POLITECNICO
MILANO 1863

Apache Spark

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Exercise 1

- Complete the bank account exercise

- Consider a new query Q4
  - Print all accounts in descending order of balance

Exercise 2

- Write a program that takes in input a csv file with the friendship relation in a social network
  - Two fields (user, friend)

- Write an iterative program that computes the transitive closure of the relation

Exercise 3

- Change the event enrichment program
  - Use the rate source to define the input stream

- Change the query to count the number of products of each class appearing in the input stream within a window of 30 seconds sliding every 5 seconds

Eval lab 2022: assumptions

Three input datasets

1. citiesRegion
   - Type: static, csv file
   - Fields: city, region
2. citiesPopulation
   - Type: static, csv file
   - Fields: id (of the city), city, population
3. bookings
   - Type: dynamic, stream
   - Fields: timestamp, value
   - Each entry with value x indicates that someone booked a hotel in the city with id x

Eval lab 2022: requirements

- For all queries: limit unnecessary recomputations as much as possible!

- Q1: compute the total population for each region

- Q2: compute the number of cities and the population of the most populated city for each region

Eval lab 2022: requirements

- Q3: Print the evolution of the population in Italy year by year until the total population in Italy overcomes 100M people
  - Assume that the population evolves as follows:
    - In cities with more than 1000 inhabitants, it increases by 1% every year
    - In cities with less than 1000 inhabitants, it decreased by 1% every year
  - The output on the terminal should be a sequence of lines
    - Year: 1, total population: xxx
    - Year: 2, total population: yyy
    - …
  - You may round the population of each city to the nearest integer during your computation

- Q4: compute the total number of bookings for each region, in a window of 30 seconds, sliding every 5 seconds