A5 Paths Report

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This is a report generated from R and it has the required results of our assignment A5.

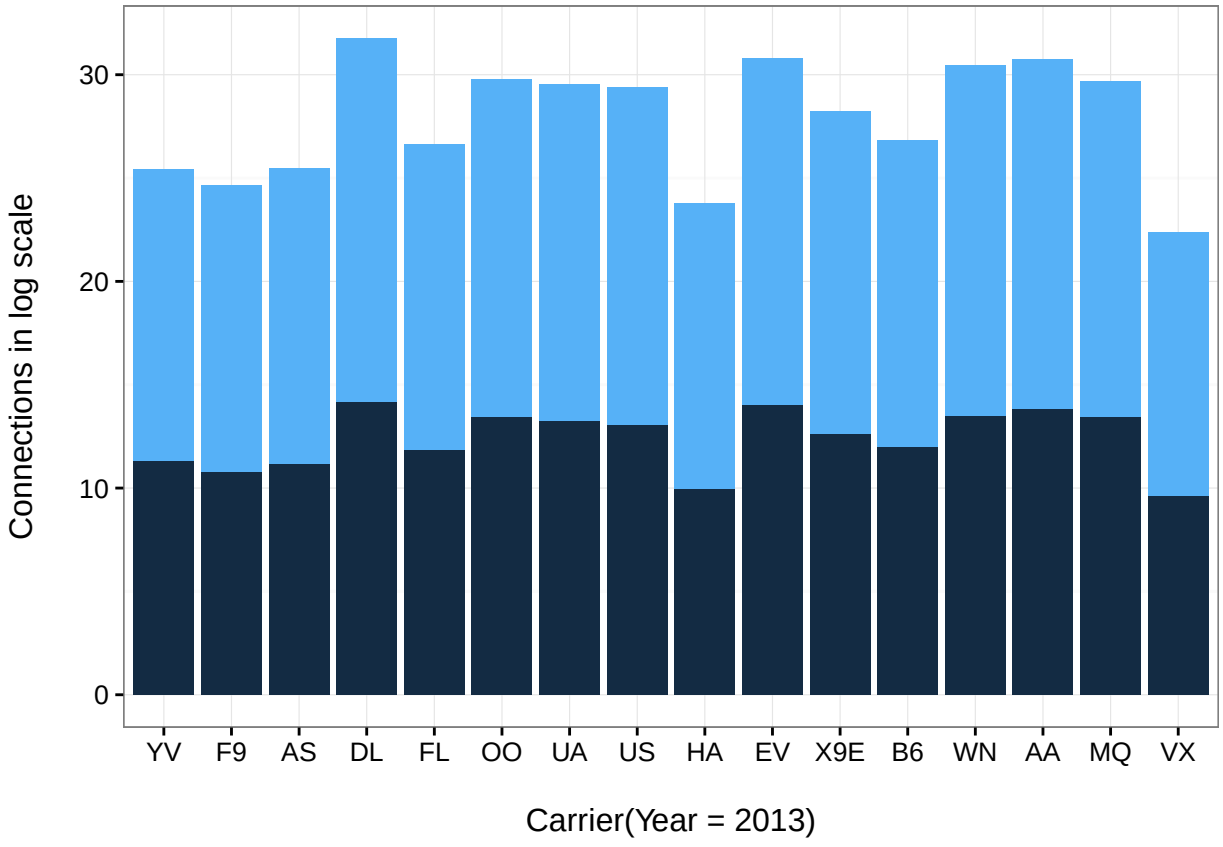
INTRODUCTION: This assignment is to display number of connections and missed connection between flights of same airline for same year. We have written mapreduce chain job to accomplish the same.

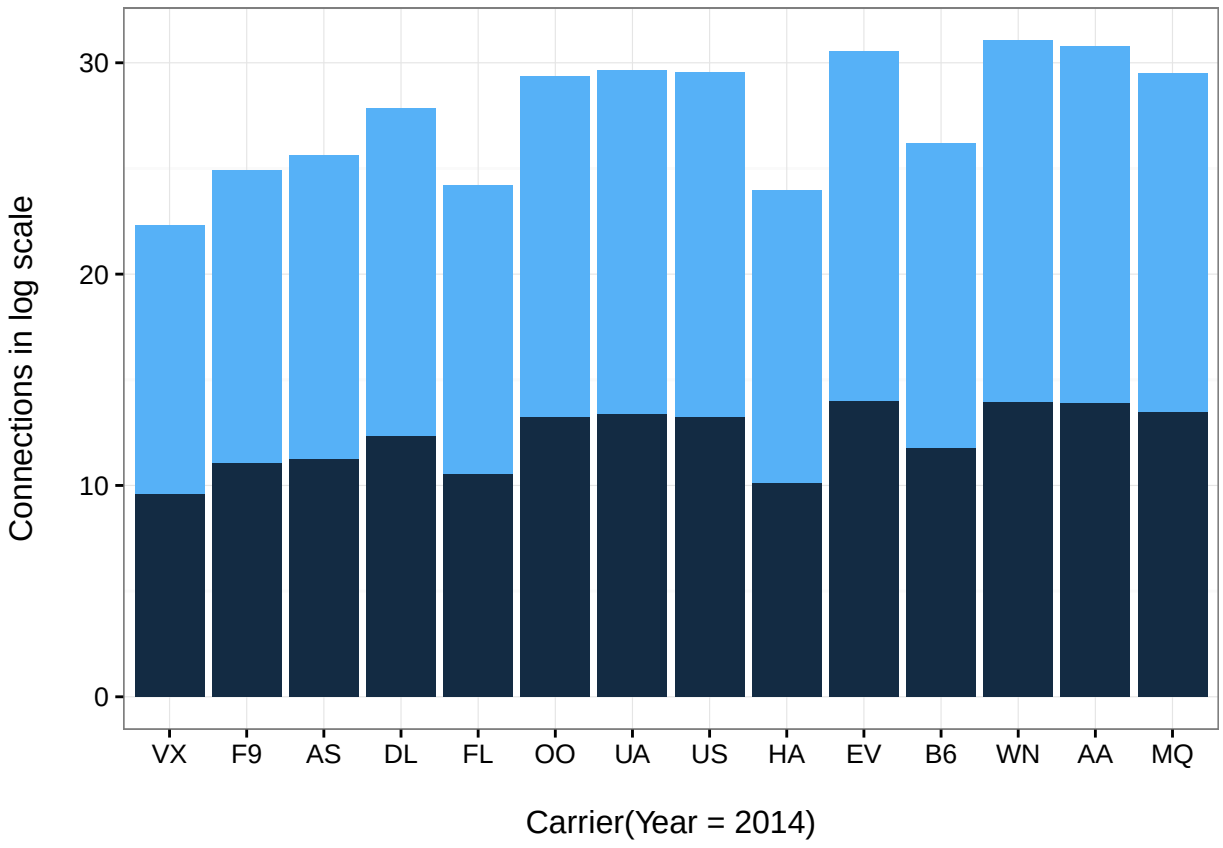
DESIGN: We have taken each row and divinded it into two records for departing and arrival flights. Our Mapper takes key as carrier year and destination/origin airport. If key contains origin airport then corresponding value is false with departure details. If key contains destination airport then corresponding value is true and arrival details.

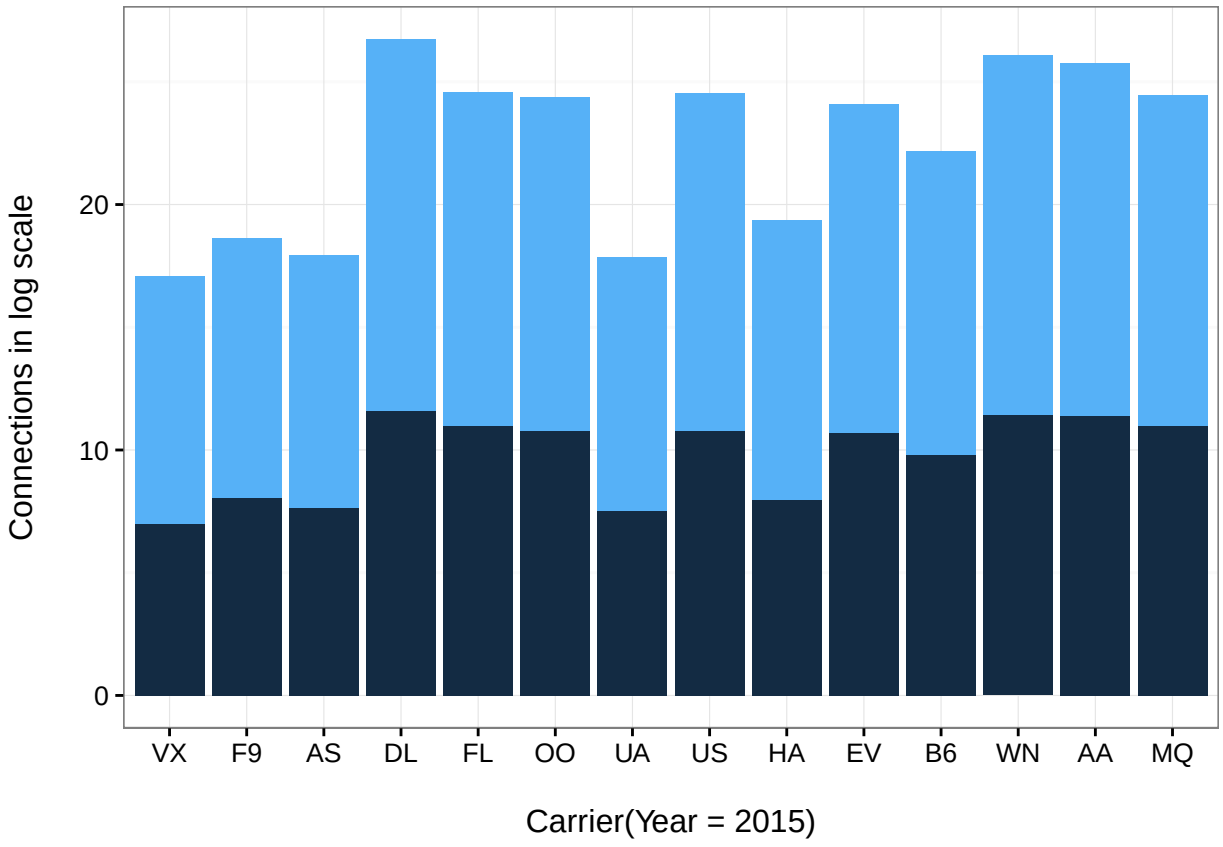
IMPLEMENTATION: Our code includes chain mapreduce with map1-reduce1-map2-reduce2. 1st mapreduce job creates intermediate files with key as carrier, year, airport(destination/origin). This intermediate files are then taken by job2 to combine all the files generated by job1 and produces final output for airline, year and connections/missedconnections. The conditions checked for connection flight and missed flight is given below. 1. Any pair of flight F and G of the same carrier such as F.Destination = G.Origin. 2. The scheduled departure of G is <= 6 hours and >= 30 minutes after the scheduled arrival of F. 3. A connection is missed when the actual arrival of F < 30 minutes before the actual departure of G.

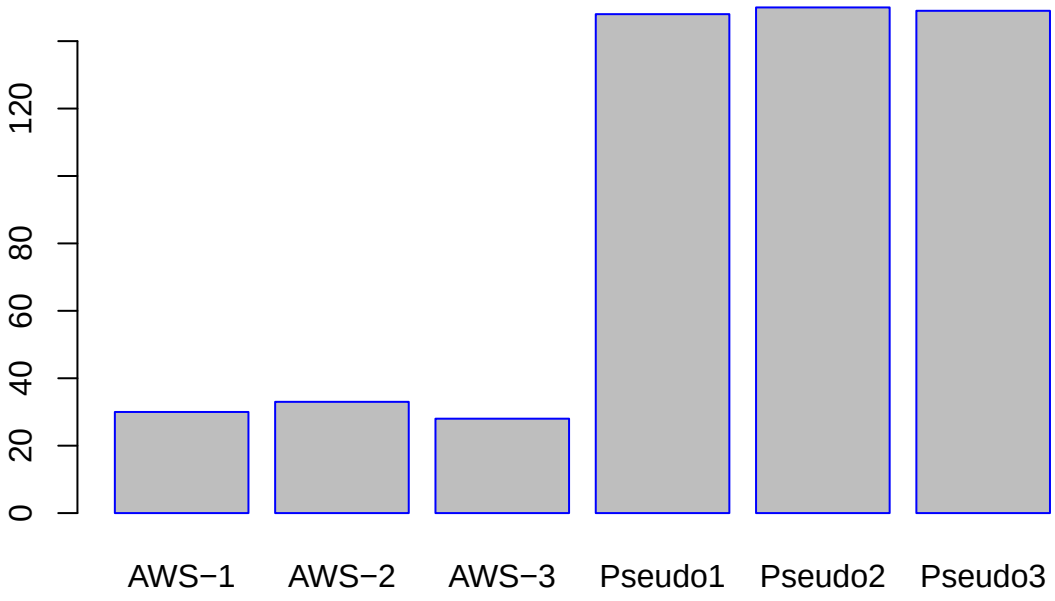
PERFORMANCE: As per our analysis for 653 MB gzipped data(25 files) on i5-8gb Mac machine and 653MB on i5-8gb Linux machine pesudo mode takes 150 mins and on cluster it takes 30 mins with 1:10 m3 xlarge machine.

GRPAHS:




Connections in log scale
30
20
10
0
VX
F9
AS
DL
FL
OO
UA
US
HA
EV
B6
WN
AA
MQ
Carrier(Year = 2014)


Connections in log scale
20
10
0
VX
F9
AS
DL
FL
OO
UA
US
HA
EV
B6
WN
AA
MQ
Carrier(Year = 2015)


Run Time
0
20
40
60
80
120
AWS−1
AWS−2
AWS−3
Pseudo1
Pseudo2
Pseudo3