



The numbers within a node correspond to a page.

The **red numbers** next to a node serve as an identification number (node id).

address array

page value	1	2	3	4	5	6
node id	3	4	5	6	1	2

The address array has size $m=6$.

If we are searching for a node with a certain page value, we can use the address array.
E.g. which node has page value 2?

Since $\text{address}[2]=4$ we know that page 2 is in node 4.

The following **arrays** of size $2m$ describe all $2m=12$ nodes:

page value array	node id	1	2	3	4	5	6	7	8	9	10	11	12	value[5]=3 means that node 5 has page value 3.
	page value	5	6	1	2	3	4	-1	-1	-1	-1	-1	-1	
parent array	node id	1	2	3	4	5	6	7	8	9	10	11	12	parent[3]=1 means that node 3 has node 1 as parent.
	parent node	1	1	1	4	4	4	-1	-1	-1	-1	-1	-1	
left array	node id	1	2	3	4	5	6	7	8	9	10	11	12	left[1]=4 means that node 1 has node 4 as left neighbor. left[4]=-10 means that L_0 -Ptr is adjacent to the left of node 4. left[2]=-1 means that node 2 has no left neighbor.
	left node	4	-1	-1	-10	-1	-1	-1	-1	-1	-1	-1	-1	
right array	node id	1	2	3	4	5	6	7	8	9	10	11	12	right[1]=-20 means that L_k -Ptr is adjacent to the right of node 1.
	right node	-20	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	
count array	node id	1	2	3	4	5	6	7	8	9	10	11	12	count[1]=2 means that two empty sets are adjacent to the left of node 1. count[4]=0 means no empty sets are to the left of node 4.
	count value	2	0	0	0	0	0	-1	-1	-1	-1	-1	-1	
marked array	node id	1	2	3	4	5	6	7	8	9	10	11	12	marked[6]=0 means that node 6 is not marked. An array value of 1 would indicate a marked node.
	marked	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	
rank array	node id	1	2	3	4	5	6	7	8	9	10	11	12	rank[4]=1 means that node 4 has a rank value of 1 (the rank is essentially the height).
	rank value	1	0	0	1	0	0	-1	-1	-1	-1	-1	-1	

There are in total $2m=12$ nodes.
6 of these nodes are currently used while the other 6 are still free.

free nodes have an array value of -1

The pointers L_0 -Ptr and L_k -Ptr are implemented by **two variables** L_0 -Ptr and L_k -Ptr:

L_0 -Ptr=4 means that L_0 -Ptr points to node 4.

L_k -Ptr=1 means that L_k -Ptr points to node 1.

A **queue** Q maintains the **id** of free nodes:

$Q = [7, 8, 9, 10, 11, 12]$