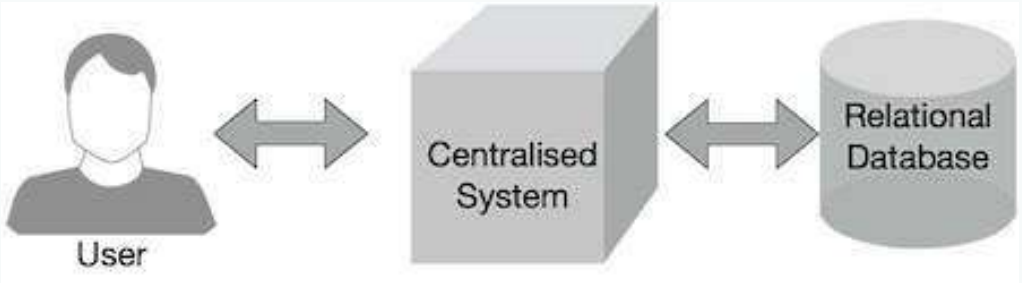
Map Reduce

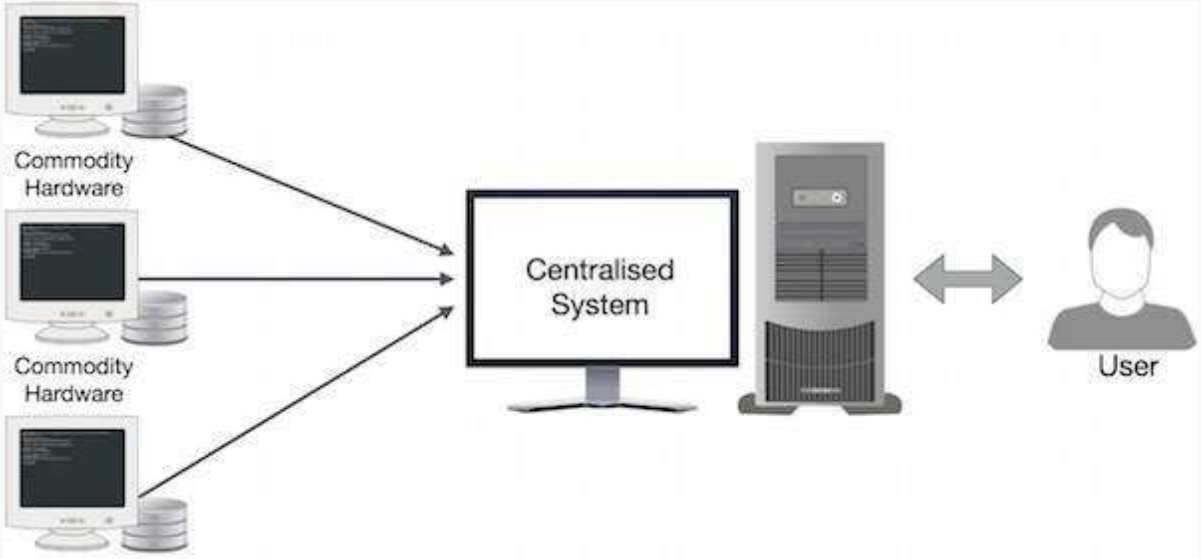
Traditional Enterprise Systems

- Have a centralized server to store and process data
- Not suitable to process huge volumes of scalable data
- Creates too much of a bottleneck while processing multiple files simultaneously



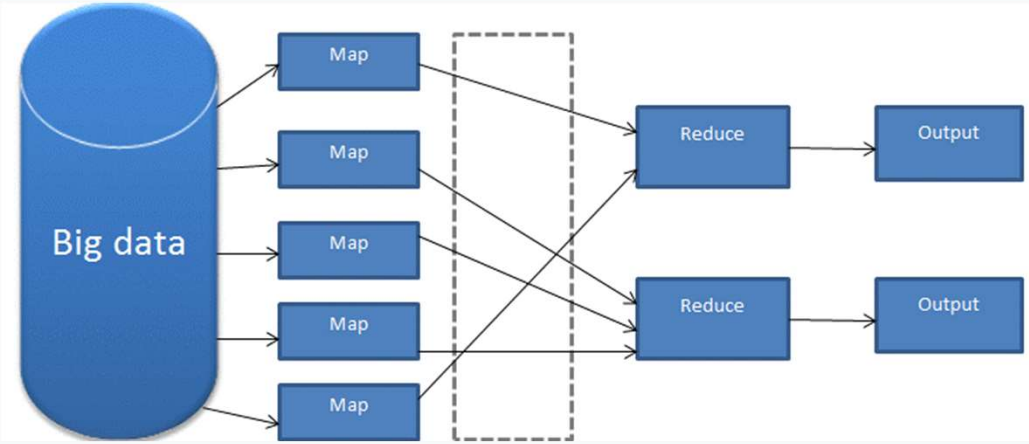
Map Reduce

- Google solved this bottleneck issue using an algorithm called MapReduce.
- MapReduce divides a task into small parts and assigns them to many computers.
- Later, the results are collected at one place and integrated to form the result dataset.

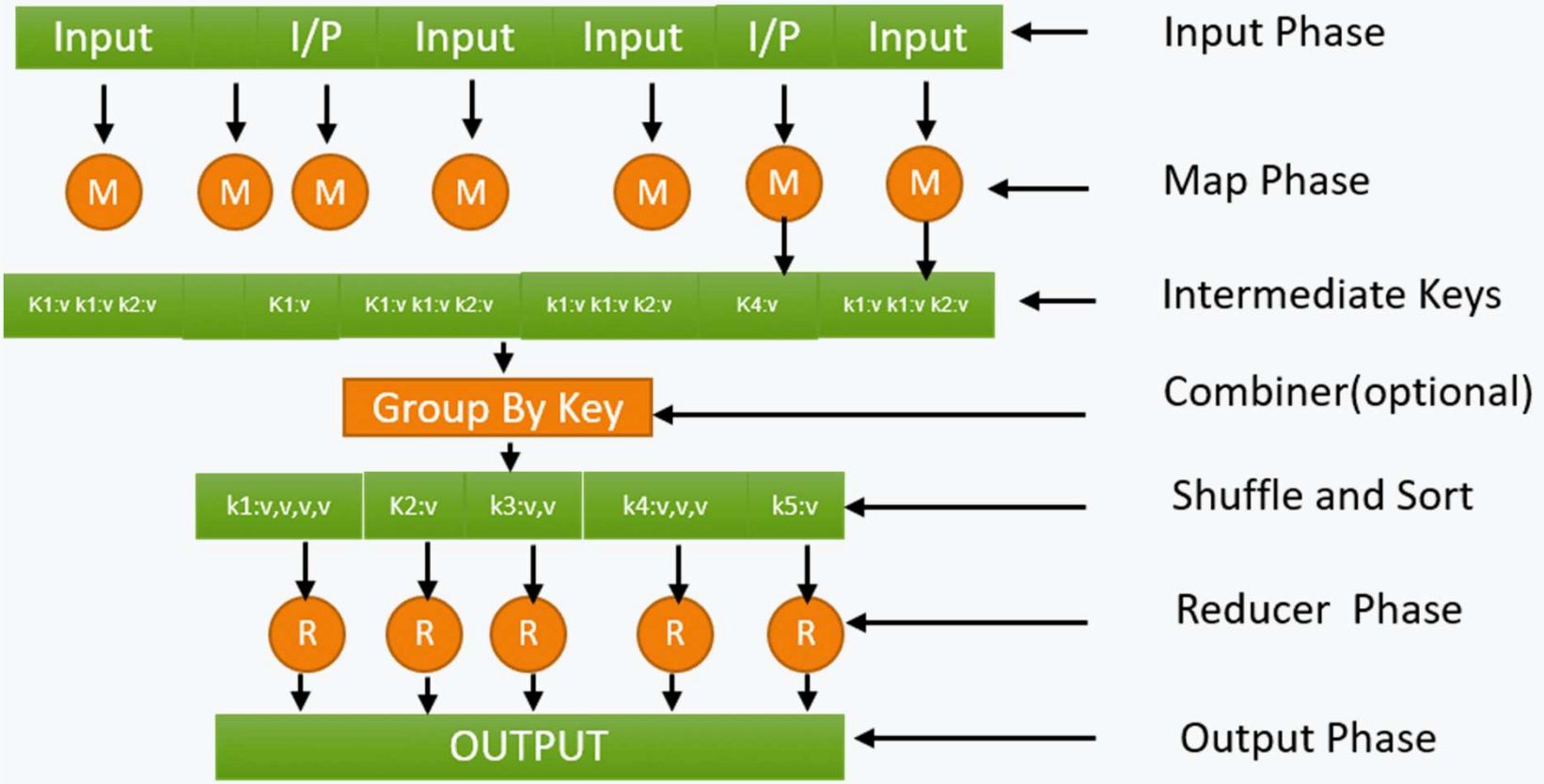


How MapReduce Works?

- The MapReduce algorithm contains two important tasks, namely
  - Map task: takes a set of data and converts it into another set of data, where individual elements are broken down into tuples (key-value pairs).
  - Reduce task: takes the output from the Map as an input and combines those data tuples (key-value pairs) into a smaller set of tuples.
- The reduce task is always performed after the map job.



Example


Input
I/P
Input
Input
I/P
Input
M
M
M
M
M
M
M
K1:v k1:v k2:v
K1:v
K1:v k1:v k2:v
k1:v k1:v k2:v
K4:v
k1:v k1:v k2:v
Group By Key
k1:v,v,v,v
K2:v
k3:v,v
k4:v,v,v
k5:v
R
R
R
R
R
OUTPUT
Input Phase
Map Phase
Intermediate Keys
Combiner(optional)
Shuffle and Sort
Reducer Phase
Output Phase

Thank You