

Illustrate the execution of RADIX SORT on the following input S of 4-tuples of Keys (K_1, K_2, K_3, K_4)

S: $(9, 2, 1, 5), (2, 1, 3, 5), (10, 5, 6, 2), (3, 4, 8, 2), (3, 4, 6, 3), (7, 5, 9, 2), (8, 3, 1, 6), (2, 1, 4, 5), (7, 6, 9, 2)$

Step 1: Construct B using K_4

B:	0	1	2	3	4	5	6	7	8	9	10
			↓	↓	↓	↓	↓				
			$(10, 5, 6, 2)$	$(3, 4, 6, 3)$	$(9, 2, 1, 5)$	$(8, 3, 1, 6)$					
			\downarrow		\downarrow	\downarrow					
			$(3, 4, 8, 2)$		$(2, 1, 3, 5)$						
			\downarrow		\downarrow						
			$(7, 5, 9, 2)$		$(2, 1, 4, 5)$						
			\downarrow								
			$(7, 6, 9, 2)$								

Step 2: Use sequence sorted by K_4 , which is now

$(10, 5, 6, 2), (3, 4, 8, 2), (7, 5, 9, 2), (7, 6, 9, 2), (3, 4, 6, 3), (9, 2, 1, 5), (2, 1, 3, 5), (2, 1, 4, 5), (8, 3, 1, 6)$
to construct B using K_3

B:	0	1	2	3	4	5	6	7	8	9	10
			↓	↓	↓	↓	↓	↓	↓	↓	
			$(9, 2, 1, 5)$		$(2, 1, 3, 5)$	$(2, 1, 4, 5)$	$(10, 5, 6, 2)$		$(3, 4, 8, 2)$	$(7, 5, 9, 2)$	
			\downarrow		\downarrow	\downarrow	\downarrow		\downarrow	\downarrow	
			$(8, 3, 1, 6)$				$(3, 4, 6, 3)$				

Step 3: Use sequence sorted by K_3 , which is now

$(9, 2, 1, 5), (8, 3, 1, 6), (2, 1, 3, 5), (2, 1, 4, 5), (10, 5, 6, 2), (3, 4, 6, 3), (3, 4, 8, 2), (7, 5, 9, 2), (7, 6, 9, 2)$
to construct B using K_2

B:	0	1	2	3	4	5	6	7	8	9	10
			↓	↓	↓	↓	↓	↓	↓	↓	
			$(2, 1, 3, 5)$	$(9, 2, 1, 5)$	$(8, 3, 1, 6)$	$(3, 4, 6, 3)$	$(10, 5, 6, 2)$	$(7, 6, 9, 2)$			
			\downarrow		\downarrow	\downarrow	\downarrow		\downarrow		
			$(2, 1, 4, 5)$			$(3, 4, 8, 2)$	$(7, 5, 9, 2)$				

Step 4: Use sequence sorted by K_2 , which is now
 $(2,1,3,5), (2,1,4,5), (9,2,1,5), (8,3,1,6), (3,4,6,3), (3,4,8,2), (10,5,6,2), (7,5,9,2), (7,6,9,2)$
 to construct B using K_1 .

$B:$	0	1	2	3	4	5	6	7	8	9	10
			\downarrow	\downarrow			\downarrow	\downarrow	\downarrow	\downarrow	\downarrow

$(2,1,3,5)$ $(3,4,6,3)$
 $(2,1,4,5)$ $(3,4,8,2)$

 $(7,5,9,2)$ $(8,3,1,6)$ $(9,2,1,5)$ $(10,5,6,2)$
 $(7,6,9,2)$

Resulting sequence is:

$(2,1,3,5), (2,1,4,5), (3,4,6,3), (3,4,8,2), (7,5,9,2), (7,6,9,2), (8,3,1,6), (9,2,1,5), (10,5,6,2)$.