DS 4300

Redis + Python

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Redis-py

- Redis-py is the standard client for Python.
- Maintained by the Redis Company itself
- GitHub Repo: redis/redis-py
- In your 4300 Conda Environment:

```
pip install redis
```

Connecting to the Server

```
import redis
redis_client = redis.Redis(host='localhost',
                           port=6379,
                           db=2,
                           decode_responses=True)
```

- For your Docker deployment, host could be *localhost* or *127.0.0.1*
- Port is the port mapping given when you created the container (probably the default 6379)
- db is the database 0-15 you want to connect to
- decode_responses → data comes back from server as bytes. Setting this true converter them (decodes) to strings.

Redis Command List

- Full List > here <
- Use Filter to get to command for the particular data structure you're targeting (list, hash, set, etc.)
- Redis.py Documentation > here <
- The next slides are not meant to be an exhaustive list of commands, only some highlights. Check the documentation for a complete list.

String Commands

```
# r represents the Redis client object
r.set('clickCount:/abc', 0)
val = r.get('clickCount:/abc')
r.incr('clickCount:/abc')
ret_val = r.get('clickCount:/abc')
print(f'click count = {ret_val}')
```

String Commands - 2

```
# r represents the Redis client object
redis_client.mset({'key1': 'val1',
                   'key2': 'val2',
                   'key3': 'val3'})
print(redis_client.mget('key1',
                        'key2',
                        'key3'))
# returns as list [‘val1’, ‘val2’, ‘val3’]
```

String Commands - 3

- set(), mset(), setex(), msetnx(), setnx()
- get(), mget(), getex(), getdel()
- incr(), decr(), incrby(), derby()
- strlen(), append()

List Commands - 1

```
# create list: key = ‘names’
# values = [‘mark’, ‘sam’, ‘nick’]
redis_client.rpush('names',
                   'mark', 'sam', 'nick')

# prints [‘mark’, ‘sam’, ‘nick’]
print(redis_client.lrange('names', 0, -1))
```

List Commands - 2

- lpush(), lpop(), lset(), lrem()
- rpush(), rpop()
- lrange(), llen(), lpos()
- Other commands include moving elements between lists, popping from multiple lists at the same time, etc.

Hash Commands - 1

```
redis_client.hset('user-session:123',
     mapping={'first': 'Sam',
              'last': 'Uelle',
              'company': 'Redis',
              'age': 30
})

# prints:
#{'name': 'Sam', 'surname': 'Uelle', 'company': 'Redis', 'age': '30'}
print(redis_client.hgetall('user-session:123'))
```

Hash Commands - 2

- `hset()`, `hget()`, `hgetall()`
- `hkeys()`
- `hdel()`, `hexists()`, `hlen()`, `hstrlen()`

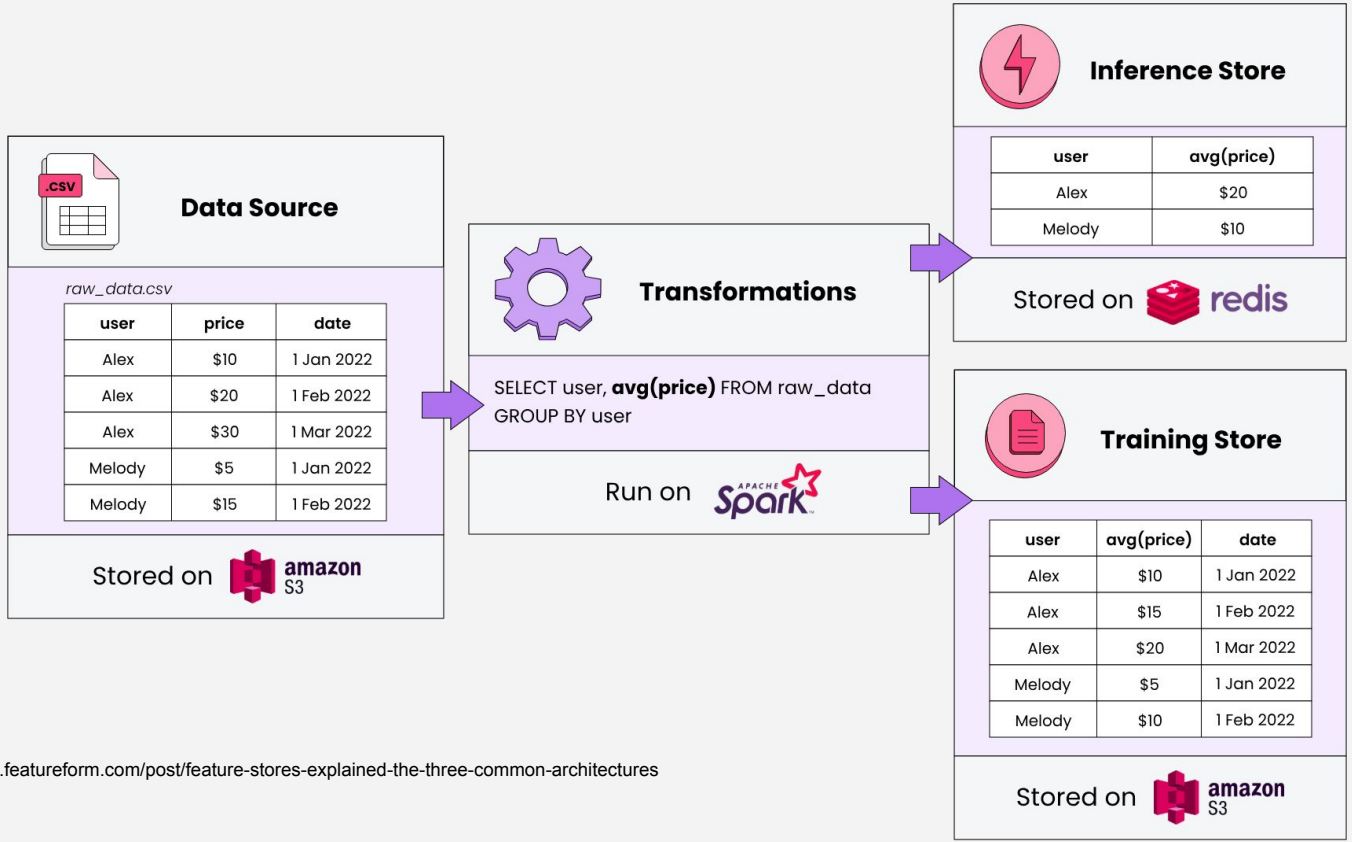
Redis Pipelines

- Helps avoid multiple related calls to the server → less network overhead

```
r = redis.Redis(decode_responses=True)
pipe = r.pipeline()

for i in range(5):
   pipe.set(f"seat:{i}", f"#{i}")

set_5_result = pipe.execute()
print(set_5_result)  # >>> [True, True, True, True, True]

pipe = r.pipeline()

# "Chain" pipeline commands together.
get_3_result = pipe.get("seat:0").get("seat:3").get("seat:4").execute()
print(get_3_result)  # >>> ['#0', '#3', '#4']
```

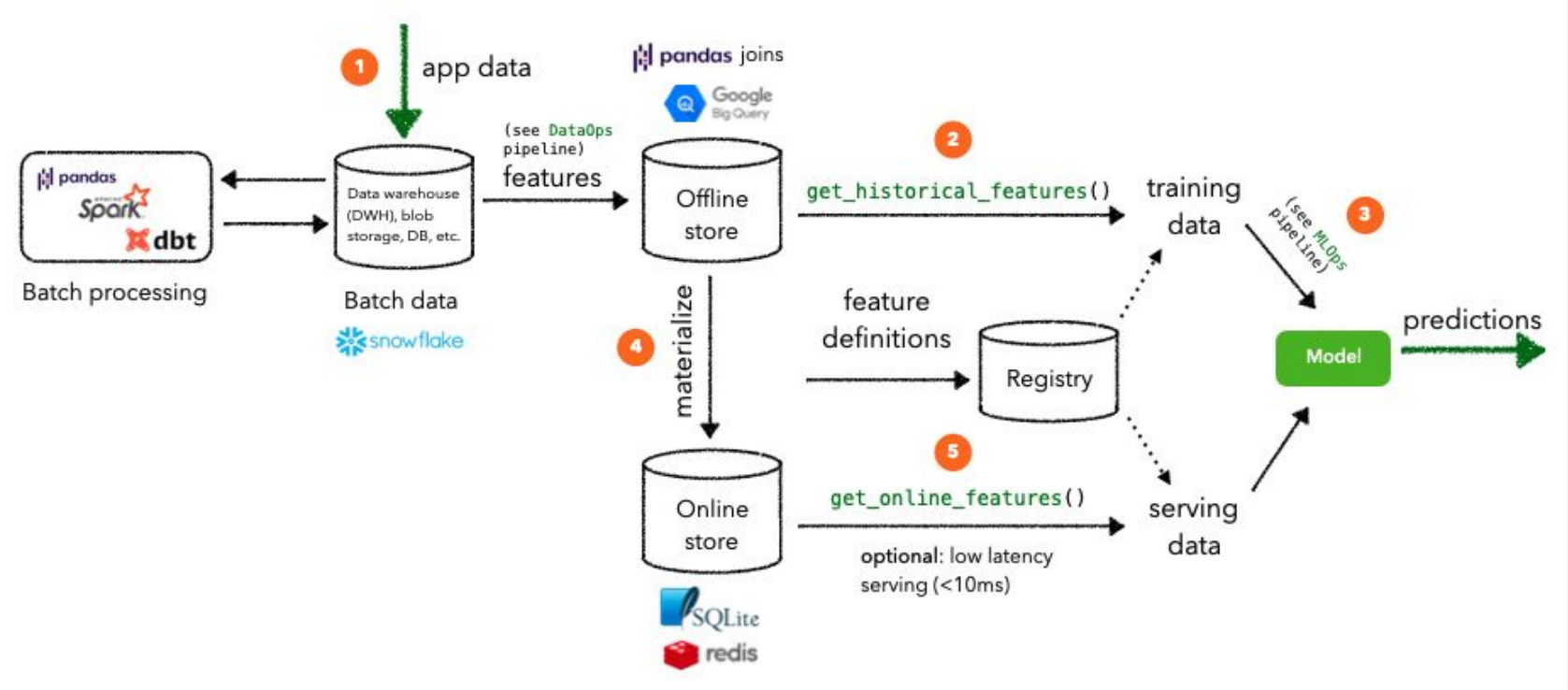
Redis in Context

Redis in ML - Simplified Example



Source: https://www.featureform.com/post/feature-stores-explained-the-three-common-architectures

Redis in DS/ML



Source: https://madewithml.com/courses/mlops/feature-store/