

Spark Streaming

Spark - Exercises

1

Exercise #51

- Full station identification in real-time
- Input:
 - A textual file containing the list of stations of a bike sharing system
 - Each line of the file contains the information about one station


```
id\tlongitude\tlatitude\tname
```
 - A streaming of readings about the status of the stations
 - Each reading has the format
 - Stationid,# free slots,#used slots,timestamp

2

Exercise #51

- Output:
 - For each reading with a number of free slots equal to 0
 - print on the standard output timestamp and name of the station
 - Emit new results every 2 seconds

3

Exercise #52

- High stock price variation identification in real-time
- Input:
 - A streaming of stock prices
 - Each input record has the format
 - Timestamp,StockID,Price

4

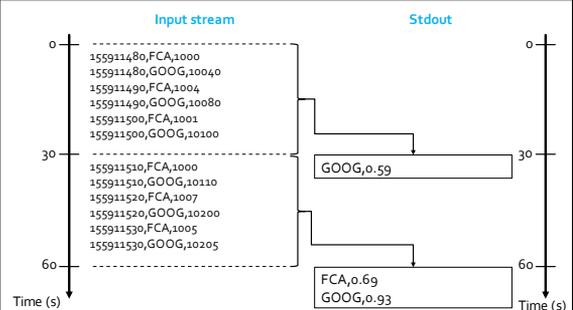
Exercise #52

- Output:
 - Every 30 seconds print on the standard output, and store in the output folder, the **StockID and the price variation (%) in the last 30 seconds of the stocks with a price variation greater than 0.5% in the last 30 seconds**
 - Given a stock, its price variation during the last 30 seconds is:

$$\frac{\max(\text{price}) - \min(\text{price})}{\max(\text{price})}$$

5

Exercise #52- Example



6

Exercise #53

- Anomalous stock price identification in real-time
- Input:
 - A textual file containing the historical information about stock prices in the last year
 - Each input record has the format
 - Timestamp,StockID,Price
 - A real time streaming of stock prices
 - Each input record has the format
 - Timestamp,StockID,Price

7

Exercise #53

- Output:
 - Every 1 minute print on the standard output, and store in the output folder, the StockIDs of the stocks that satisfy one of the following conditions
 - price of the stock (received on the real-time input data stream) < historical minimum price of that stock (based only on the historical file)
 - price of the stock (received on the real-time input data stream) > historical maximum price of that stock (based only on the historical file)
 - If a stock satisfies the conditions multiple times in the same batch, return the stockId only one time for each batch

8

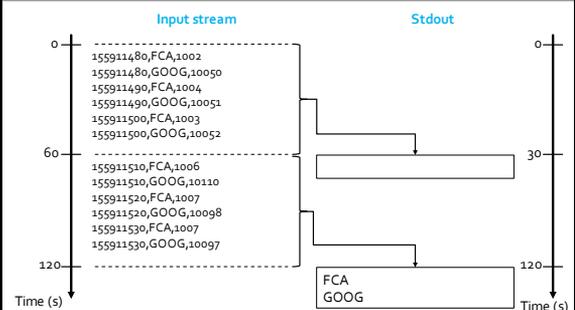
Exercise #53- Example

- Textual file containing the historical information about stock prices in the last year


```
130000000,FCA,1000
130000000,GOOG,10040
130000060,FCA,1004
130000060,GOOG,10080
130000120,FCA,1001
130000120,GOOG,10100
```

9

Exercise #53- Example



10