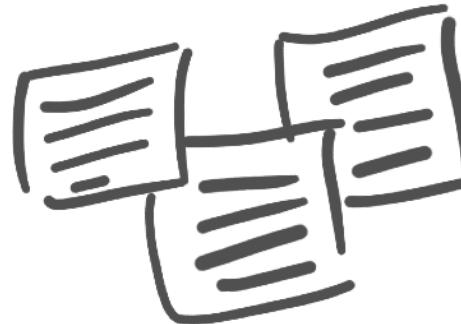


Kafka Connect



JDBC Source Connector

List of Tables

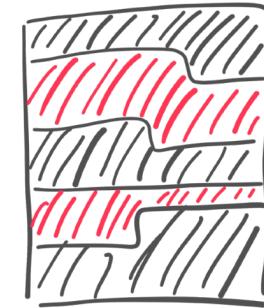
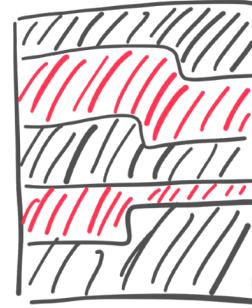
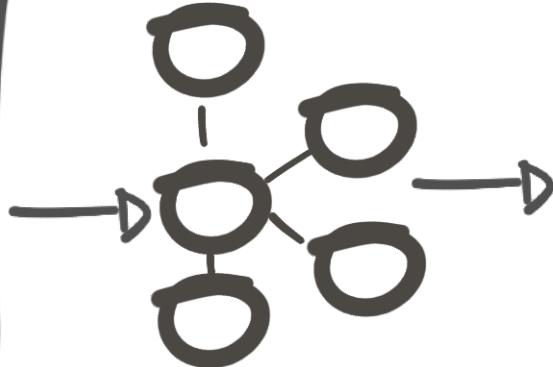
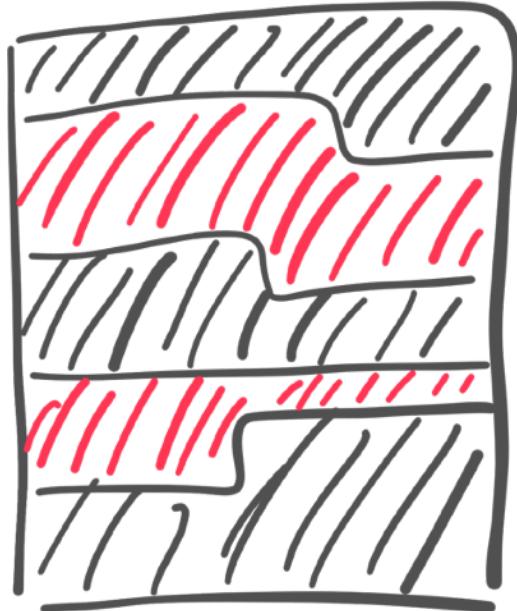


Polling Interval

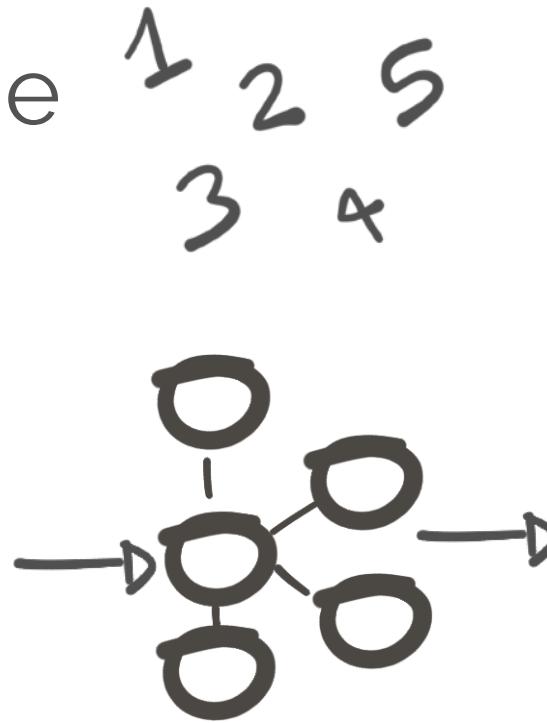
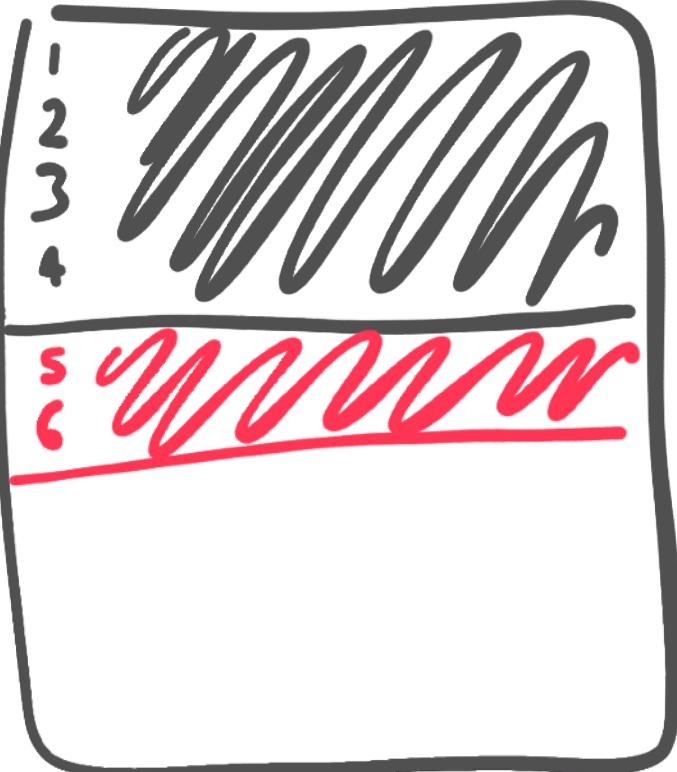


Query Mode

Bulk Mode



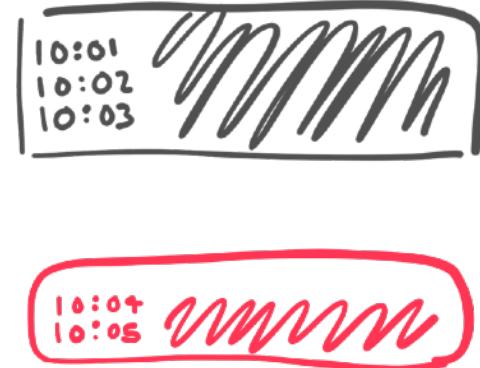
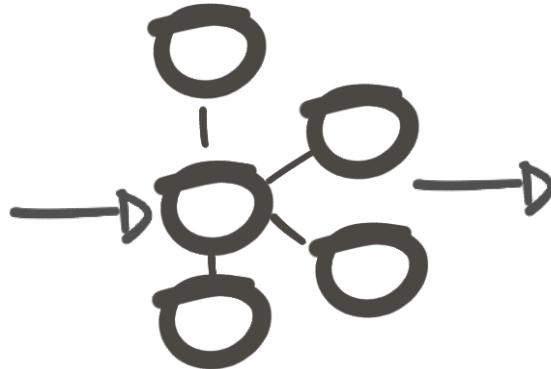
Incremental Mode



WHERE ID > 4

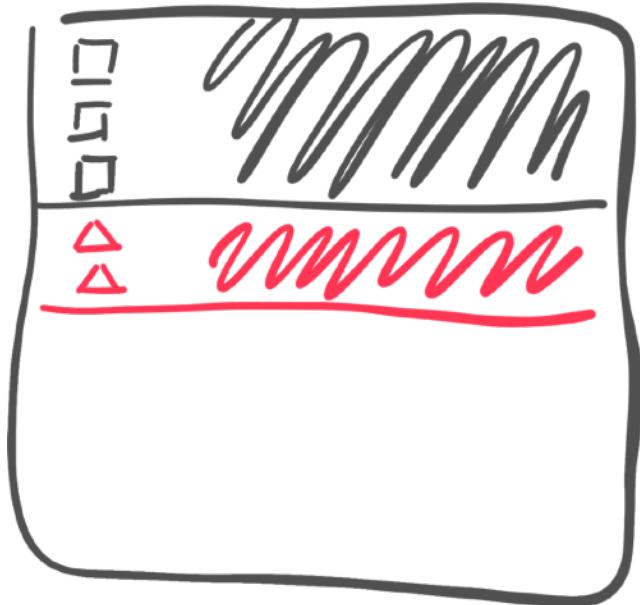
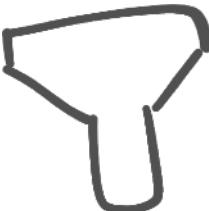


Timestamp Mode



WHERE TS > 10.05

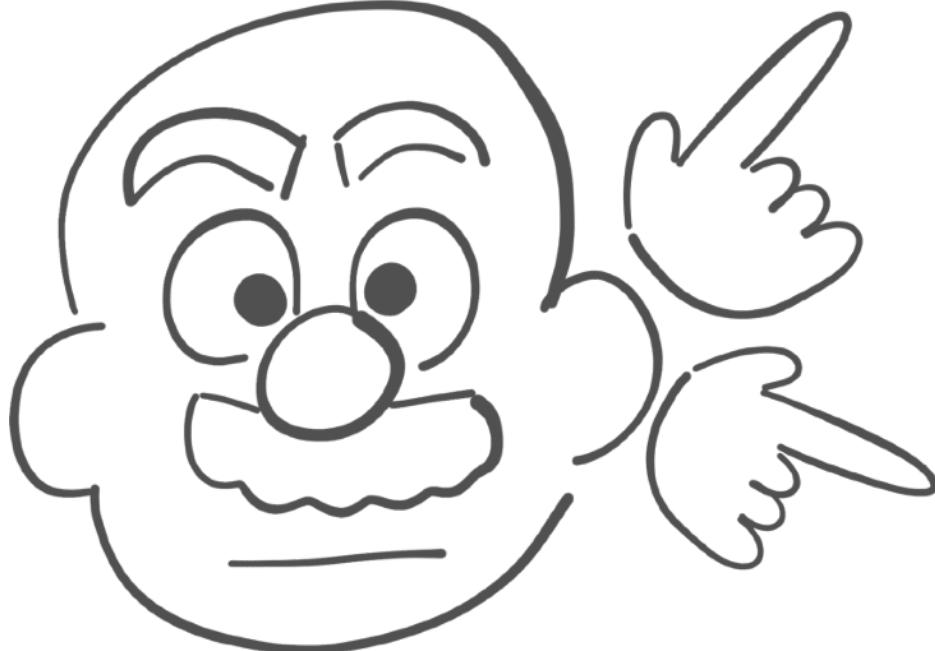
Query Mode



WHERE COL = △

Problems





Which JDBC Connector ?

<https://github.com/aiven/jdbc-connector-for-apache-kafka>

Common Challenges

Number Mapping
 numeric.mapping

Out of Memory Errors

 defaultRowFetchSize

Data Types

ERROR java.lang.IllegalArgumentException:
Number of groups must be positive

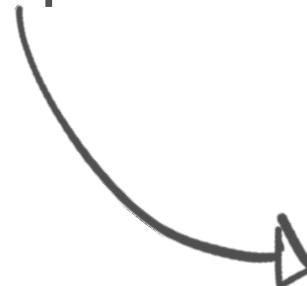
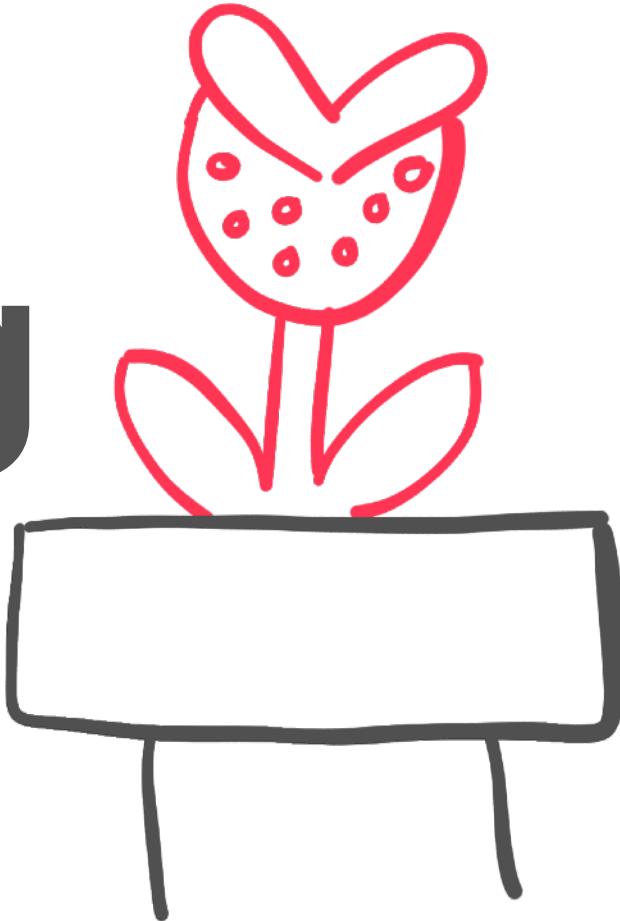
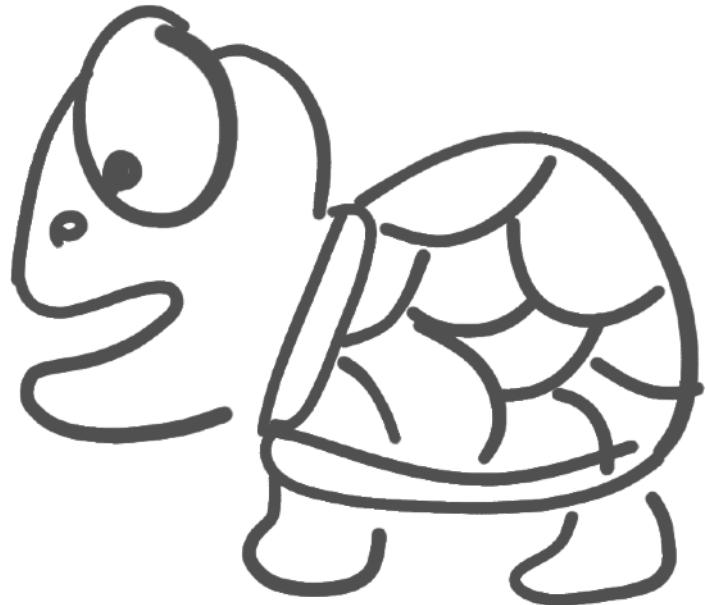


table.types

Everything
is Fine
Not



Fast Events



Polling Interval



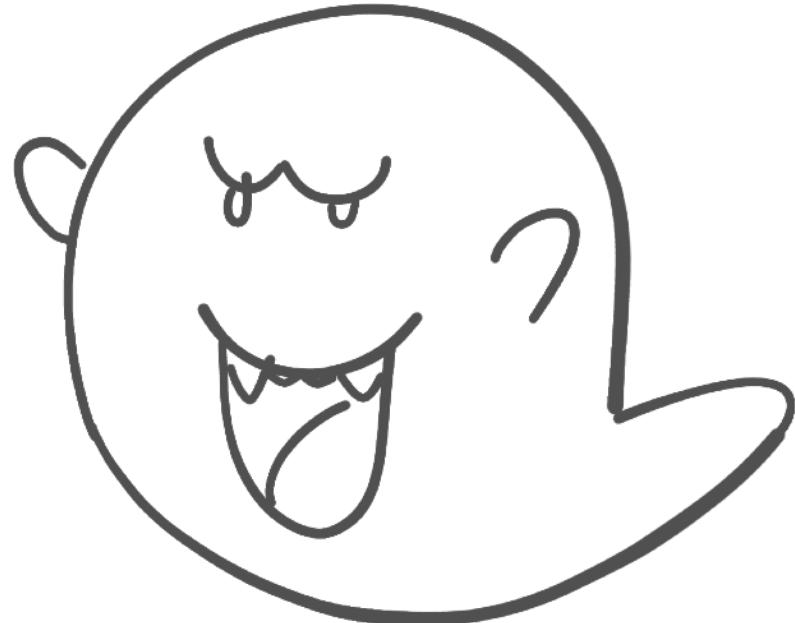
Event



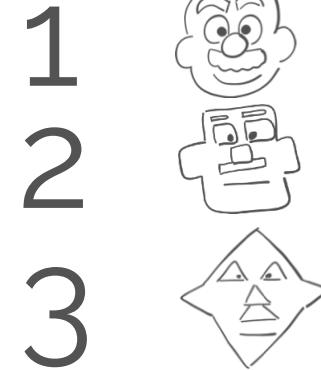
State



Ghost Events



Id	Name
1	
2	
3	



Incremental = No Updates!

Name

Change Timestamp



10:00



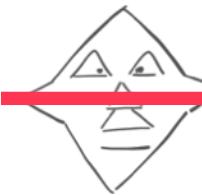
10:00



10:03



10:01



10:02



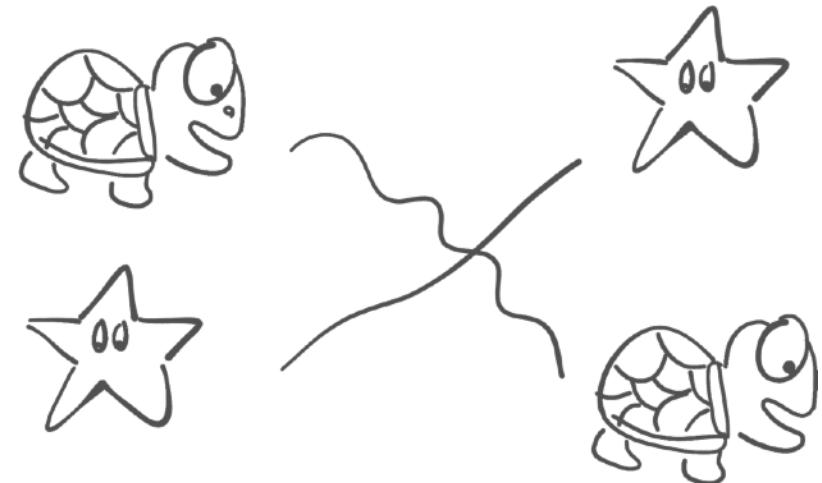
10:02



10:03

No Hard Deletes!

Out of Order Events

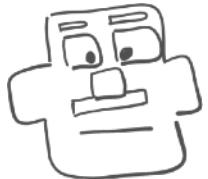


Name

Change Timestamp



10:00



10:01



10:03



10:02



10:00



10:01



10:03

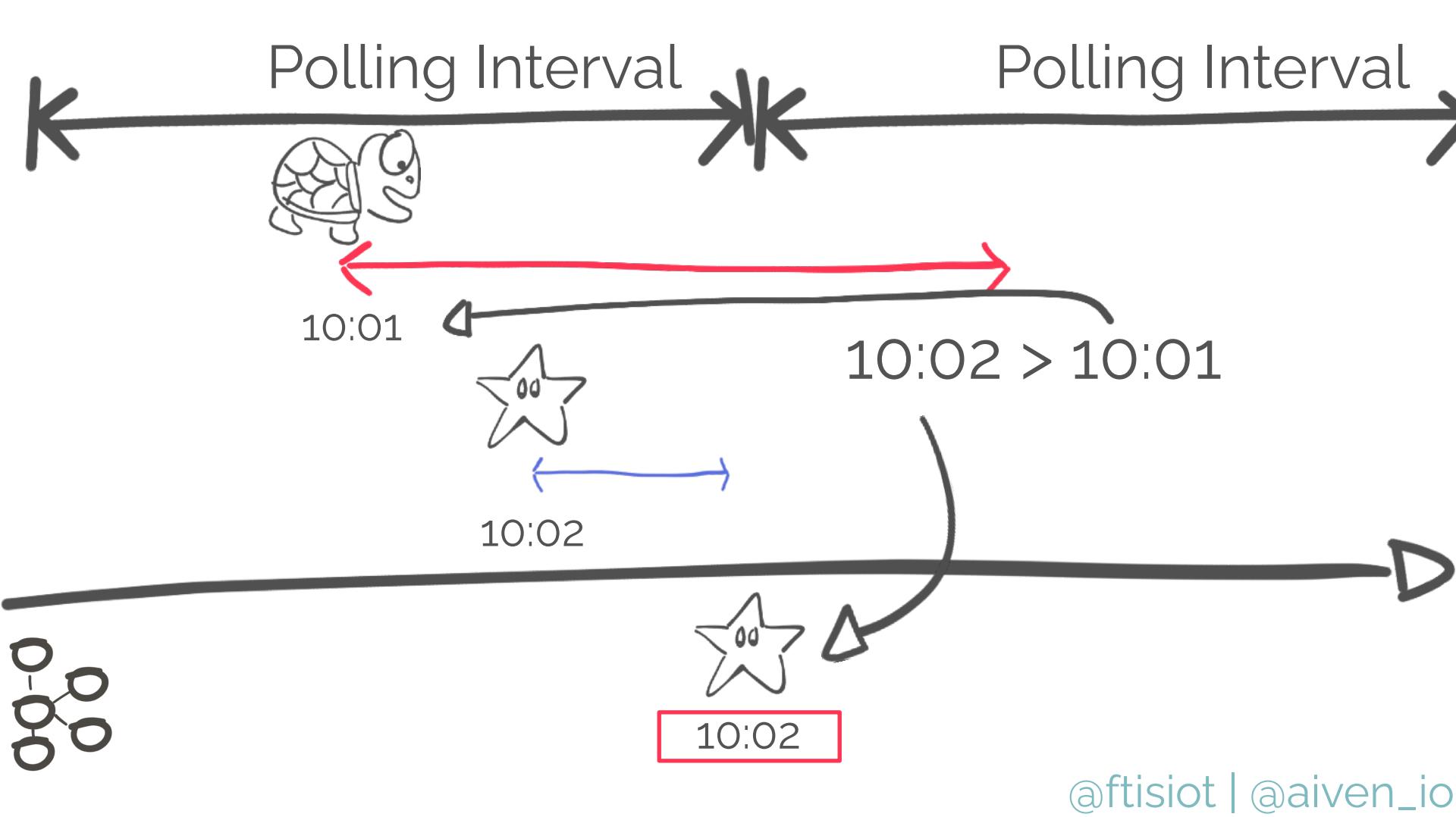
Device Clock

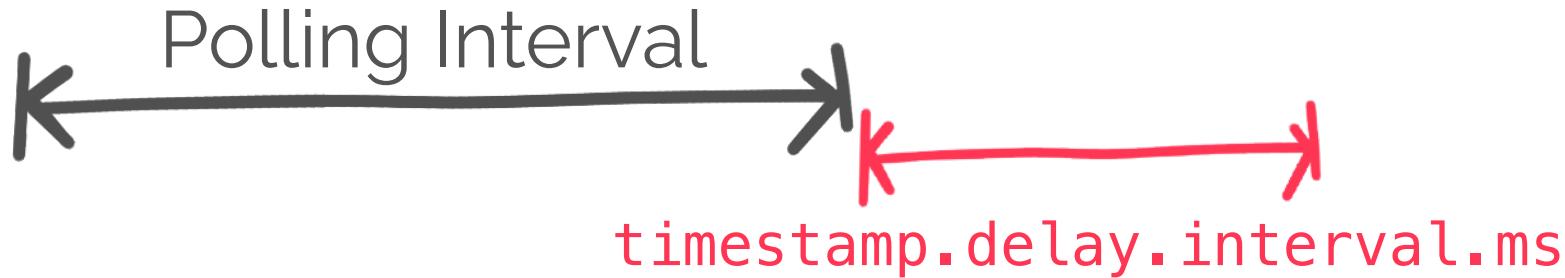
Batching

Why?

Network Lag

Transaction Duration





JDBC Limits

Load on the DB

Out of Order Events

Require Extra Fields

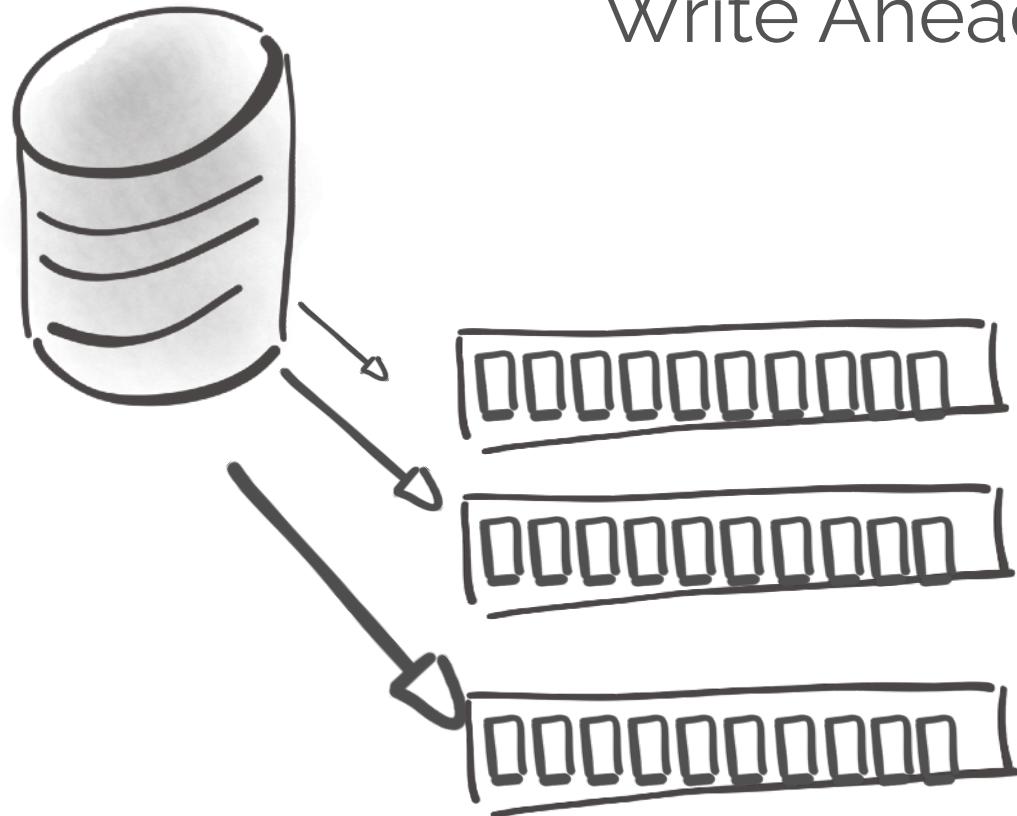
Updates/Deletions

Polling Time

A black and white line drawing of a cartoon character with a large head, a wide, toothy grin, and a single large button nose. The character has a small tuft of hair on top of its head and is wearing a simple, light-colored shirt. It is pointing its right index finger towards a horizontal rectangular object, which appears to be a piece of paper or a document. The character's eyes are wide and looking towards the object.

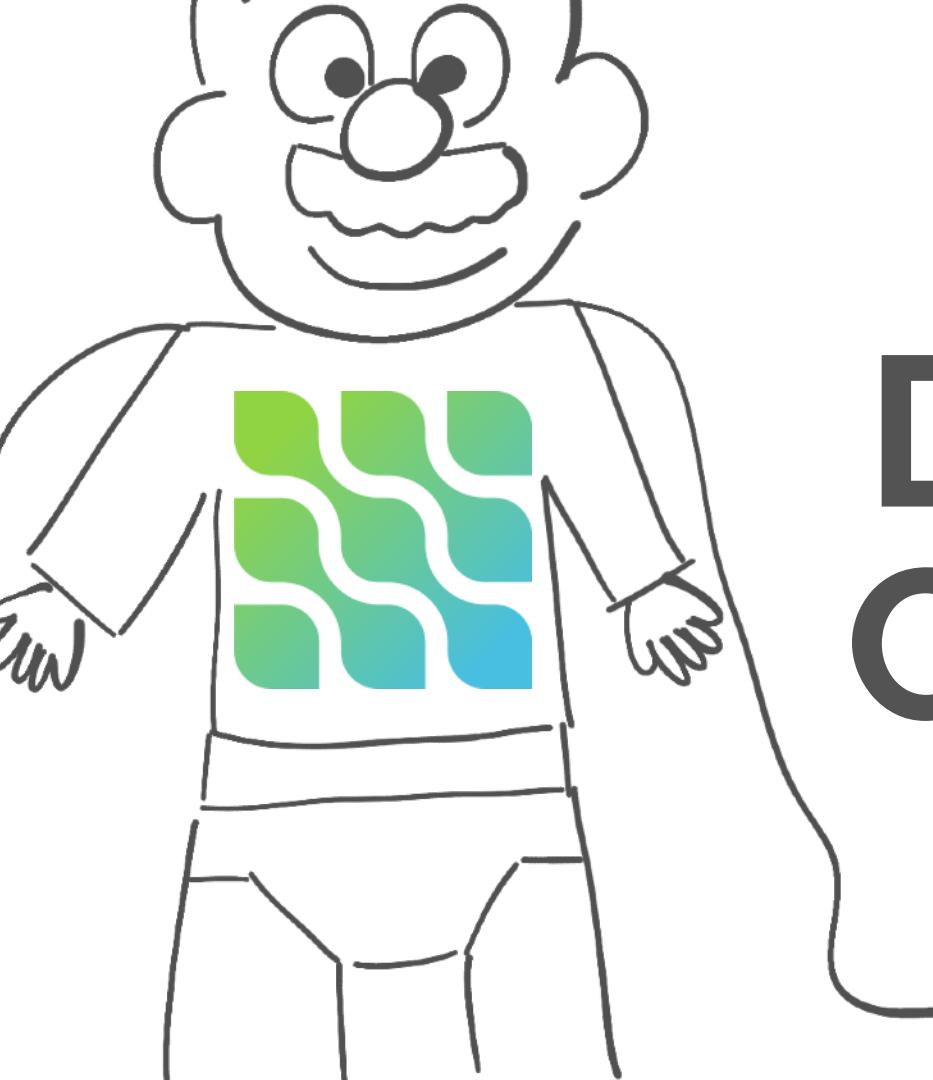
Log Based Approach

Write Ahead Log - PostgreSQL



binlog - MySQL

oplog - MongoDB



Debezium Connector



KafkaSummit2022 🎃 \$ |

SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, bits: 256, compression: off)
Type "help" for help.

```
defaultdb=> select * from players;
code |   name
-----+-----
 1 | Mario 😊
 2 | Princess 🧸
 3 | Turtle 🐢
(3 rows)

defaultdb=> insert into players values (4, 'Mushroom 🍄');
INSERT 0 1
defaultdb=> update players set name = 'Ghost 🕸' where name = 'Mushroom 🍄';
UPDATE 1
defaultdb=> delete from players where name='Ghost 🕸';
DELETE 1
defaultdb=> insert into players values (4, 'Ghost 🕸');
INSERT 0 1
defaultdb=> delete from players where name='Ghost 🕸';
DELETE 1
defaultdb=>
```

psql

kcat

```
connector": "postgresql", "name": "my_pgsource", "ts_ms": 1648798370665, "snapshot": {"string": "last"}, "db": "defaultdb", "sequence": {"string": "[null, \"84102280\"]"}, "schema": "public", "table": "players", "txId": {"long": 843}, "lsn": {"long": 84102280}, "xmin": null}, "op": "r", "ts_ms": {"long": 1648798370665}, "transaction": null}
% Reached end of topic my_pgsource.public.players [0] at offset 3
{"code": 4}
{"before": null, "after": {"Value": {"code": 4, "name": {"string": "Mushroom 🍄"}}, "source": {"version": "1.7.0.Final", "connector": "postgresql", "name": "my_pgsource", "ts_ms": 1648798390595, "snapshot": {"string": "false"}, "db": "defaultdb", "sequence": {"string": "[null, \"84102952\"]"}, "schema": "public", "table": "players", "txId": {"long": 856}, "lsn": {"long": 84102952}, "xmin": null}, "op": "c", "ts_ms": {"long": 1648798390879}, "transaction": null}
% Reached end of topic my_pgsource.public.players [0] at offset 4
{"code": 4}
{"before": {"Value": {"code": 4, "name": {"string": "Mushroom 🍄"}}, "after": {"Value": {"code": 4, "name": {"string": "Ghost 🕸"}}, "source": {"version": "1.7.0.Final", "connector": "postgresql", "name": "my_pgsource", "ts_ms": 1648798397130, "snapshot": {"string": "false"}, "db": "defaultdb", "sequence": {"string": "[\"84102952\", \"84103336\"]"}, "schema": "public", "table": "players", "txId": {"long": 861}, "lsn": {"long": 84103336}, "xmin": null}, "op": "u", "ts_ms": {"long": 1648798397479}, "transaction": null}
% Reached end of topic my_pgsource.public.players [0] at offset 5
{"code": 4}
{"before": {"Value": {"code": 4, "name": {"string": "Ghost 🕸"}}, "after": null, "source": {"version": "1.7.0.Final", "connector": "postgresql", "name": "my_pgsource", "ts_ms": 1648798405381, "snapshot": {"string": "false"}, "db": "defaultdb", "sequence": {"string": "[\"84103336\", \"84103792\"]"}, "schema": "public", "table": "players", "txId": {"long": 867}, "lsn": {"long": 84103792}, "xmin": null}, "op": "d", "ts_ms": {"long": 1648798405592}, "transaction": null}
% Reached end of topic my_pgsource.public.players [0] at offset 7
{"code": 4}
{"before": null, "after": {"Value": {"code": 4, "name": {"string": "Ghost 🕸"}}, "source": {"version": "1.7.0.Final", "connector": "postgresql", "name": "my_pgsource", "ts_ms": 1648798415613, "snapshot": {"string": "false"}, "db": "defaultdb", "sequence": {"string": "[\"84103792\", \"84104208\"]"}, "schema": "public", "table": "players", "txId": {"long": 874}, "lsn": {"long": 84104208}, "xmin": null}, "op": "c", "ts_ms": {"long": 1648798416232}, "transaction": null}
{"code": 4}
{"before": {"Value": {"code": 4, "name": {"string": "Ghost 🕸"}}, "after": null, "source": {"version": "1.7.0.Final", "connector": "postgresql", "name": "my_pgsource", "ts_ms": 1648798415639, "snapshot": {"string": "false"}, "db": "defaultdb", "sequence": {"string": "[\"84104208\", \"84104392\"]"}, "schema": "public", "table": "players", "txId": {"long": 875}, "lsn": {"long": 84104392}, "xmin": null}, "op": "d", "ts_ms": {"long": 1648798416233}, "transaction": null}
% Reached end of topic my_pgsource.public.players [0] at offset 10
```

JDBC Limits

Minimal Load

~~Load on the DB~~

Tracked as per Log
~~Out of Order Events~~

No Extra Fields

~~Require Extra Fields~~

All Events

~~Updates/Deletions~~

Near Real Time

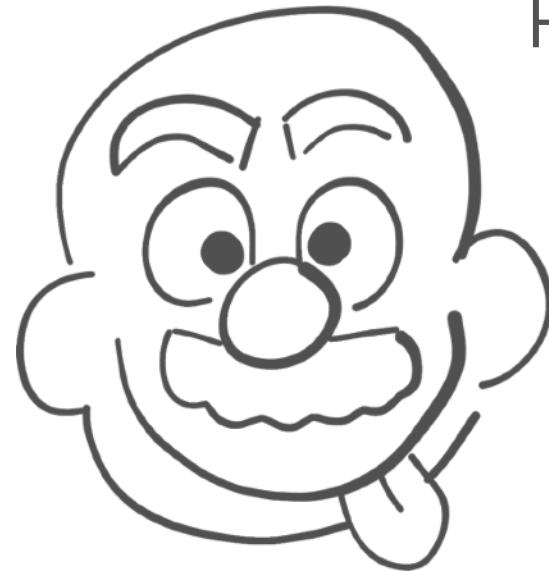
~~Polling Time~~

Additional Benefit

Enhanced
Metadata!

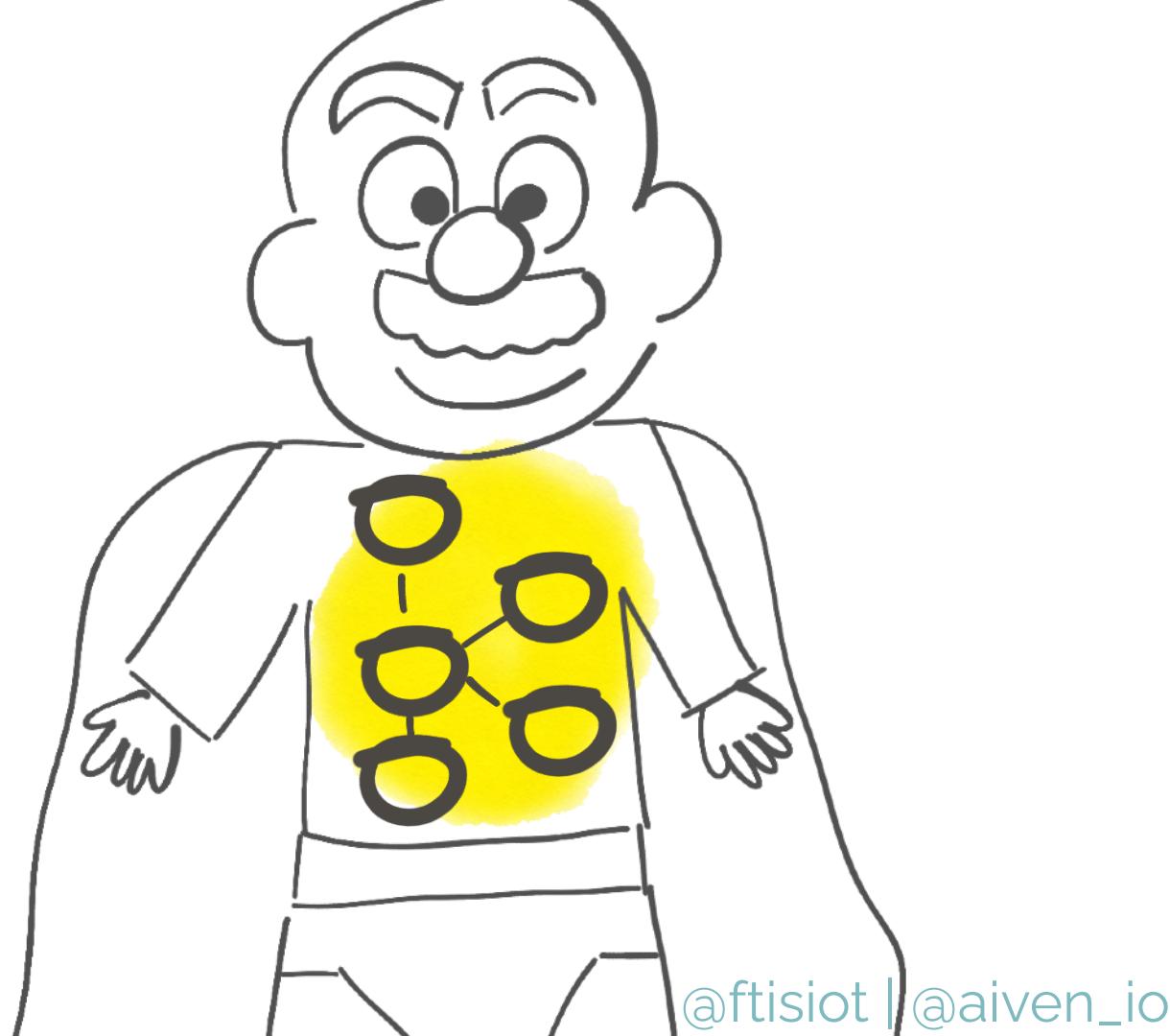
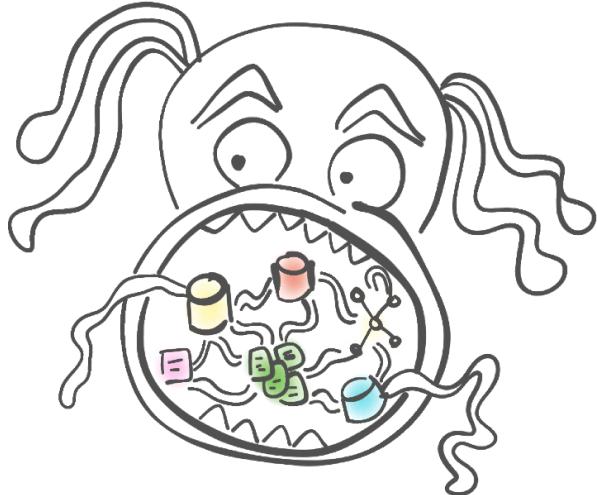
Timestamps

Pre-Post status



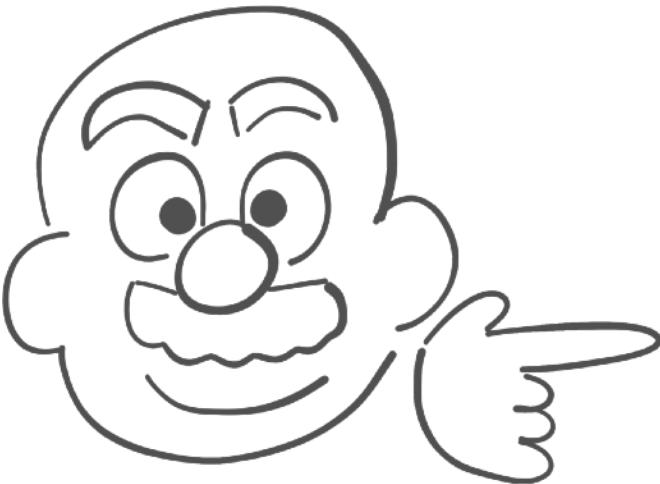
Operation Type

Sequence Number





JDBC



Debezium

<https://ftisiot.net/talks/kafka-jdbc-what-can-go-wrong/>



JDBC Connector



Debezium Connector



JDBC Source Connector in Action



Debezium Connector in Action



<https://aiven.io>



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