

Broadcast stage(end\_node\_id 15): date\_dim,10000FileScan->Filter->Project->BroadcastExchange

Broadcast stage(end\_node\_id 19): item,10000FileScan->Filter->BroadcastExchange

First stage (end\_node\_id 6): File Scan web\_sales,2338.2FileScan->Filter->BroadcastHashJoin->Project->BroadcastHashJoin->Project->HashAggregate->ExchangeHashpartitioning

NormalStage (end\_node\_id 4): length of beginNodesToChains is 1  
[1,0,0,1,0,0,0,0]  
Chain 0 is : HashAggregate(keys=[i\_category#97, i\_class#98, spark\_grouping\_id#96L], functions=[sum(ws\_net\_paid#34)])  
HashAggregate->ExchangeHashpartitioning

NormalStage (end\_node\_id 0): length of beginNodesToChains is 1  
[1,0,1,0,1,0,0,0]  
Chain 0 is : Sort [\_w1#111 ASC NULLS FIRST, \_w2#112 ASC NULLS FIRST, \_w3#113 DESC NULLS LAST], false, 0  
Sort->Empty->Project->TakeOrderedAndProject