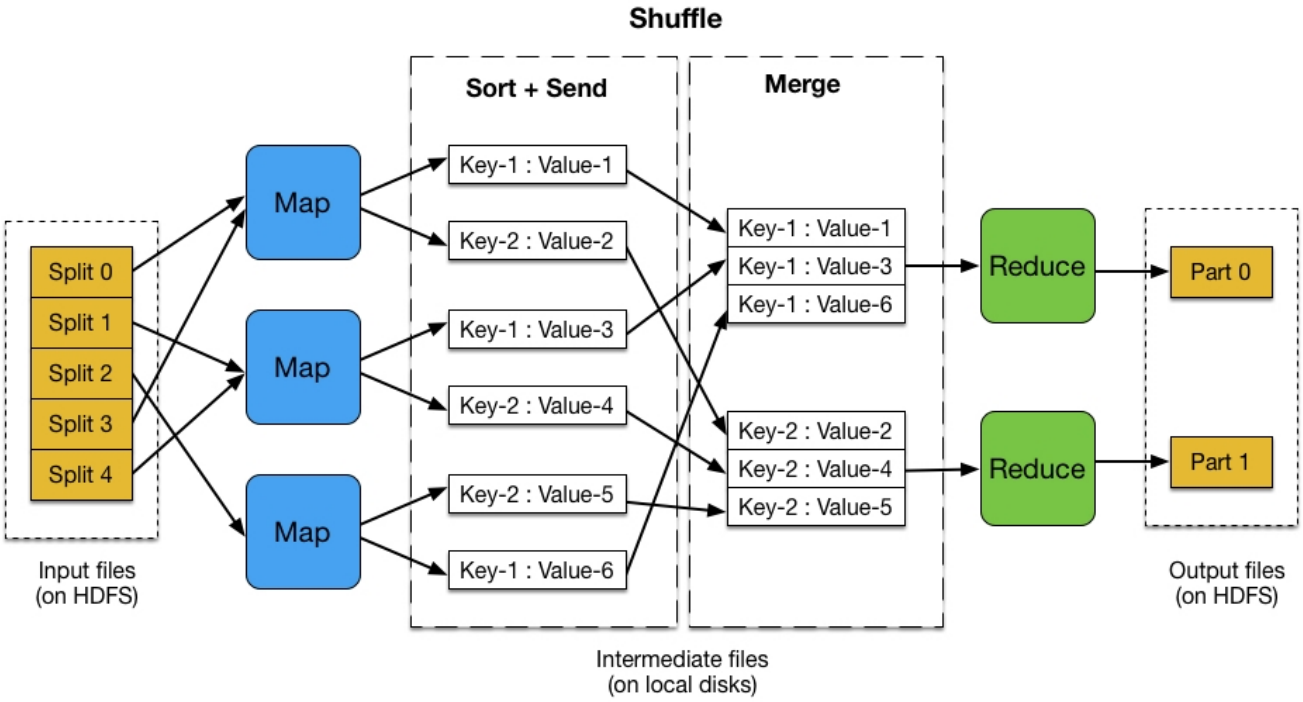
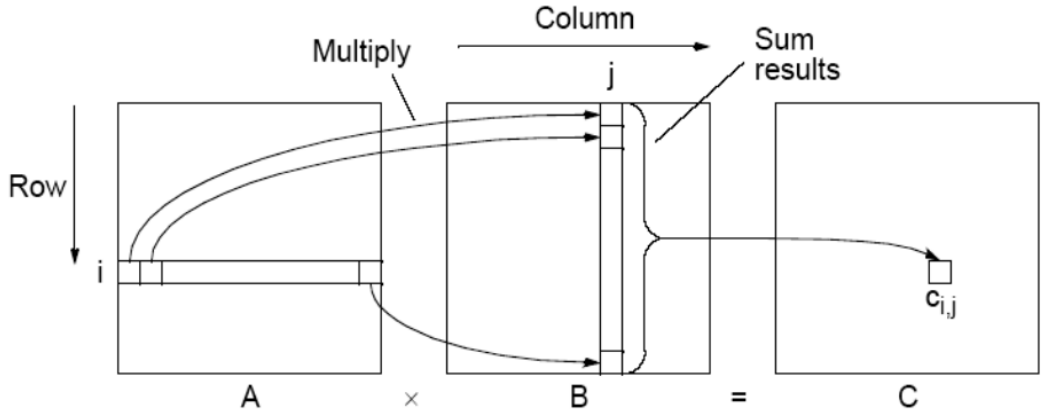
MapReduce



C = A x B



$$c_{i,\,j} = \sum_{k=0}^{l-1} a_{i,k} b_{k,j}$$

$$\begin{pmatrix} 2 & 3 & 5 \\ 7 & 11 & 13 \end{pmatrix} \times \begin{pmatrix} 17 & 19 \\ 23 & 29 \\ 31 & 37 \end{pmatrix}$$

A → i=2, j=3 B → j=3, k=2

$C_{ik} = \sum_j A_{ij} \times B_{jk}$

Mapper for A (key, value) = (i, k), (A, j , A_{ij}) for all k

Mapper for B (key, value) = (i, k), (B, j, B_{jk}) for all i

A)

	Row	Col	
k= 1	i = 1	j =1	(1, 1), (A, 1, 2))
		j=2	(1, 1), (A, 2, 3))
		j=3	(1, 1), (A, 3, 5))
	i = 2	j =1	(2, 1), (A, 1, 7))
		j=2	(2, 1), (A, 2, 11))
		j=3	(2, 1), (A, 3, 13))
k= 2	i = 1	j =1	(1, 2), (A, 1, 2))
		j=2	(1, 2), (A, 1, 3))
		j=3	(1, 2), (A, 1, 5))
	i = 2	j =1	(2, 2), (A, 1, 7))
		j=2	(2, 2), (A, 1, 11))
		j=3	(2, 2), (A, 1, 13))

B)

	Row	Col	
i= 1	j = 1	k =1	(1, 1), (B, 1, 17))
		k=2	(1, 2), (B, 1, 19))
	j = 2	k=1	(1, 1), (B, 2, 23))
		k=2	(1, 2), (B, 2, 29)
	j = 3	k=1	(1, 1), (B, 3, 31))
		k=2	(1, 2), (B, 3, 37))
i= 2	j = 1	k =1	(2, 1), (B, 1, 17))
		k=2	(2, 2), (B, 1, 19))
	j = 2	k=1	(2, 1), (B, 2, 23))
		k=2	(2, 2), (B, 2, 29))
	j = 3	k=1	(2, 1), (B, 3, 31))
		k=2	(2, 2), (B, 3, 37))

Reducer

Key

(1, 1)

(A, 1, 2)	(B, 1, 17)	2x17	
(A, 2, 3)	(B, 2, 23)	3x23	34+69+155 = 258
(A, 3, 5)	(B, 3, 31)	5x31	

(2, 1)

(A, 1, 7)	(B, 1, 17)	7x17	
(A, 2, 11)	(B, 2, 23)	11x23	119+253+403 = 775
(A, 3, 13)	(B, 3, 31)	13x31	

(1, 2)

(A, 1, 2)	(B, 1, 19)	2x19	
(A, 2, 3)	(B, 2, 29)	3x29	38+87+185 = 310
(A, 3, 5)	(B, 3, 37)	5x37	

(2, 2)

(A, 1, 7)	(B, 1, 19)	7x19	
(A, 2, 11)	(B, 2, 29)	11x29	133+319+481=933
(A, 3, 13)	(B, 3, 37)	13x37	