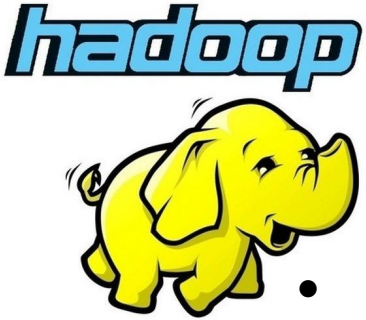
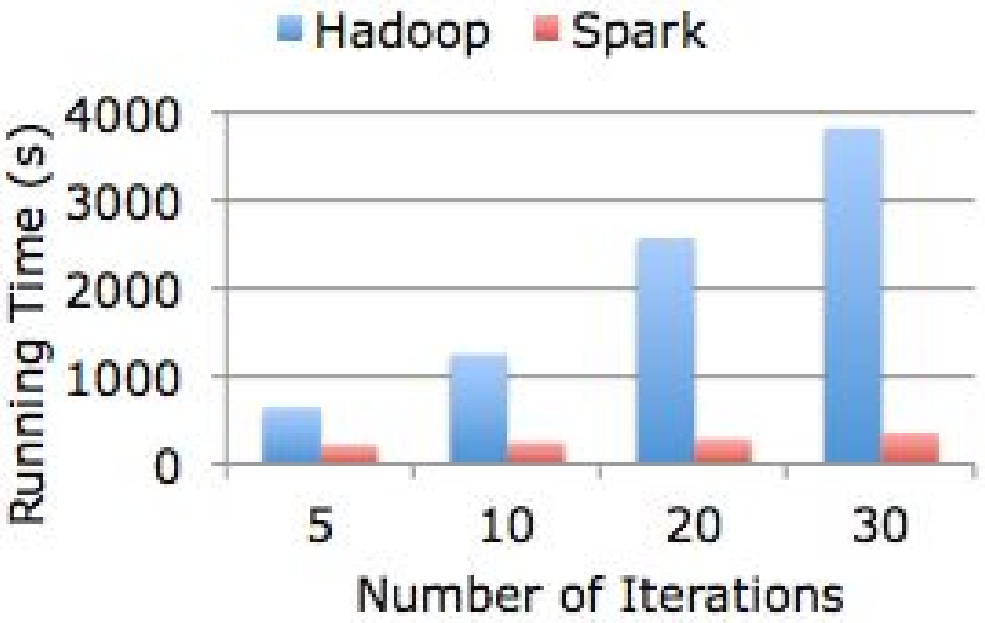

Spark

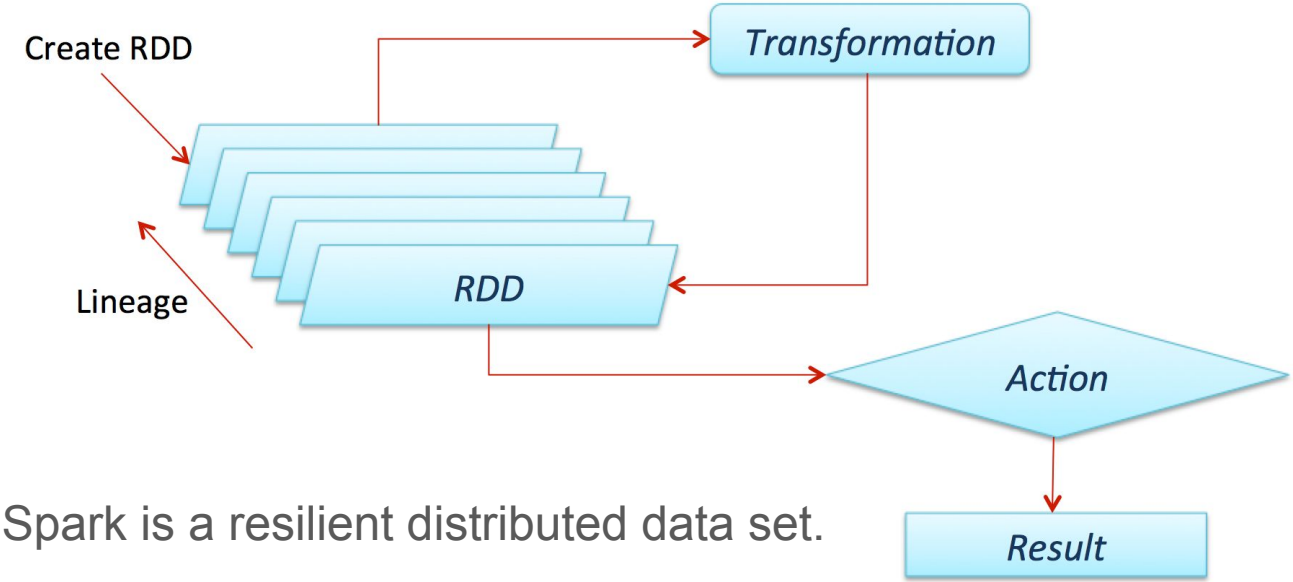


- made it possible to analyze large data sets, but relied heavily on disk storage (rather than memory) for computation
- not a great solution for calculations requiring multiple passes over the same data or many intermediate steps, due to the need to write to and read from the disk between each step
    - difficult to use for interactive data analysis, the main task data scientists need to do
- Hadoop also suffered from suboptimal support for the additional libraries many data scientists needed, such as SQL and machine learning implementations. Once the cost of RAM (computer memory) started to drop significantly, augmenting or replacing Hadoop by storing data in-memory quickly emerged as an appealing alternative



Spark uses distributed, in-memory data structures to improve speeds for many data processing workloads by several orders of magnitude

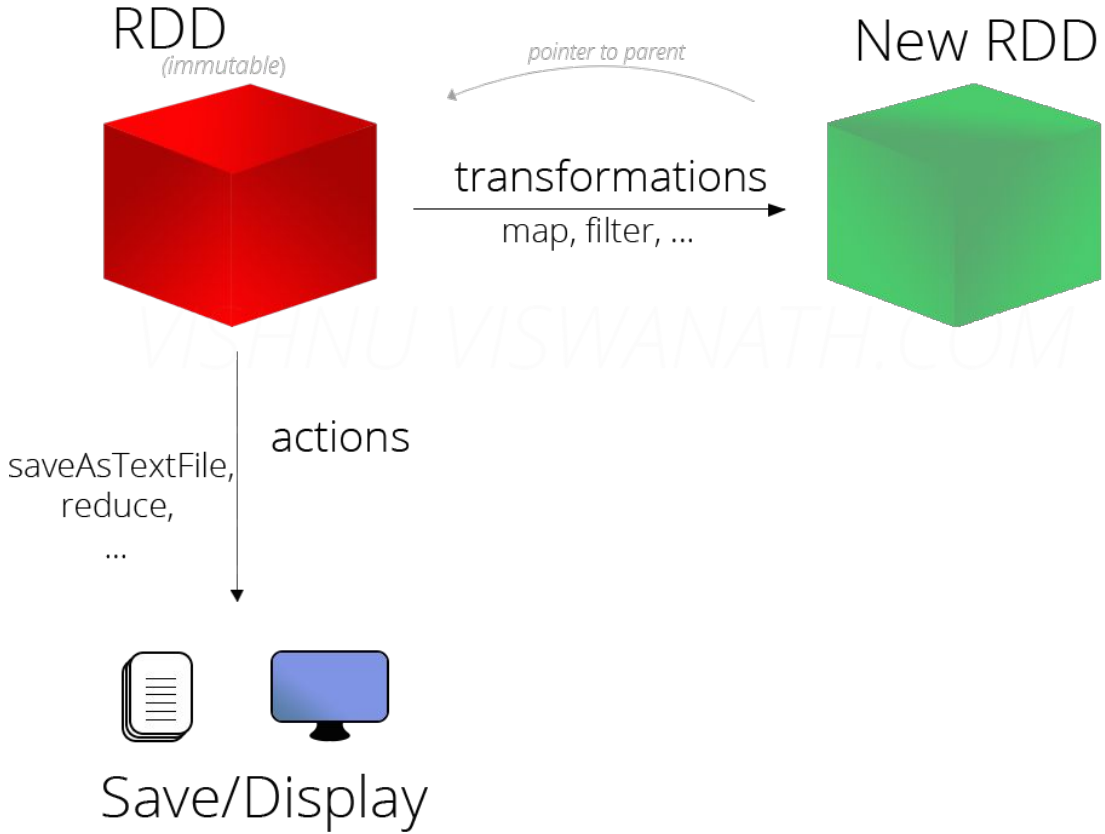
RDD



The core data structure in Spark is a resilient distributed data set.

RDD is Spark's representation of a data set that's distributed across the RAM, or memory, of a cluster of many machines.

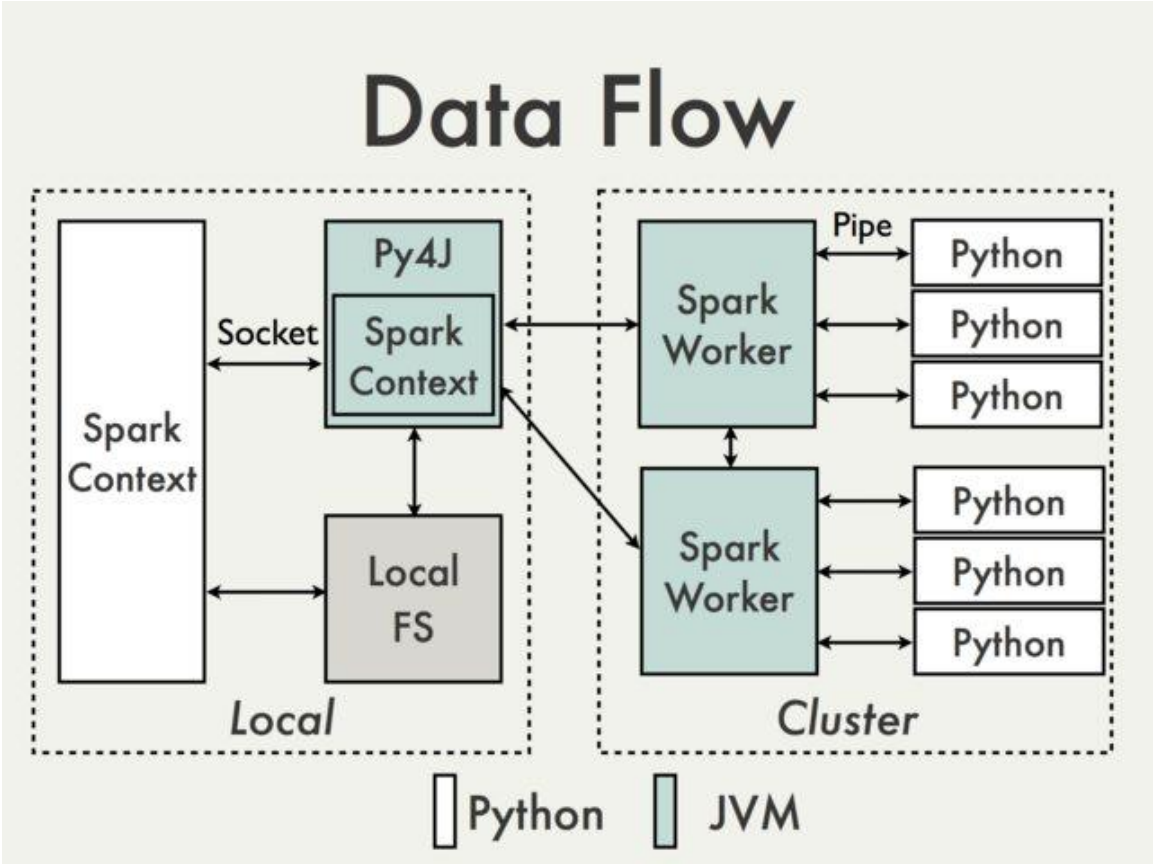
An RDD object is essentially a collection of elements we can use to hold lists of tuples, dictionaries, lists, etc.

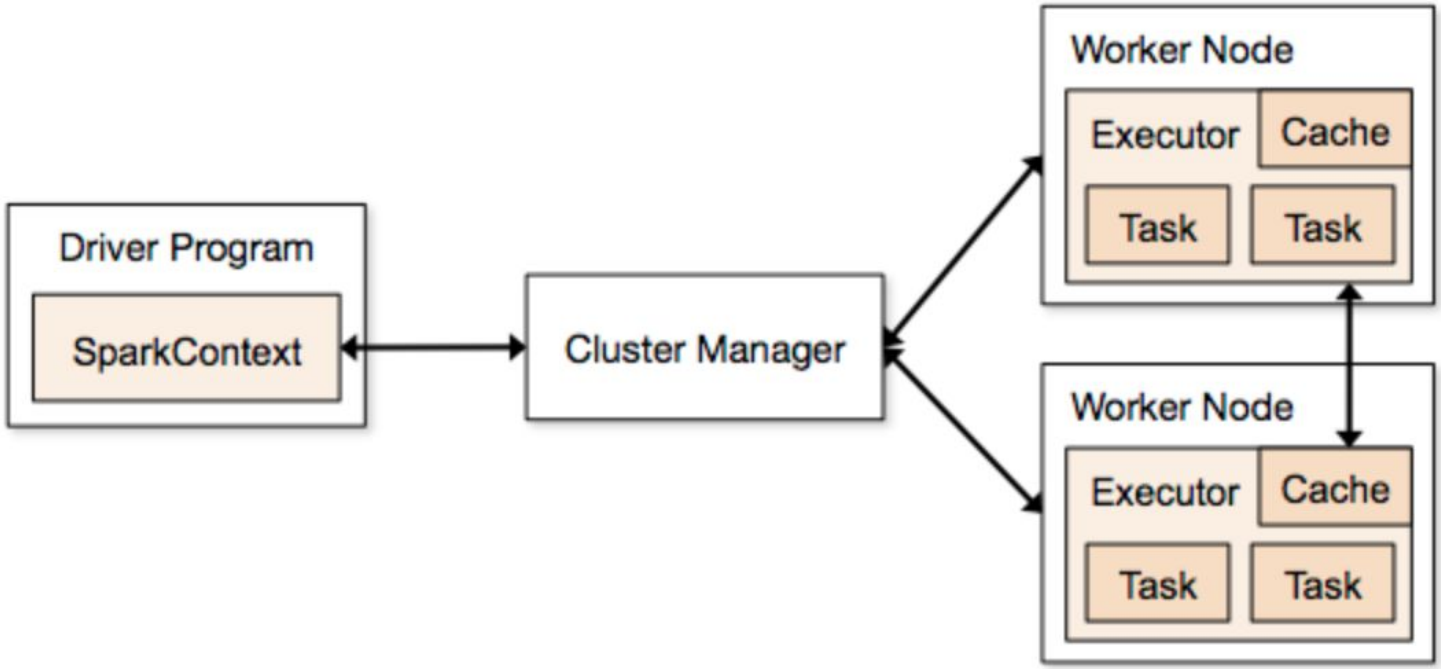


PySpark

PySpark is built on top of Spark's Java API.

Data is processed in Python and cached / shuffled in the JVM





In Spark, the SparkContext object manages the connection to the clusters, and coordinates the running of processes on those clusters

https://github.com/gSchool/DSI_Lectures/blob/master/spark/ryan_henning/Intro%20to%20Spark.pdf

https://spark.apache.org/docs/1.1.1/api/python/pyspark.rdd.RDD-class.html#take