Spark Dataframe

Marco Milanesio

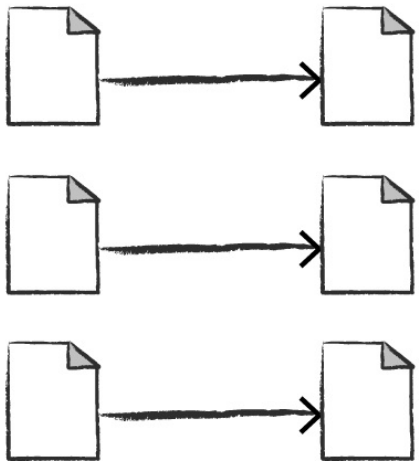
MS Data Science 2019-2020

Transformations

- `myRange = spark.range(1000).toDF("number")`
- `divisBy2 = myRange.where("number % 2 = 0")`
- Two types of transformations, specifying:
  - **Narrow** dependencies
  - **Wide** dependencies

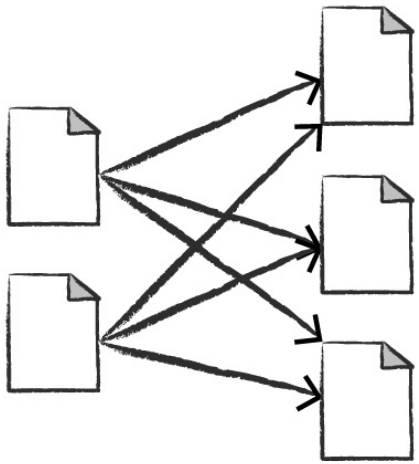
Narrow transformations 1:1

- each input partition will contribute to only one output partition.
- **pipelining**
- `.filter(),.where(),.map(),...`



Wide transformations 1:n

- input partitions contributing to many output partitions
- **shuffle**
- `.groupByKey(),.reduceByKey(),.sort(),...`



2015-summary.csv

- End2End example
- Summarize most of the steps

Intro & basic imports

```
[1]  !apt-get install openjdk-8-jdk-headless -qq > /dev/null
     import os
     os.environ["JAVA_HOME"] = "/usr/lib/jvm/java-8-openjdk-amd64"
     !update-alternatives --set java /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/java
     !java -version
     !pip install pyspark
```

```
[3]  from google.colab import files
```

```
[4]  files.upload()
```

Build session and load the data

```
[5]  from pyspark.sql import SparkSession
```

```
[7]  datafile = '2015-summary.csv'
```

```
[8]  spark = (SparkSession.builder.master('local').appName('flightsApp').getOrCreate())
```

```
[9]  sc = spark.sparkContext
```

```
[12] flightData2015 = (spark
                       .read
                       .option('inferSchema', 'true')
                       .option('header', 'true')
                       .csv(datafile)
     )
```

Let's go

Overview of last command in the coding session