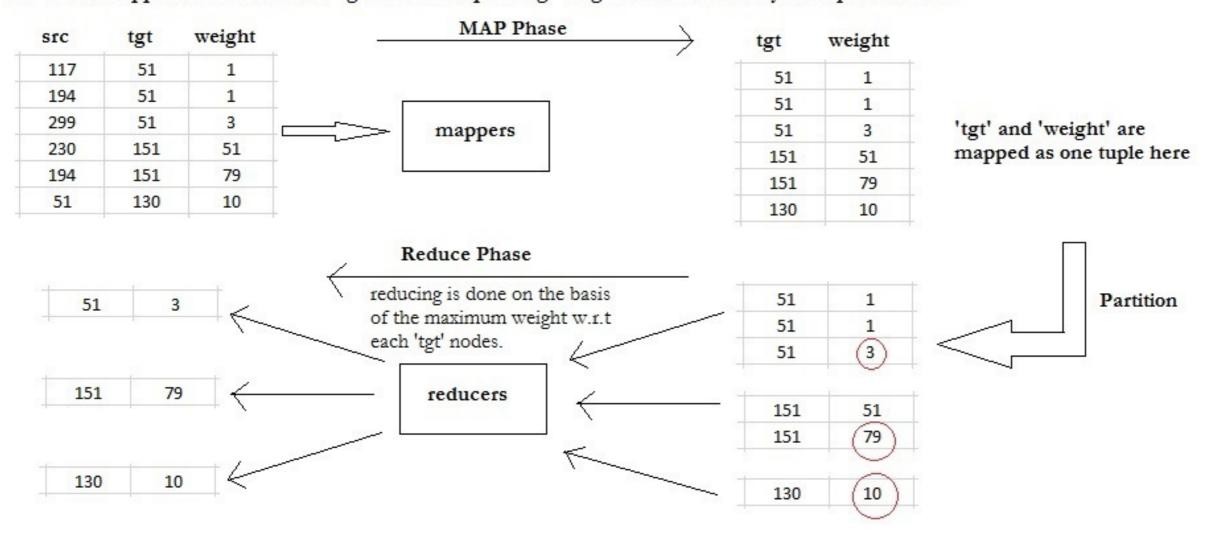
1.a. 'src' is skipped and we focus on 'tgt' and corresponding 'weight's. We use the toy example for demo.



1.b. We implement Side join algorithm on the given small data. The flowchart of the MapReduce Algorithm for the task is as explained below:

Student

Student

0

0

Alice

Bob

1234

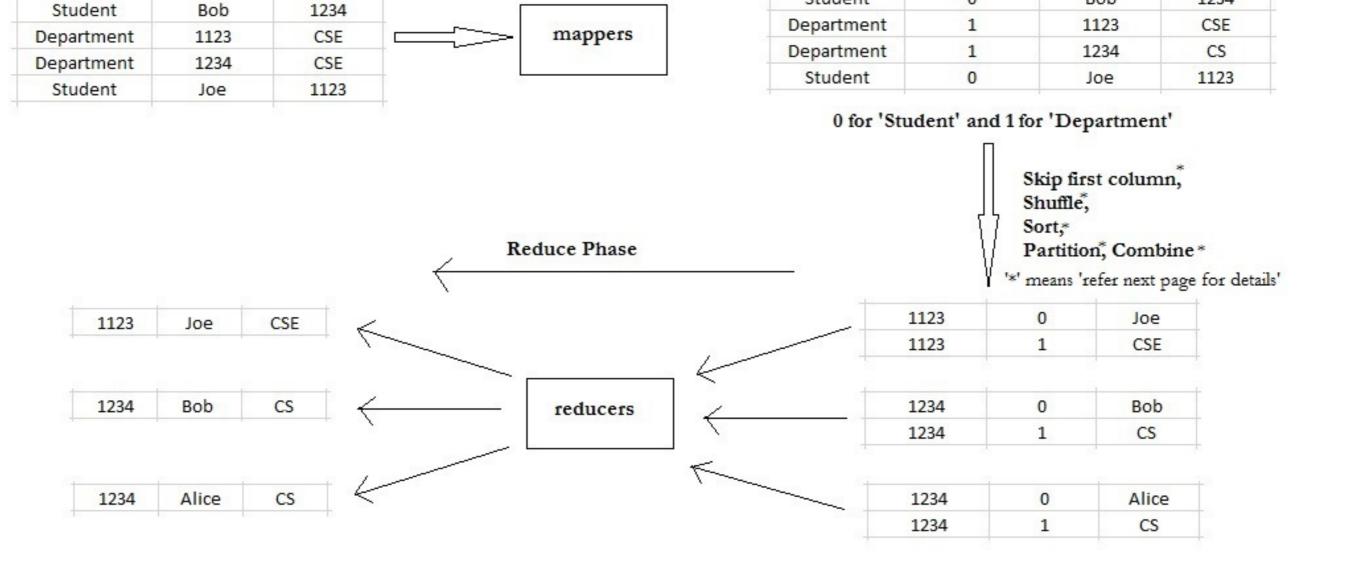
1234

MAP Phase

Student

Alice

1234



| Skip first column: | | Student | 0 | Alice | 1234 | | (|) | Alice | 13 |
|--------------------|--|-----------------------|----------------------------------|-------|------|------------------------------|----------------------------|--------------------------|-------|----|
| | | Student | 0 | Bob | 1234 | | (|) | Bob | 1 |
| | Department | | 1 | 1123 | CSE | | | l | 1123 | C |
| | | Department | 1 | 1234 | CS | | 1 | ı | 1234 | (|
| | | Student | 0 | Joe | 1123 | | (|) | Joe | 1 |
| | | | | | | | | | | |
| | K | | | | | | | | | |
| Shuffle: | 1 | 1123 | CSE | | | 1 | CSE | 1123 | | |
| | 1 | 1234 | CS | | | 1 | CS | 1234 | | |
| | | | | + | | | | | | |
| | 0 | Alice | 1234 | | | 1234 | 0 | Alice | | |
| | 0 | Bob | 1234 | | | 1234 | 0 | Bob | | |
| | 1 | CSE | 1123 | | > _ | 1123 | 1 | CSE | | |
| | 1 | CS | 1234 | | | 1234 | 1 | CS | | |
| | 0 | Joe | 1123 | | 14 | 1123 | 0 | Joe | | |
| | 77 | 10 | | | | | | | | |
| Sort: | 1234 | 0 | Alice | | | 1123 | 0 | Joe | | |
| | 1234 | 0 | Bob | 1000 | | 1123 | 1 | CSE | | |
| | 1123 | 1 | CSE | | > | 1234 | 1 | CS | | |
| | | 1 | CS | | | 1234 | 0 | Bob | | |
| | 1234 | 1 | Co | | | | | | | |
| | 1234 1123 | | Joe | | | 1234 | 0 | Alice | | |
| Partition: | _ | | | | | | | | | |
| Partition: | _ | | | | | 1234 | 0 | Alice | | |
| Partition: | _ | 0 | Joe | | | 1234 | 0 | Alice | | |
| Partition: | 1123 1123 1123 | 0 1 | Joe Joe CSE | | | 1234 1123 1123 | 0 | Joe CSE | | |
| Partition: | 1123 1123 1123 1234 | 0 1 1 | Joe CSE CS | | | 1234 | 0 | Alice | | |
| Partition: | 1123 1123 1123 1234 1234 | 0 1 1 | Joe CSE CS Bob | | | 1234 1123 1123 | 0 | Joe CSE | | |
| Partition: | 1123 1123 1123 1234 | 0 1 1 | Joe CSE CS | | | 1234 1123 1123 | 0 | Joe CSE | | |
| Partition: | 1123 1123 1123 1234 1234 | 0 1 1 | Joe CSE CS Bob | | | 1234 1123 1234 | 0 1 | Joe CSE CS | | |
| Partition: | 1123 1123 1123 1234 1234 | 0 1 1 | Joe CSE CS Bob | | | 1234 1123 1234 1234 | 0 1 0 | Joe CSE CS Bob | | |
| Partition: | 1123 1123 1234 1234 1234 | 0 1 1 | Joe CSE CS Bob | | | 1234 1123 1234 | 0 1 | Joe CSE CS | | |
| | 1123 1123 1234 1234 1234 | 0 1 1 | Joe CSE CS Bob | | | 1234 1123 1234 1234 | 0 1 0 | Joe CSE CS Bob | | |
| | 1123 1123 1234 1234 1234 | 0 1 1 | Joe CSE CS Bob | | | 1234 1123 1234 1234 | 0 1 0 | Joe CSE CS Bob | Joe | |
| | 1123 1123 1234 1234 1234 | 0 1 1 0 0 | Joe CSE CS Bob Alice | | | 1234 1123 1234 1234 | 0 1 1 0 | Joe CSE CS Bob | Joe | |
| | 1123 1123 1234 1234 1234 | 0 1 1 0 0 | Joe CSE CS Bob Alice | | | 1234 1123 1234 1234 | 0 0 1 1 0 | Joe CSE CS Bob | | |
| | 1123 1123 1234 1234 1234 1234 | 0 1 1 0 0 | Joe CSE CS Bob Alice | | | 1234 1123 1234 1234 | 0 0 1 1 0 | Joe CSE CS Bob | | |
| | 1123 1123 1234 1234 1234 1234 | 0 1 1 0 0 | Joe CSE CS Bob Alice | | | 1234 1123 1234 1234 | 0 0 1 1 0 | Joe CSE CS Bob Alice | CSE |) |
| | 1123 1123 1234 1234 1234 1123 | 0 1 1 0 0 | Joe CSE CS Bob Alice | | | 1234 1123 1234 1234 | 0 0 1 1 0 0 | Joe CSE CS Bob Alice 0 1 | CSE |) |
| | 1123 1123 1234 1234 1234 1123 | 0 1 1 0 0 | Joe CSE CS Bob Alice | | | 1234 1123 1234 1234 | 0 0 1 1 0 0 | Joe CSE CS Bob Alice 0 1 | CSE | |

Alice