PROCESSAMENTO DE STREAMS

COMPLEX EVENT PROCESSING

FACULDADE DE CIÊNCIAS E TECNOLOGIA DA UNIVERSIDADE NOVA DE LISBOA

DEPARTAMENTO DE INFORMÁTICA

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INTRODUÇÃO

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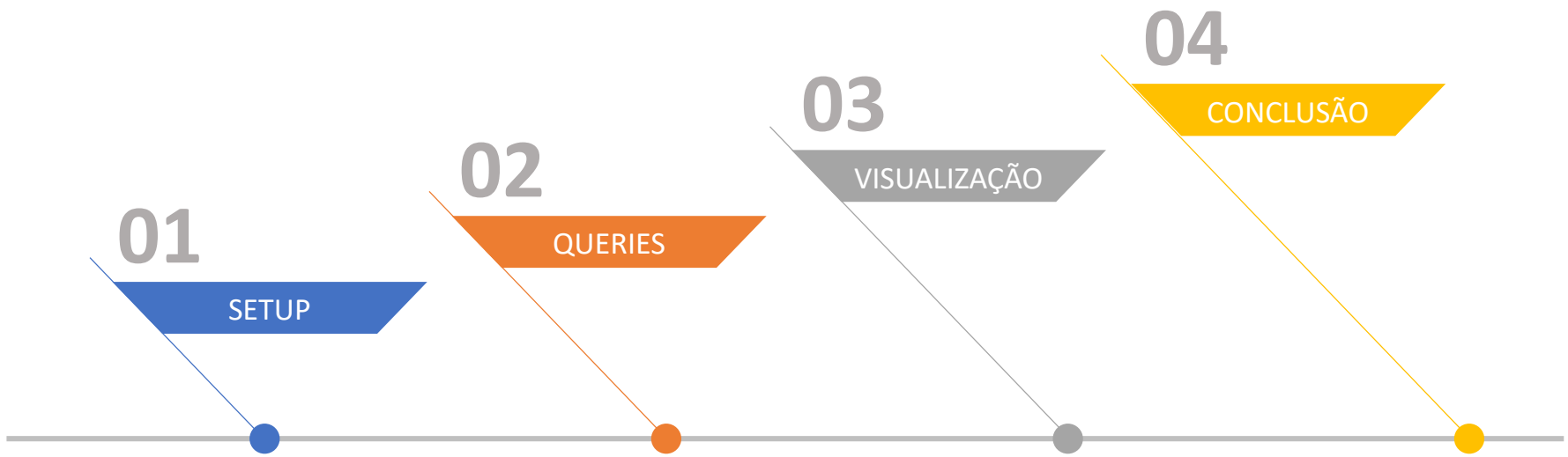

SETUP

Ilustração do setup aplicado.

QUERIES

Implementação das *queries* do *DEBS 2015 Challenge;*
Implementação de mais 3 queries adicionais descritas no enunciado do projecto.

VISUALIZAÇÃO

Visualização da *query Profitable Areas* através de um jupyter notebook com o uso da biblioteca gmaps para python.

CONCLUSÃO

Algumas considerações finais sobre as tecnologias utilizadas no decorrer do projecto.

SETUP

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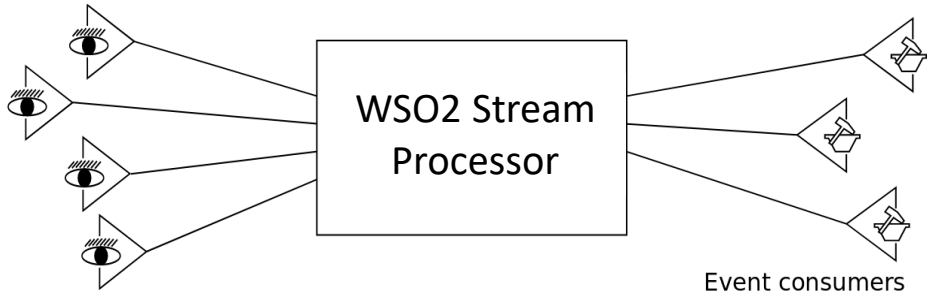
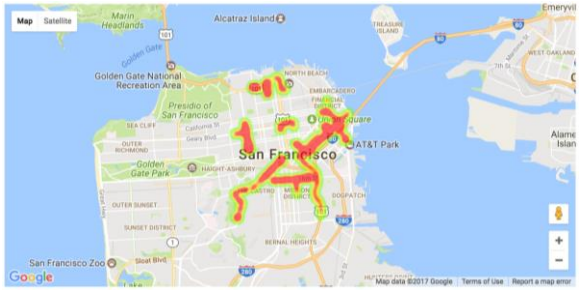


Event observers (sources)

Kafka

Event consumers (sinks)

Kafka



QUERIES

FREQUENT ROUTES

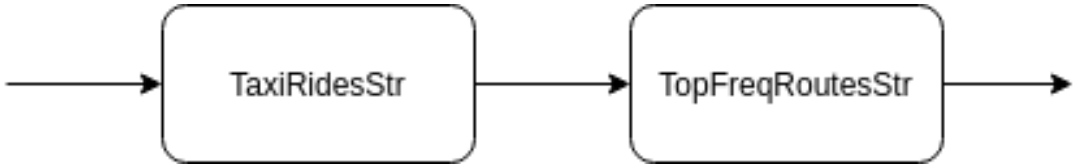


Fig.1. Diagrama de fluxo da *query Frequent Routes*.

FROM TaxiRidesStr#window.time(30 sec)

SELECT pickup_gridID, dropoff_gridID, count(*) as frequency

GROUP BY pickup_gridID, dropoff_gridID

ORDER BY frequency **DESC**

LIMIT 10

INSERT INTO TopFreqRoutesStr;

PROFITABLES AREAS

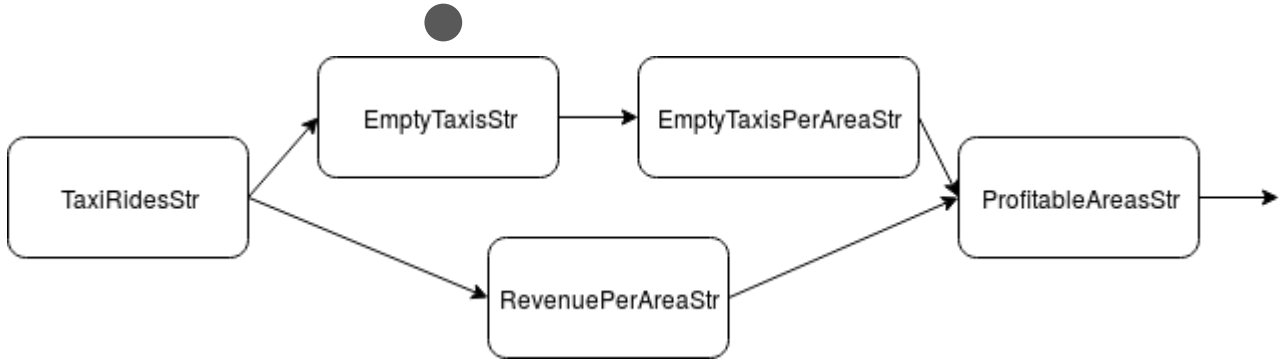


Fig.2. Diagrama de fluxo da *query Profitables Areas*.

PARTITION WITH (medallion of TaxiRidesStr)

BEGIN

FROM e1 = TaxiRidesStr -> **NOT** TaxiRidesStr[medallion == e1.medallion] for 30 sec

SELECT e1.medallion, e1.dropoff_gridID

INSERT INTO EmptyTaxisStr;

END;

PROFITABLES AREAS

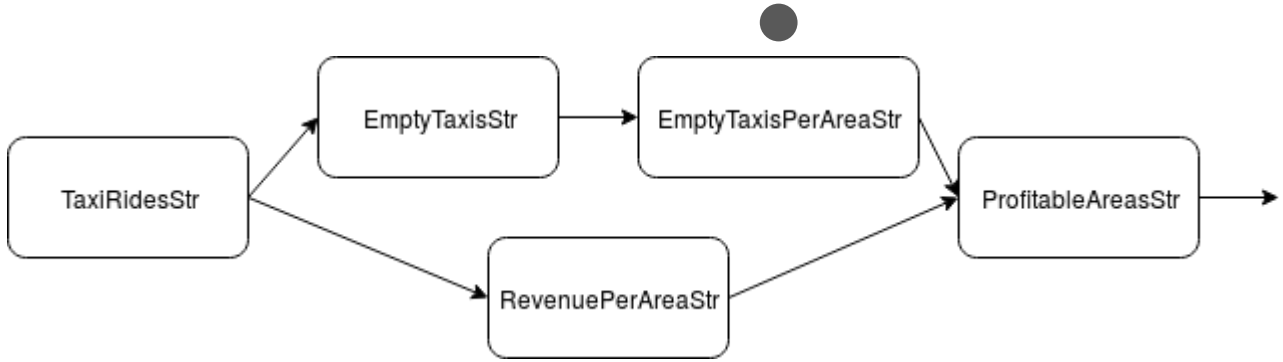


Fig.2. Diagrama de fluxo da *query Profitables Areas*.

FROM EmptyTaxisStr#window.time(30 sec)

SELECT dropoff_gridID as areaID, count(*) as emptyTaxis

GROUP BY dropoff_gridID

INSERT INTO EmptyTaxisPerAreaStr;

PROFITABLES AREAS

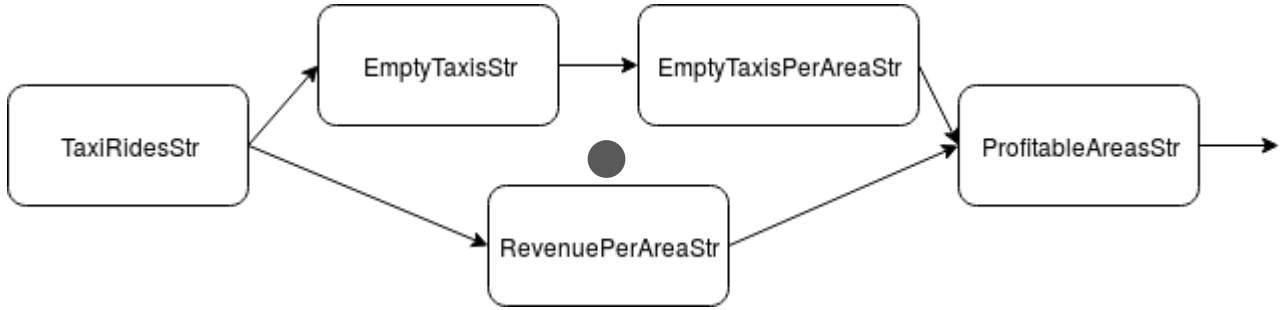


Fig.2. Diagrama de fluxo da *query Profitables Areas*.

FROM TaxiRidesStr#window.time(15 sec)

SELECT pickup_gridID as areaID, **AVG**(fare_amount + tip_amount) as revenue

GROUP BY pickup_gridID

INSERT INTO RevenuePerAreaStr;

PROFITABLES AREAS

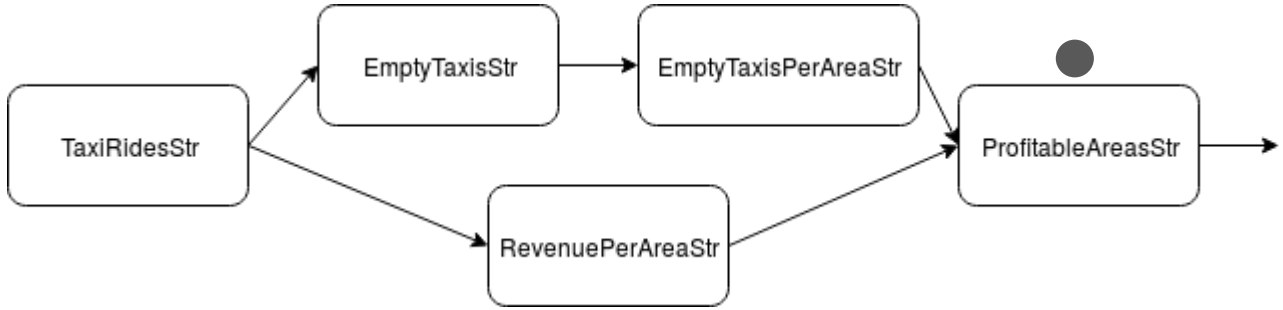


Fig.2. Diagrama de fluxo da *query Profitables Areas*.

FROM RevenuePerAreaStr#window.time(15s) as A **JOIN** EmptyTaxisPerAreaStr#window.time(15s) as B **ON** A.areaID == B.areaID

SELECT A.areaID, revenue/emptyTaxis as profit

GROUP BY A.areaIDorder by profit DESClimit 10

INSERT INTO ProfitableAreasStr;

IDLE TAXIS

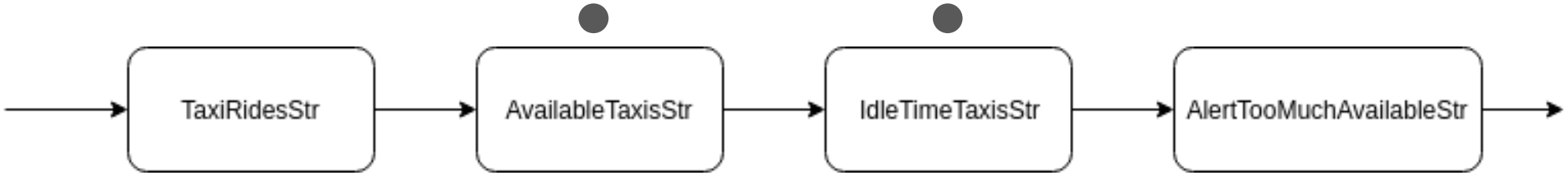


Fig.3. Diagrama de fluxo da *query Idle Taxis*.

FROM TaxiRidesStr#window.time(1 hour)

SELECT * **INSERT INTO** AvailableTaxisStr;

FROM e1 = AvailableTaxisStr -> e2 = AvailableTaxisStr[medallion == e1.medallion]

SELECT e1.medallion as taxi, (e2.p_time-e1.d_time) as idle_time

INSERT INTO IdleTimeTaxisStr;

IDLE TAXIS

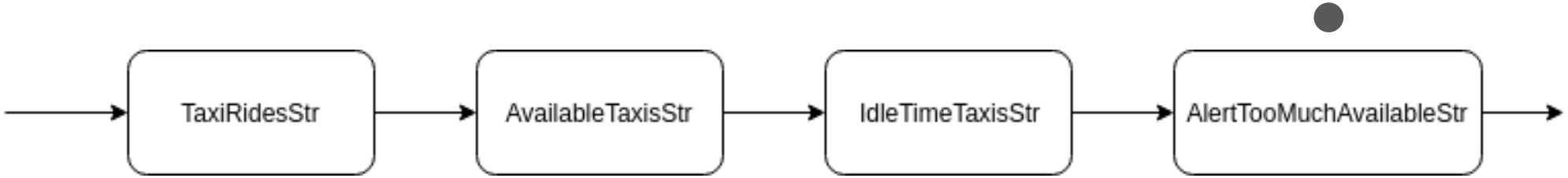


Fig.3. Diagrama de fluxo da *query Idle Taxis*.

FROM IdleTimeTaxisStr

SELECT avg(idle_time) as avg_idle_time

HAVING avg_idle_time > 10 * 60

INSERT INTO AlertTooMuchAvailableStr;

CONGESTED AREAS

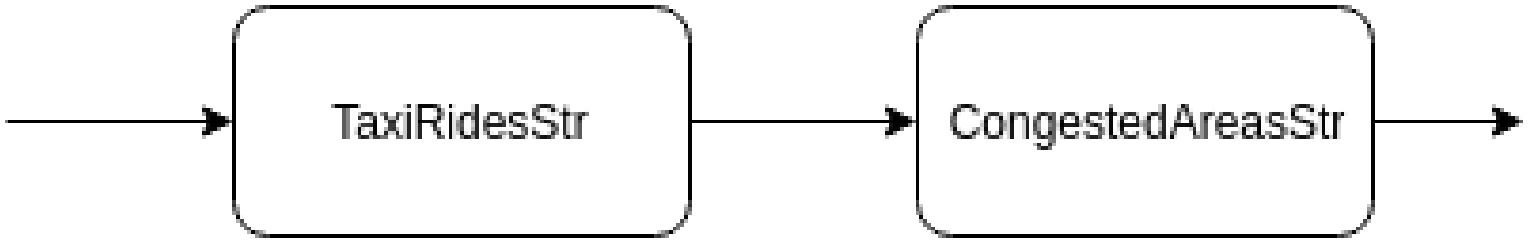


Fig.4. Diagrama de fluxo da *query Congested Areas*.

```
FROM EVERY e1 = TaxiRidesStr->
  e2=TaxiRidesStr [medallion == e1.medallion AND ride_duration > e1.ride_duration] ->
  e3=TaxiRidesStr [medallion == e2.medallion AND ride_duration < e2.ride_duration] ->
  e4=TaxiRidesStr [medallion == e3.medallion AND ride_duration > e3.ride_duration] ->
  e5=TaxiRidesStr [medallion == e4.medallion AND ride_duration > e4.ride_duration] ->
  e6=TaxiRidesStr [medallion == e5.medallion AND ride_duration > e5.ride_duration]
SELECT e2.pickup_gridID as areaID, e2.ride_duration as peak_duration
INSERT INTO CongestedAreasStr;
```

MOST PLEASANT TAXI DRIVERS

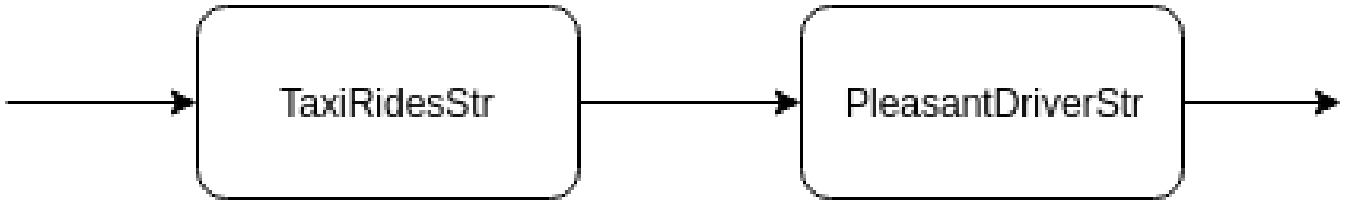


Fig.5. Diagrama de fluxo da *query Most Pleasant Taxi Drivers*.

FROM TaxiSecStr#window.timeBatch(24 min)

SELECT hack_license, sum(tip_amount) as tips_total

GROUP BY hack_license

ORDER BY tips_total **DESC**

LIMIT 1

INSERT INTO PleasantDriverStr;

CONCLUSÃO

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SiddhiQL comparativamente ao SparkStreaming:

- + Manutenção devido a simplicidade do código;
- + Flexibilidade e Expressividade na descrição das *queries* devido à deteção de padrões de eventos de alto nível;
- - Qualidade da documentação disponível inferior, e.g. sources/sinks kafka;

- - *Editor* com alguns *bugs* na deteção de erros de sintaxe;
- - Erros de sintaxe pouco informativos;

OBRIGADO PELA ATENÇÃO

VISUALIZAÇÃO

DEMO