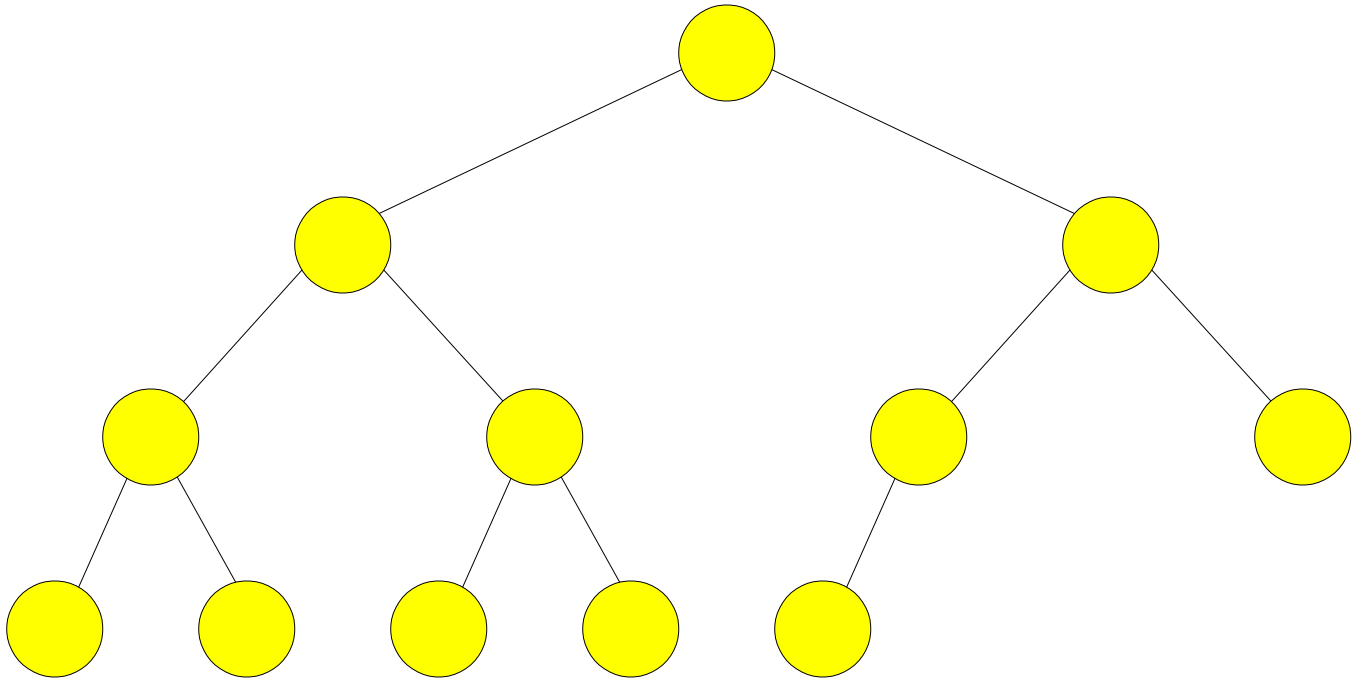
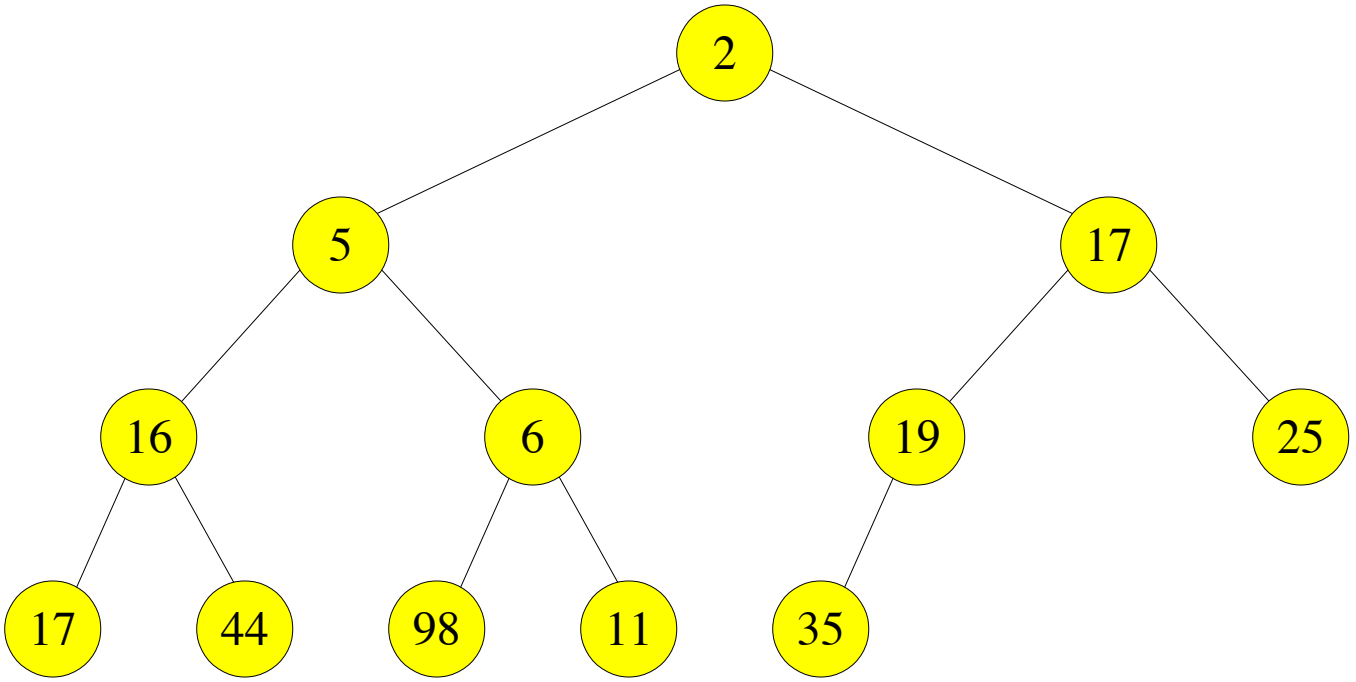
Binary Heap Definition:

#1:



Binary Heap Definition:

#2:

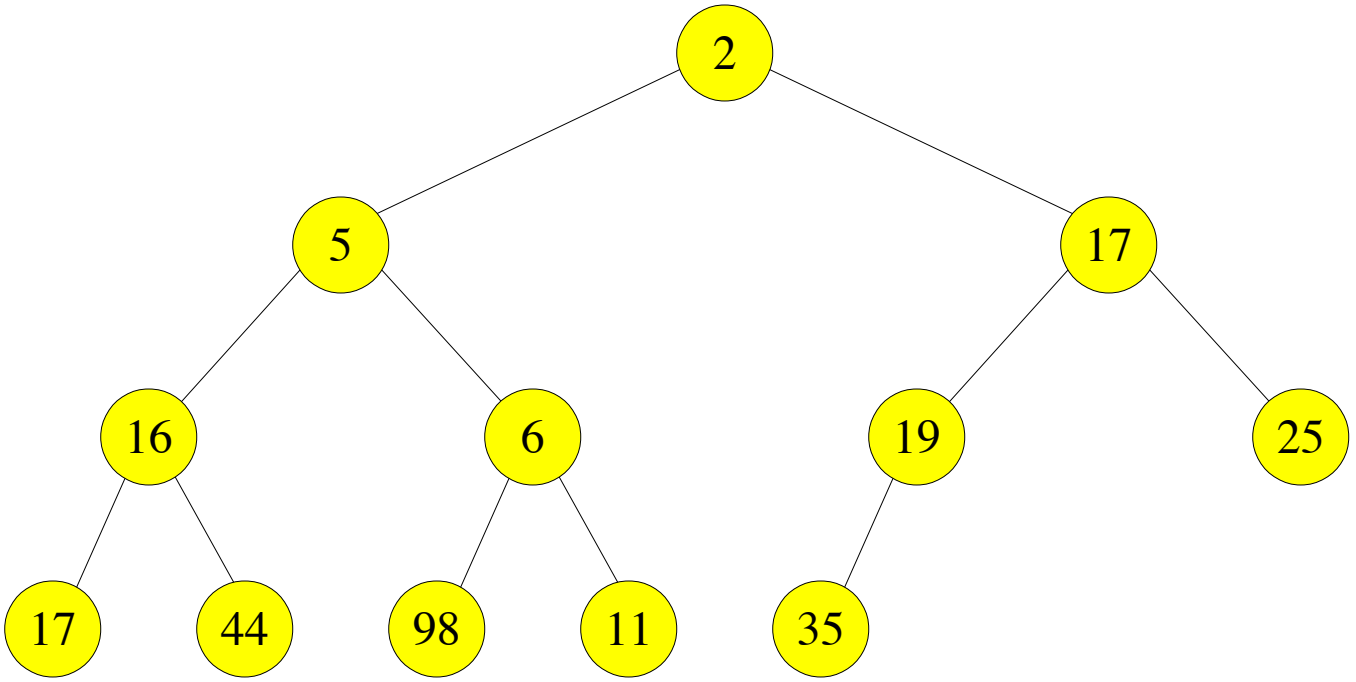


Pushing a value

:

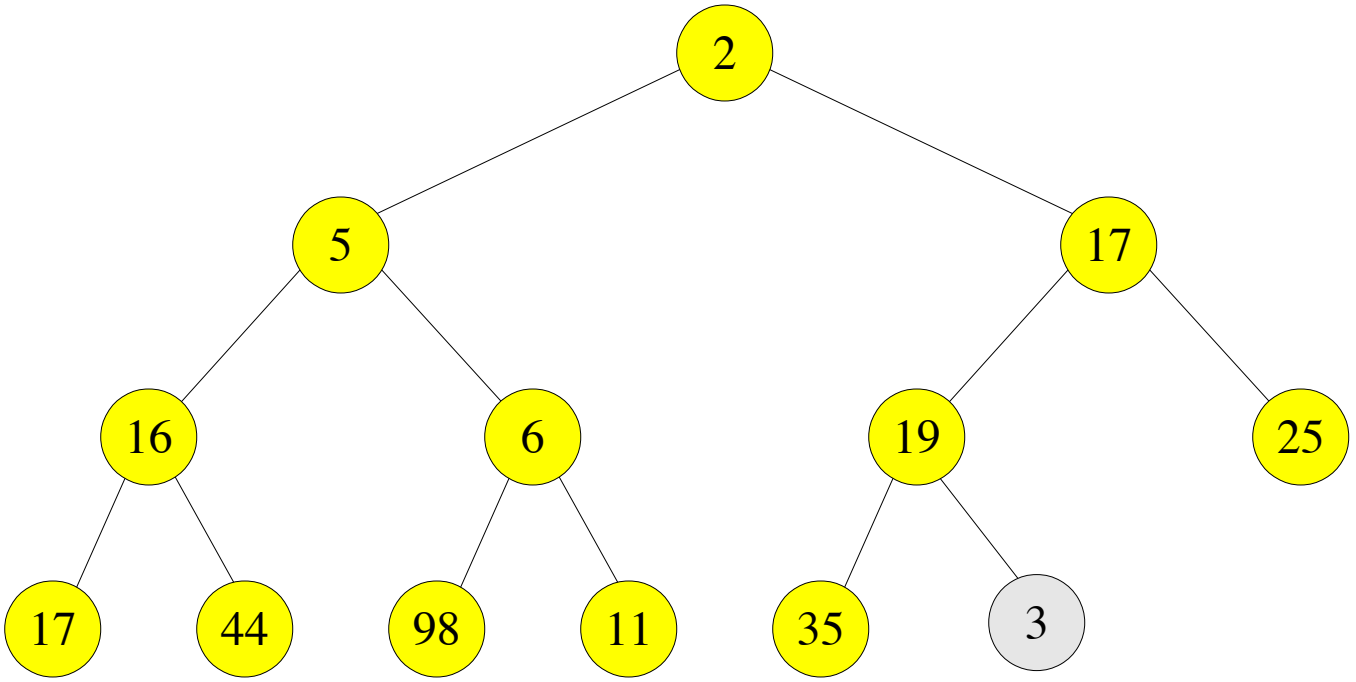
Push example

Push 3.



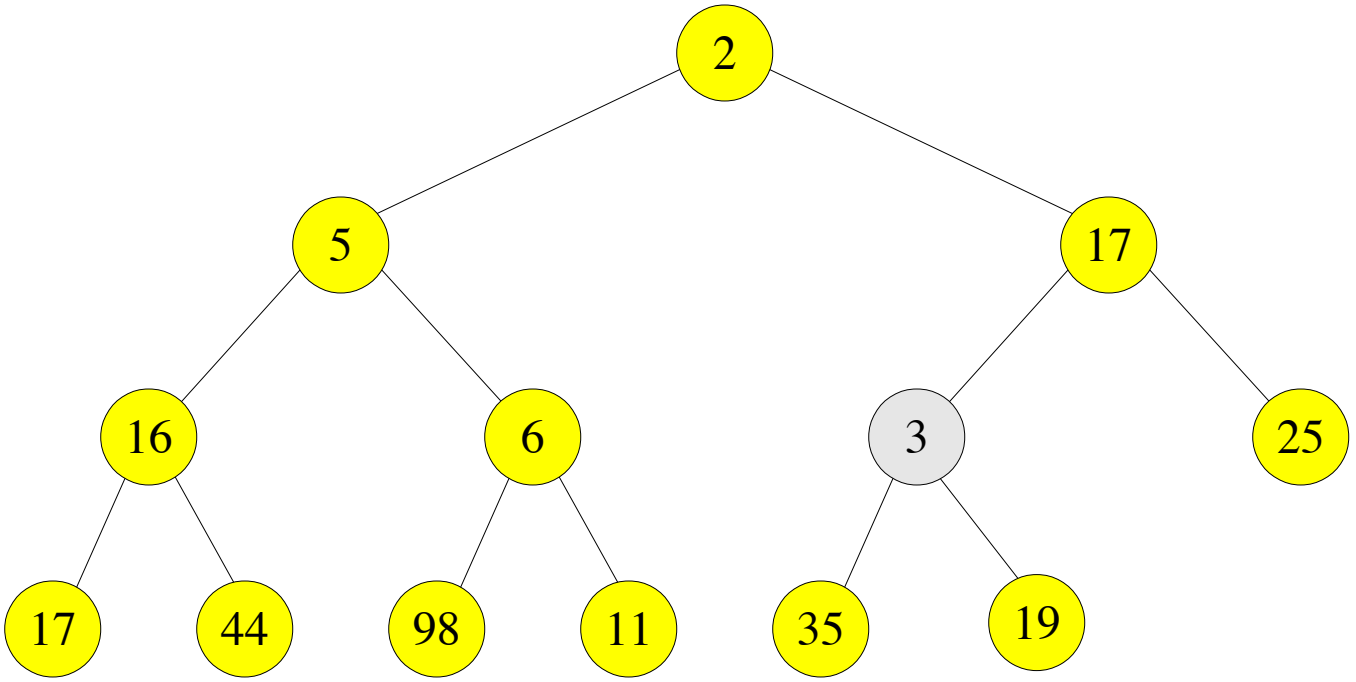
Push example

Push 3.



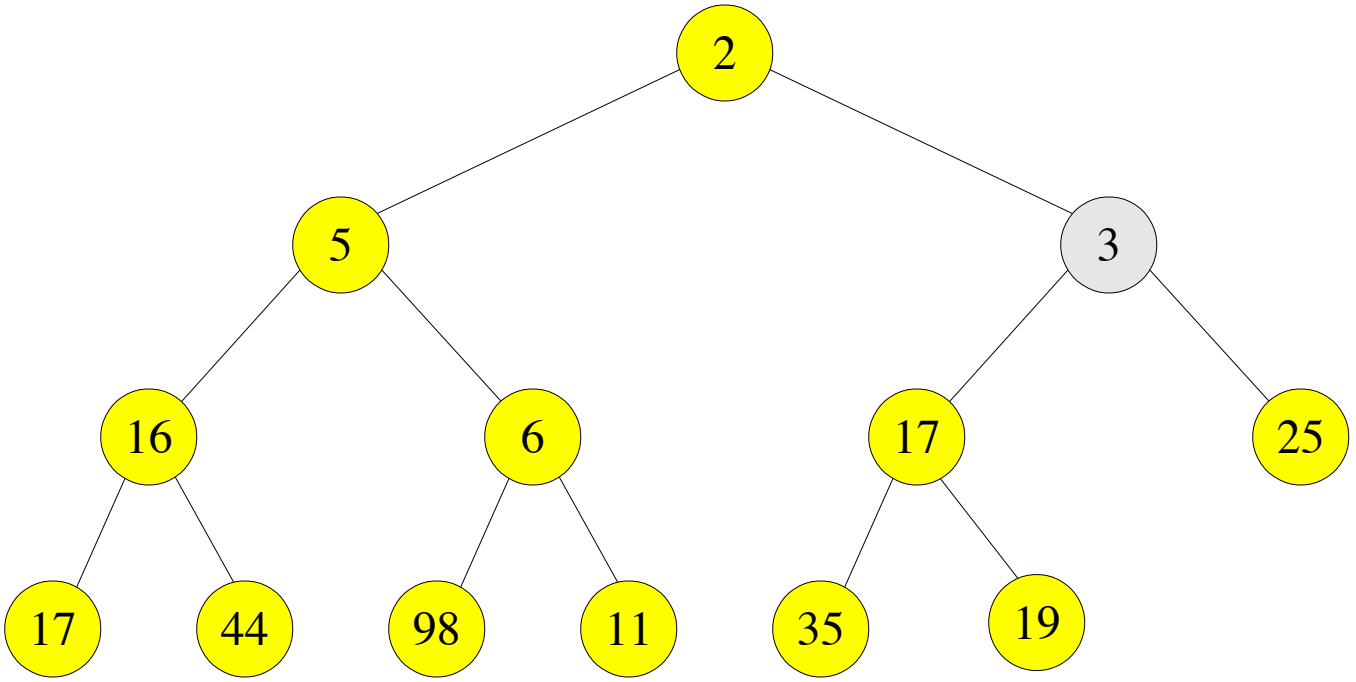
Push example

Push 3.



Push example

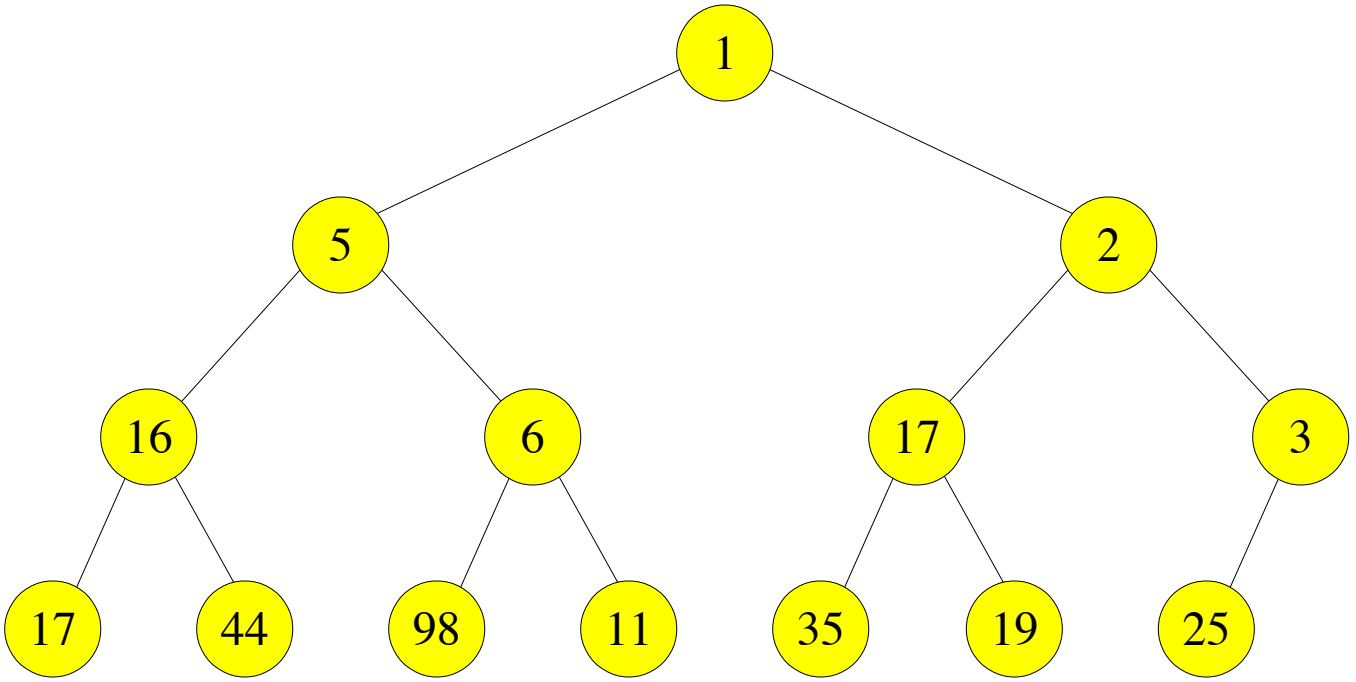
Push 3.



Popping a value

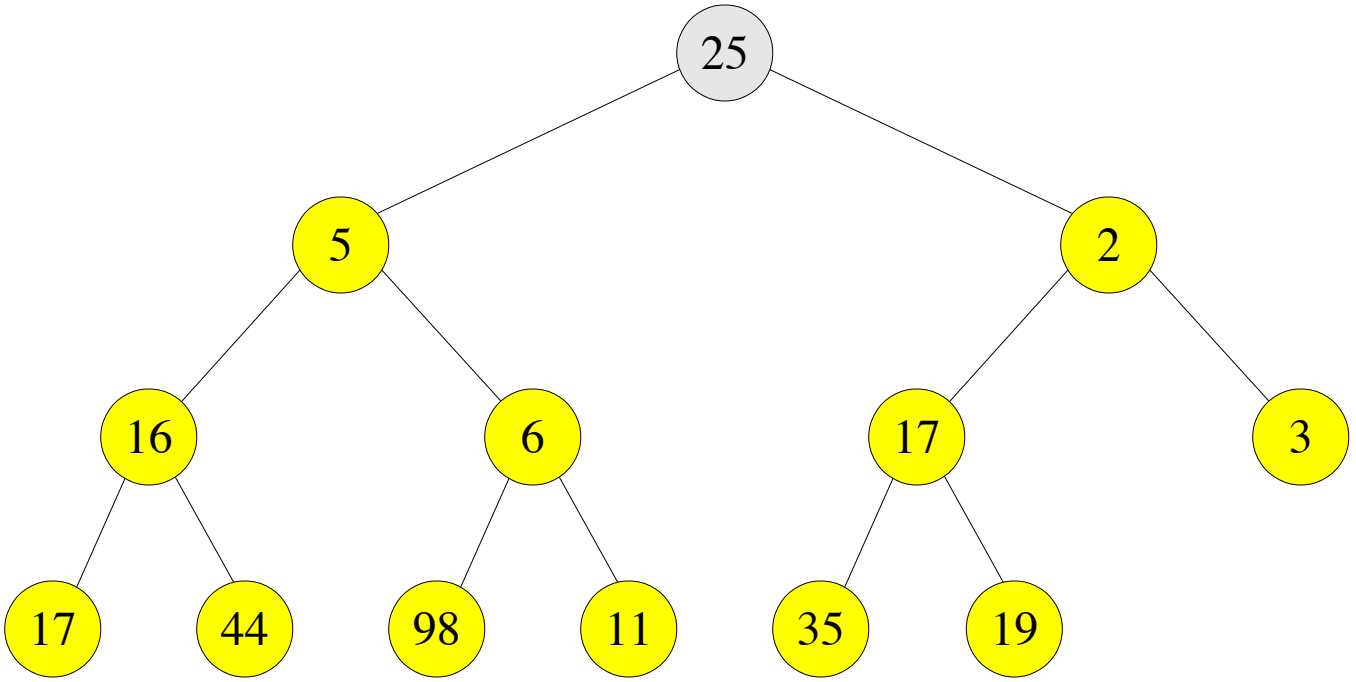
:

Pop example



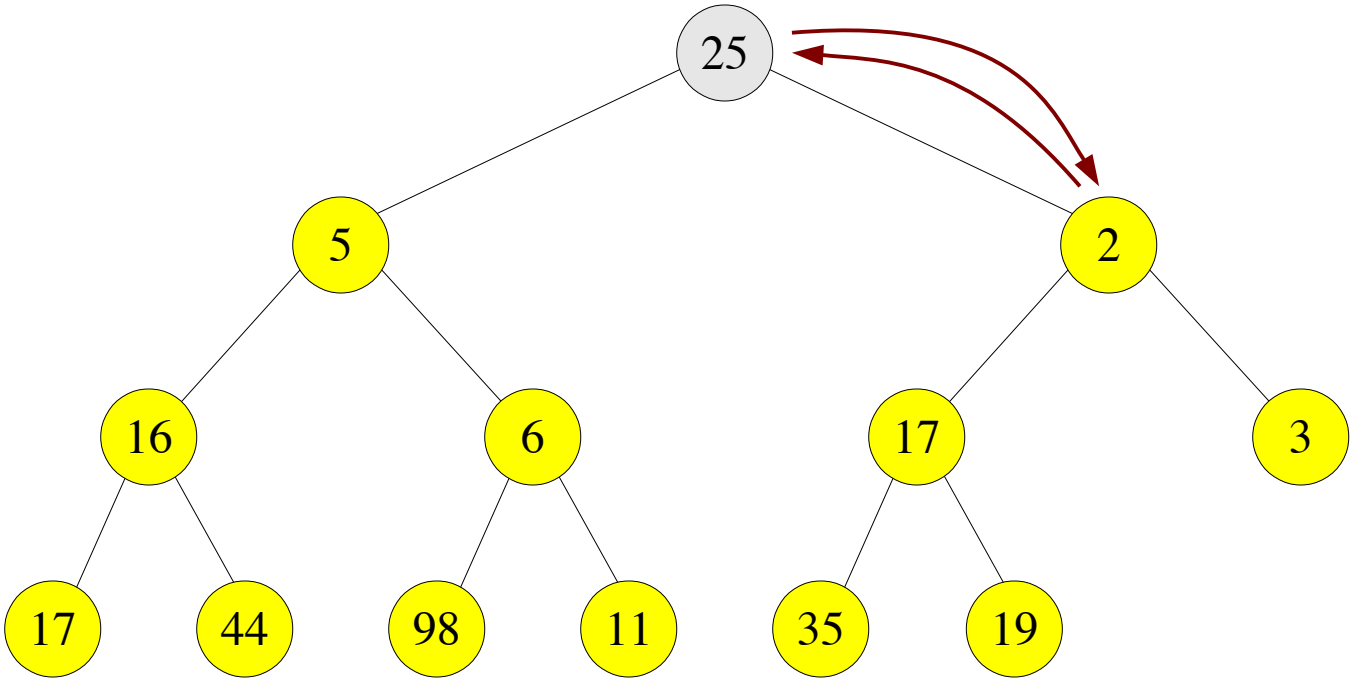
Pop example

Will return 1.



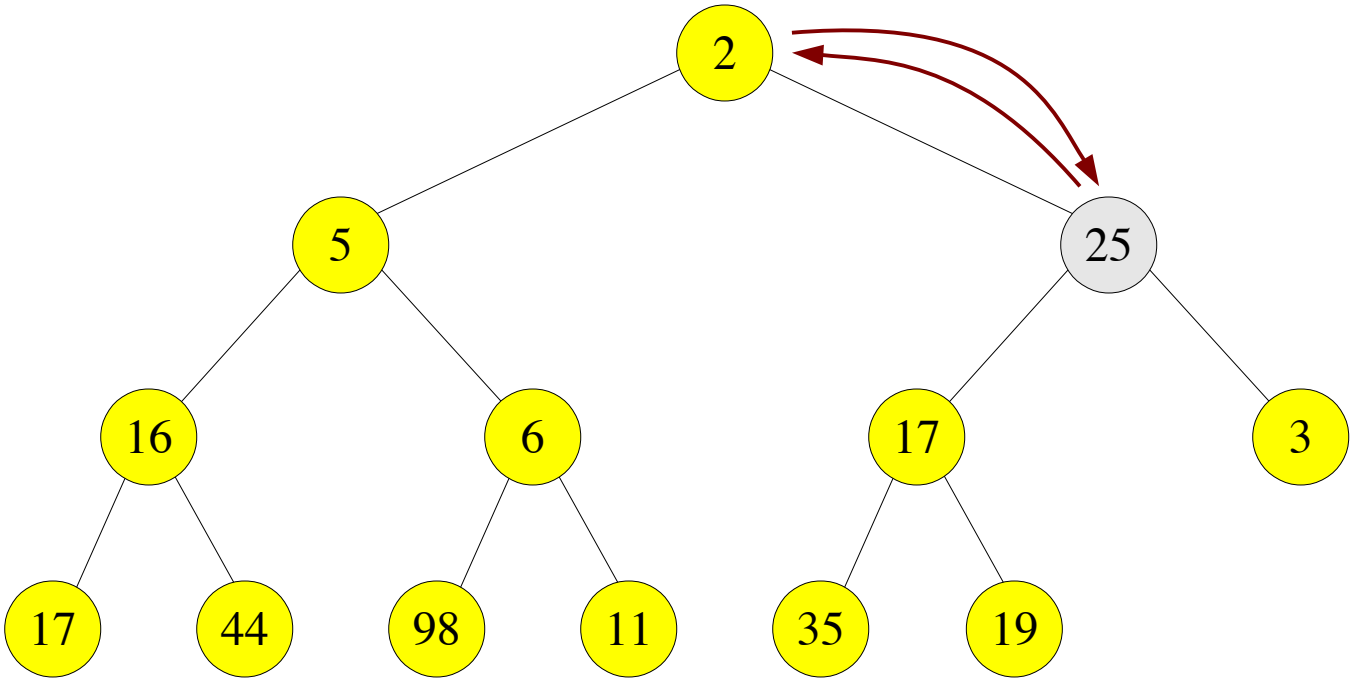
Pop example

Will return 1.



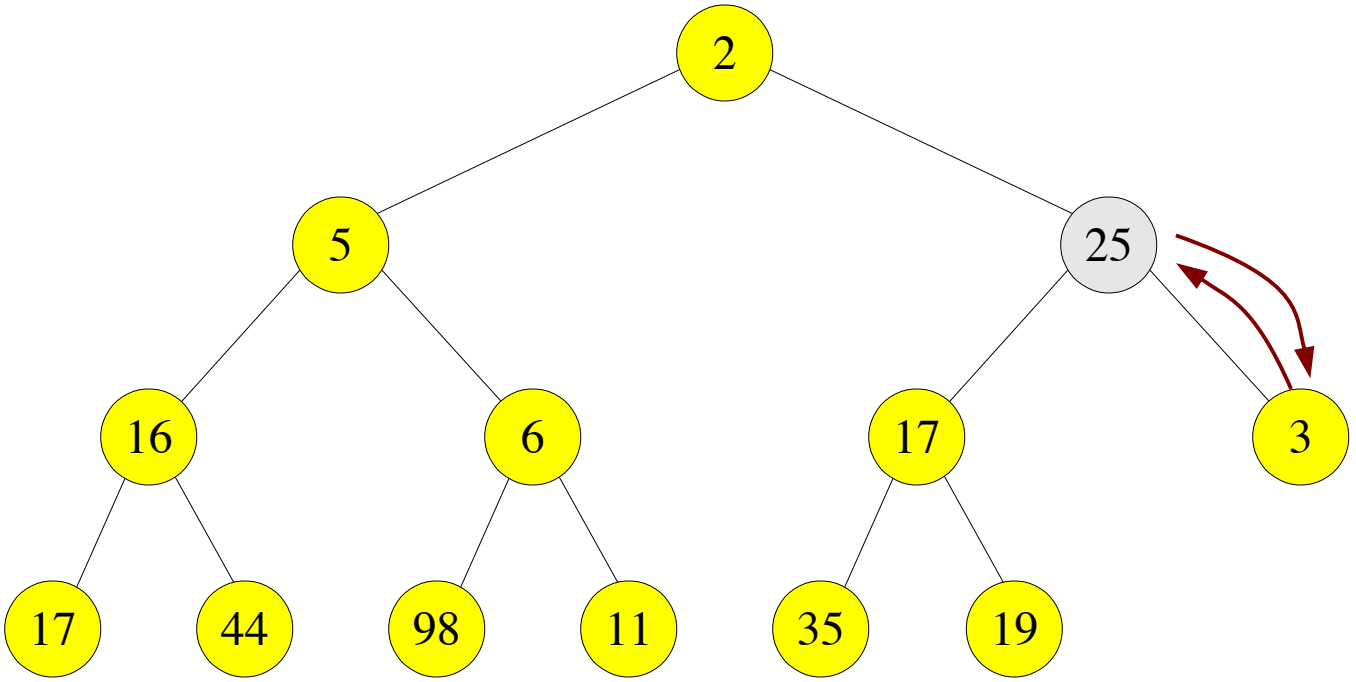
Pop example

Will return 1.



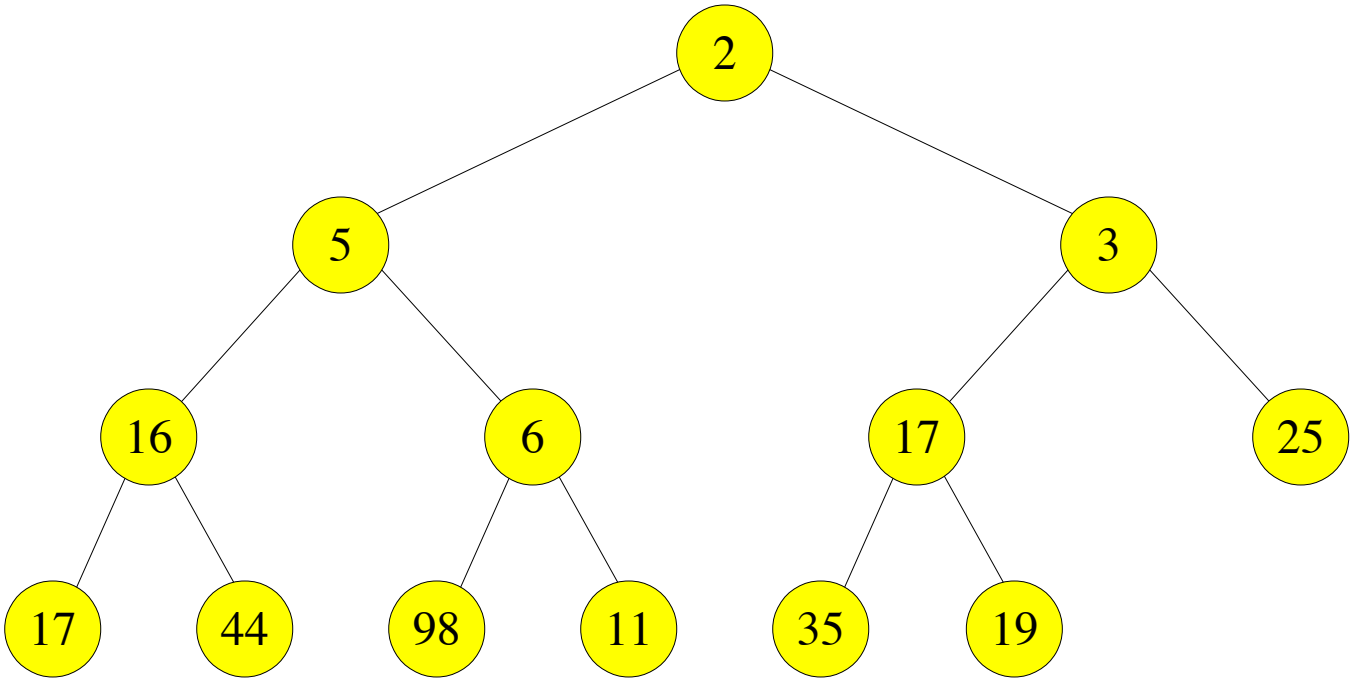
Pop example

Will return 1.

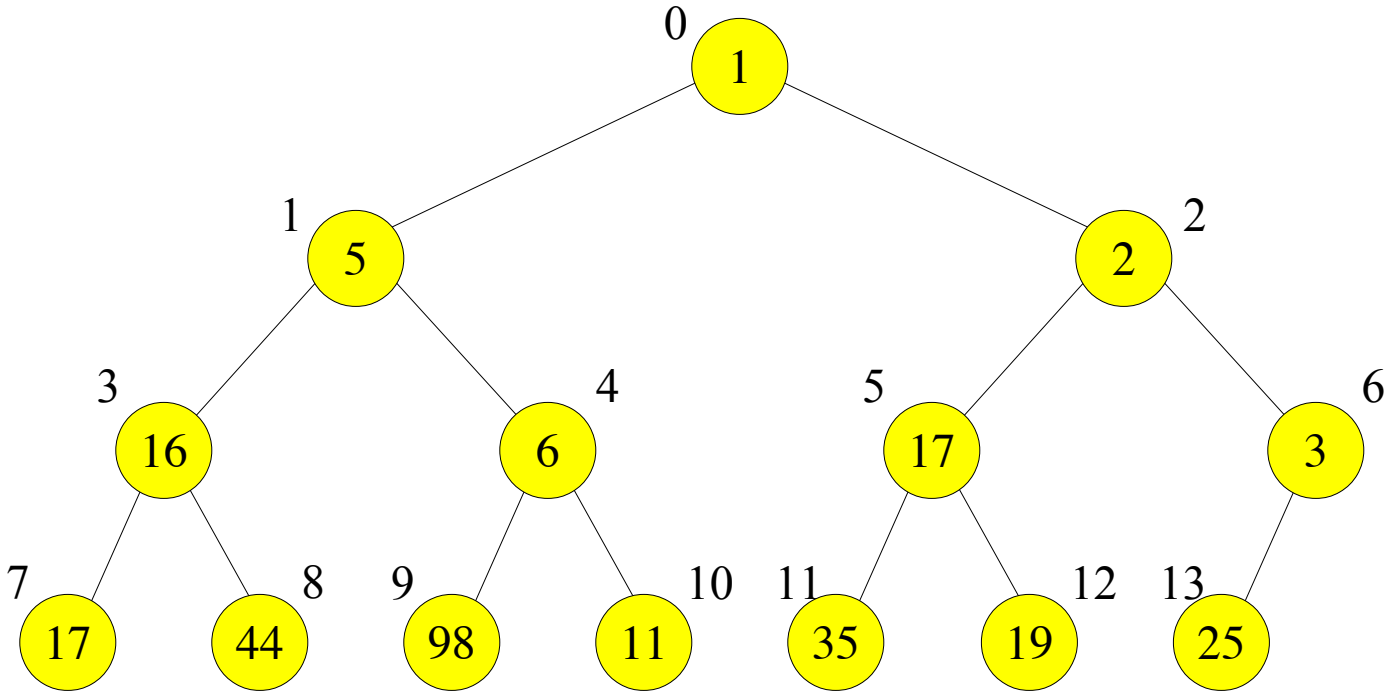


Pop example

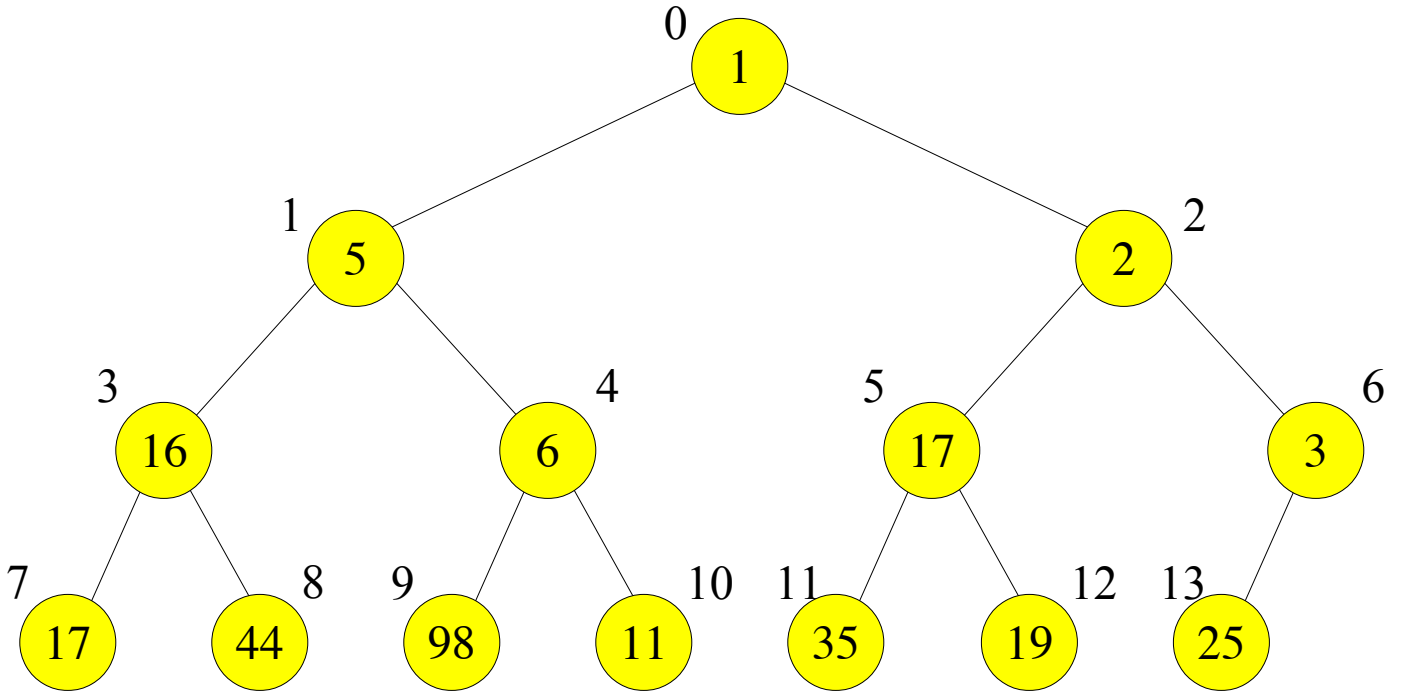
Return 1.



Implementation Details



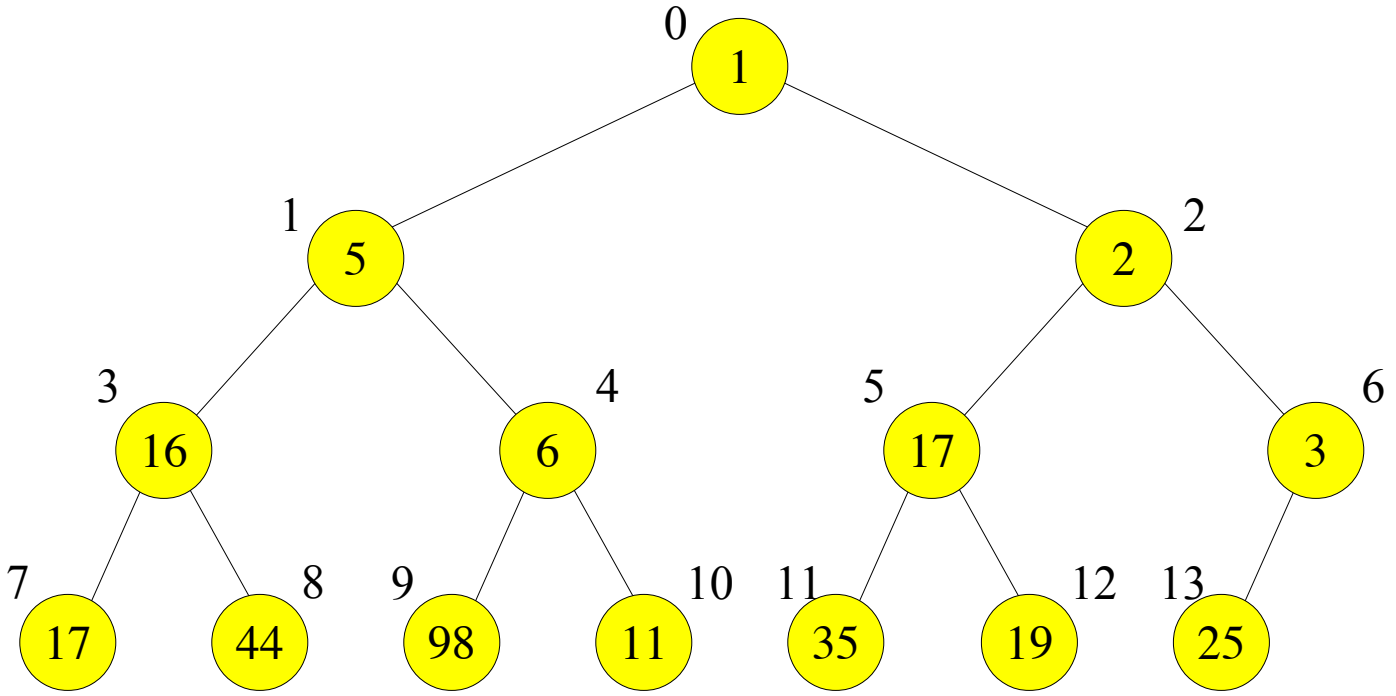
Implementation Details



1	5	2	16	6	17	3	17	44	98	11	35	19	25
0	1	2	3	4	5	6	7	8	9	10	11	12	13

Implementation Details

$p =$
$l =$
$r =$

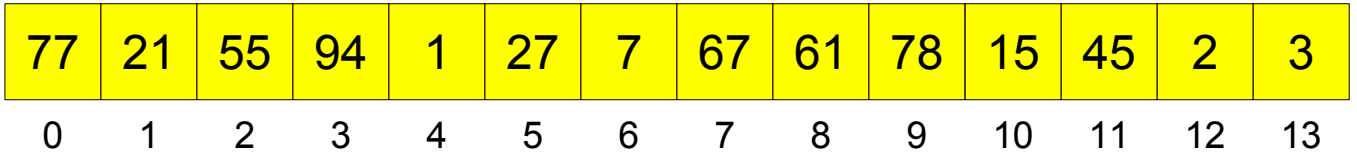


1	5	2	16	6	17	3	17	44	98	11	35	19	25
0	1	2	3	4	5	6	7	8	9	10	11	12	13

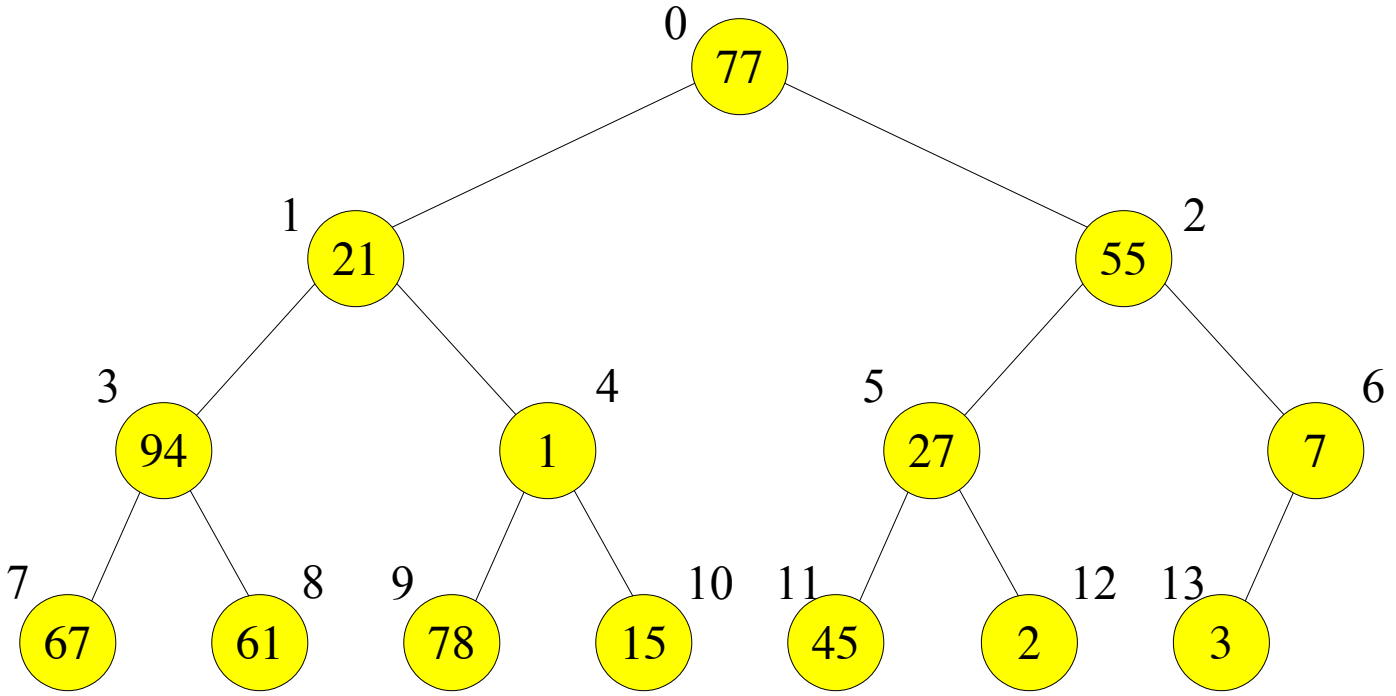
Implementation Details

(Write a program that implements push(), printing the heap each time.)

Constructing a Heap from a Vector



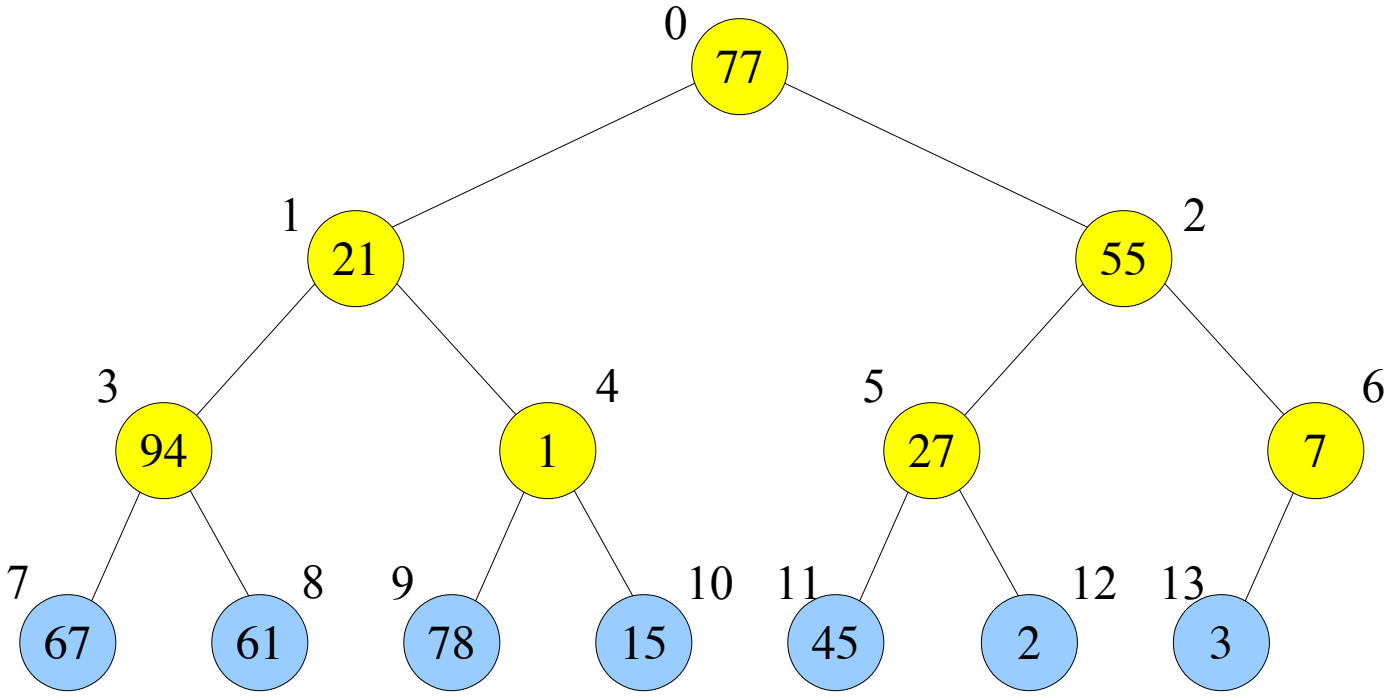
Constructing a Heap from a Vector



77	21	55	94	1	27	7	67	61	78	15	45	2	3
0	1	2	3	4	5	6	7	8	9	10	11	12	13

Constructing a Heap from a Vector

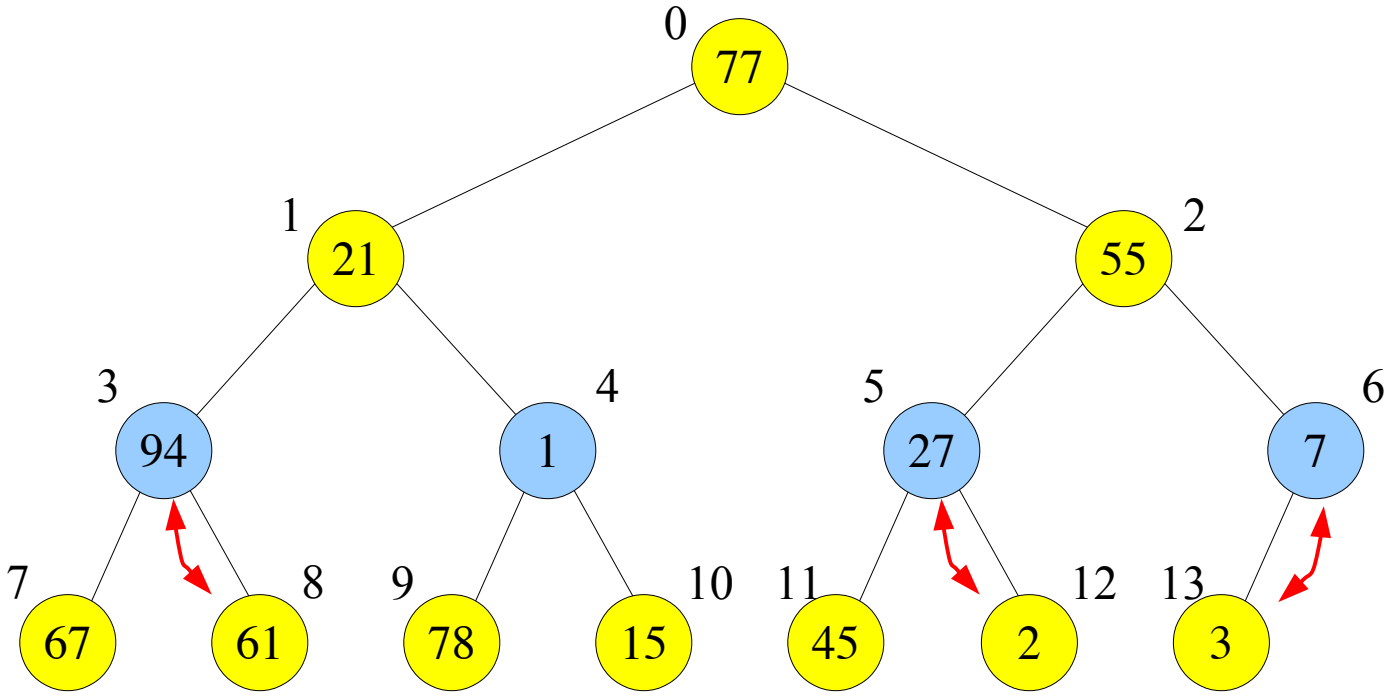
Already Heaps



77	21	55	94	1	27	7	67	61	78	15	45	2	3
0	1	2	3	4	5	6	7	8	9	10	11	12	13

Constructing a Heap from a Vector

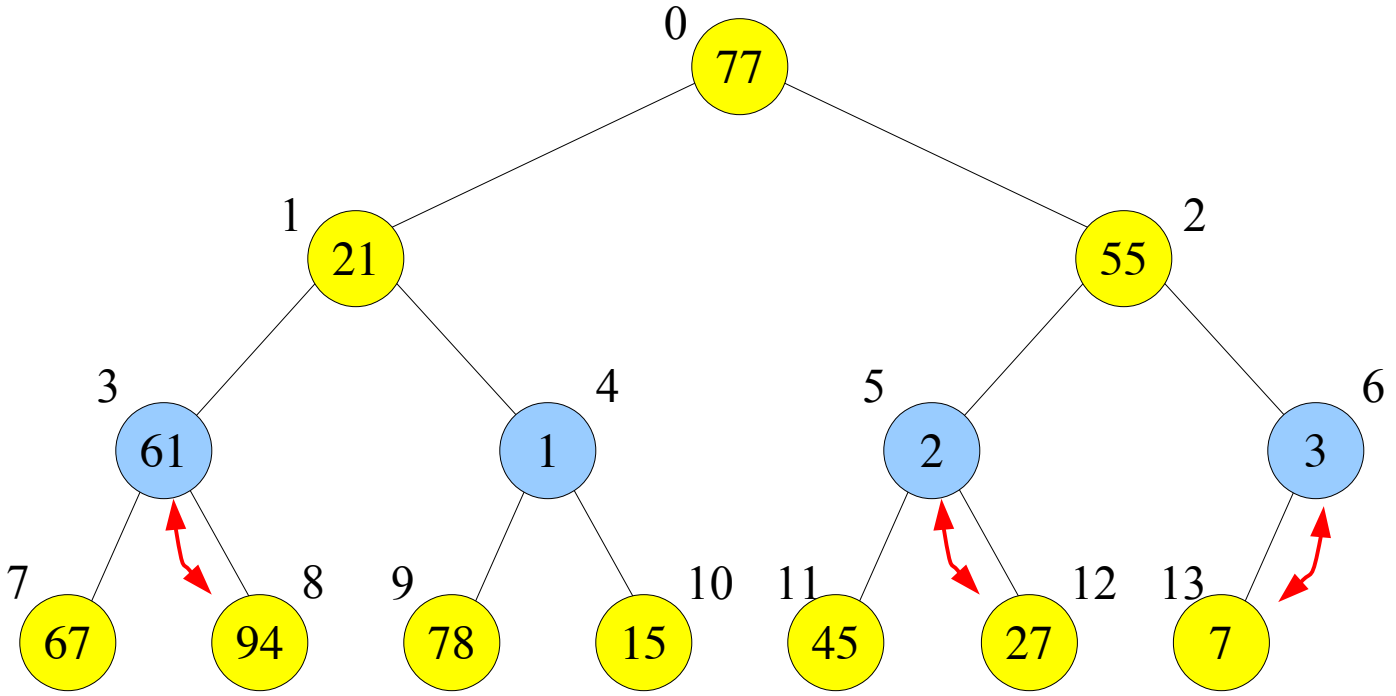
Percolate Down



77	21	55	94	1	27	7	67	61	78	15	45	2	3
0	1	2	3	4	5	6	7	8	9	10	11	12	13

Constructing a Heap from a Vector

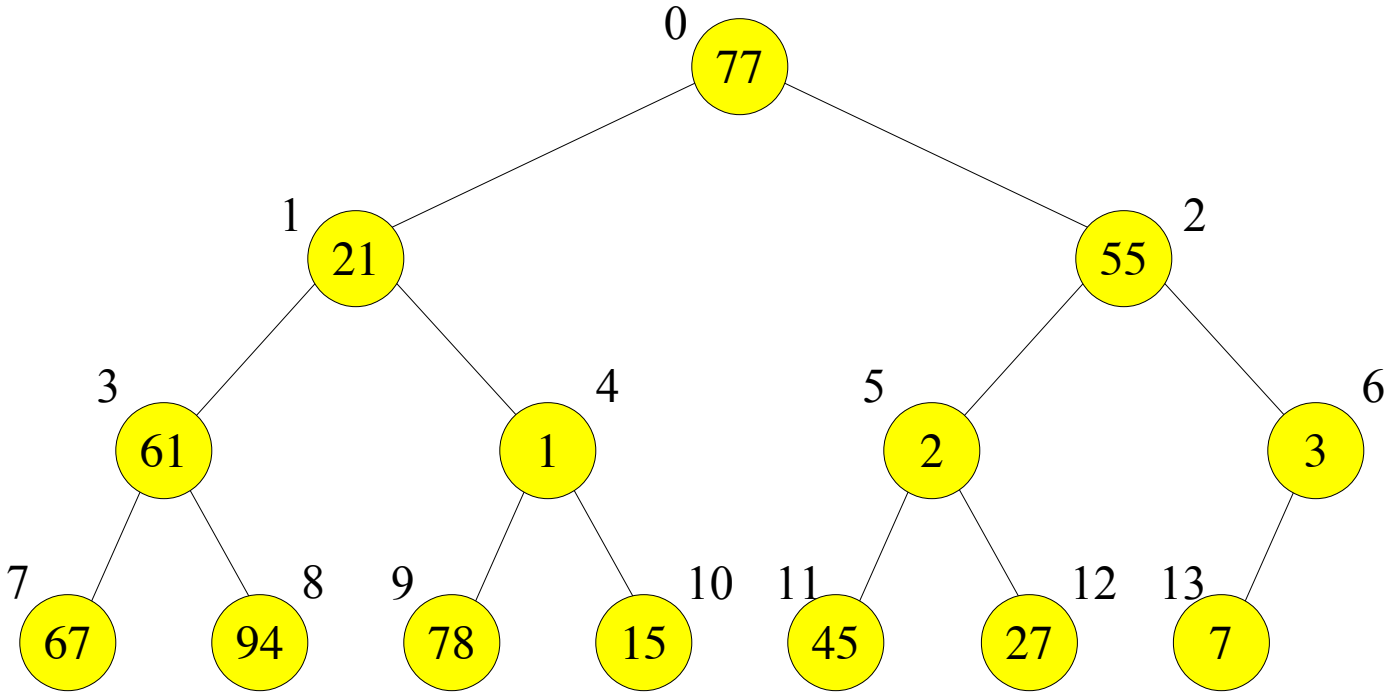
Percolate Down



77	21	55	61	1	2	3	67	94	78	15	45	27	7
0	1	2	3	4	5	6	7	8	9	10	11	12	13

Constructing a Heap from a Vector

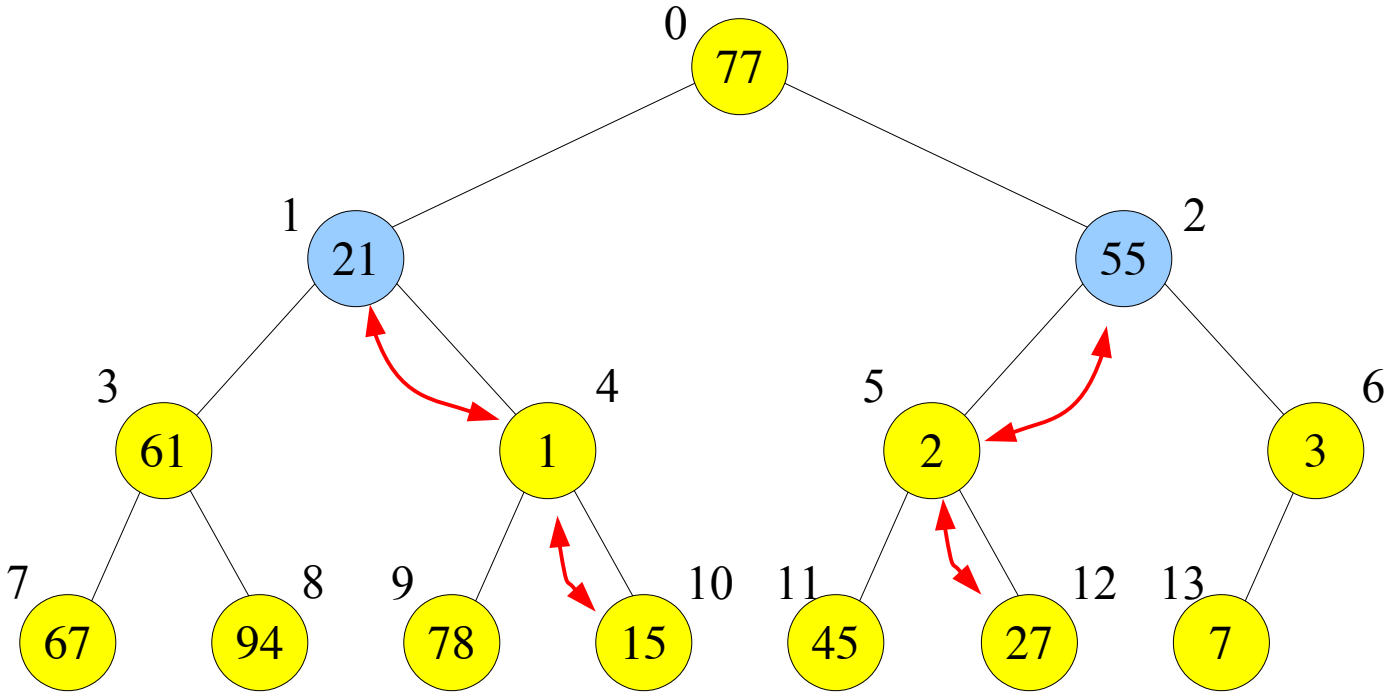
Percolate Down



77	21	55	61	1	2	3	67	94	78	15	45	27	7
0	1	2	3	4	5	6	7	8	9	10	11	12	13

Constructing a Heap from a Vector

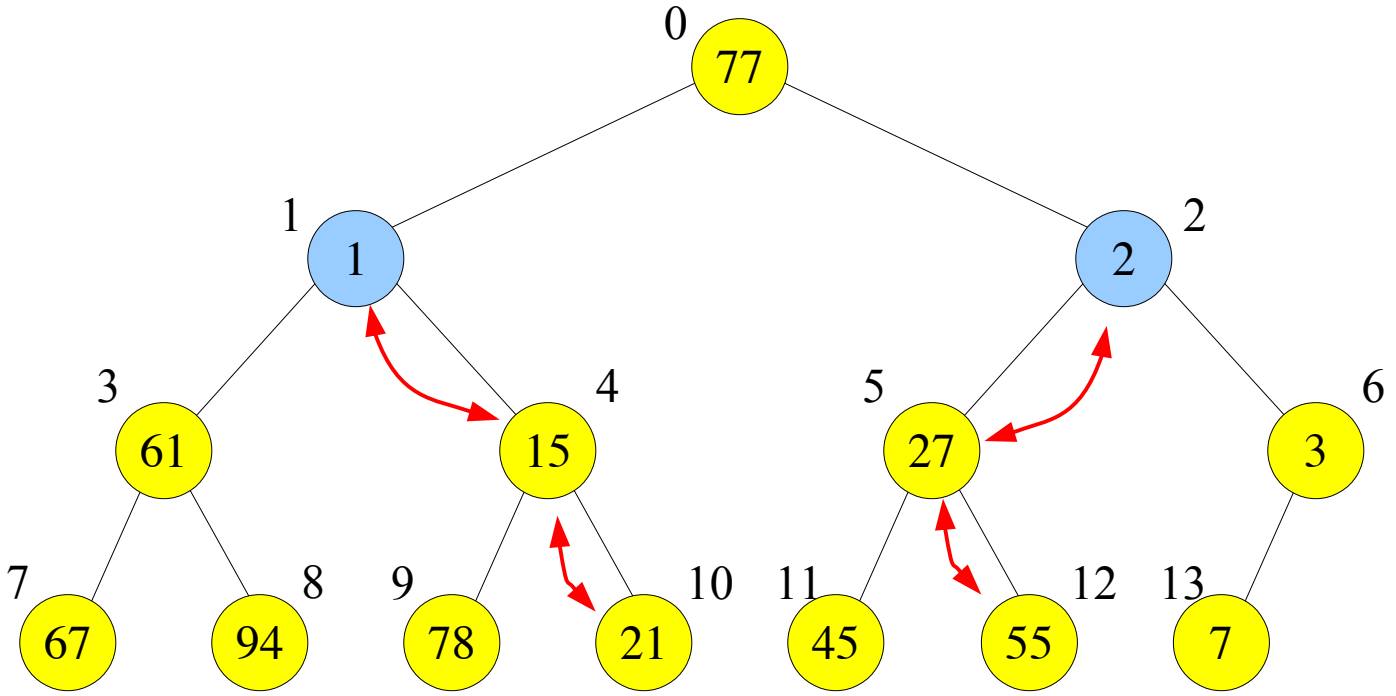
Percolate Down



77	21	55	61	1	2	3	67	94	78	15	45	27	7
0	1	2	3	4	5	6	7	8	9	10	11	12	13

Constructing a Heap from a Vector

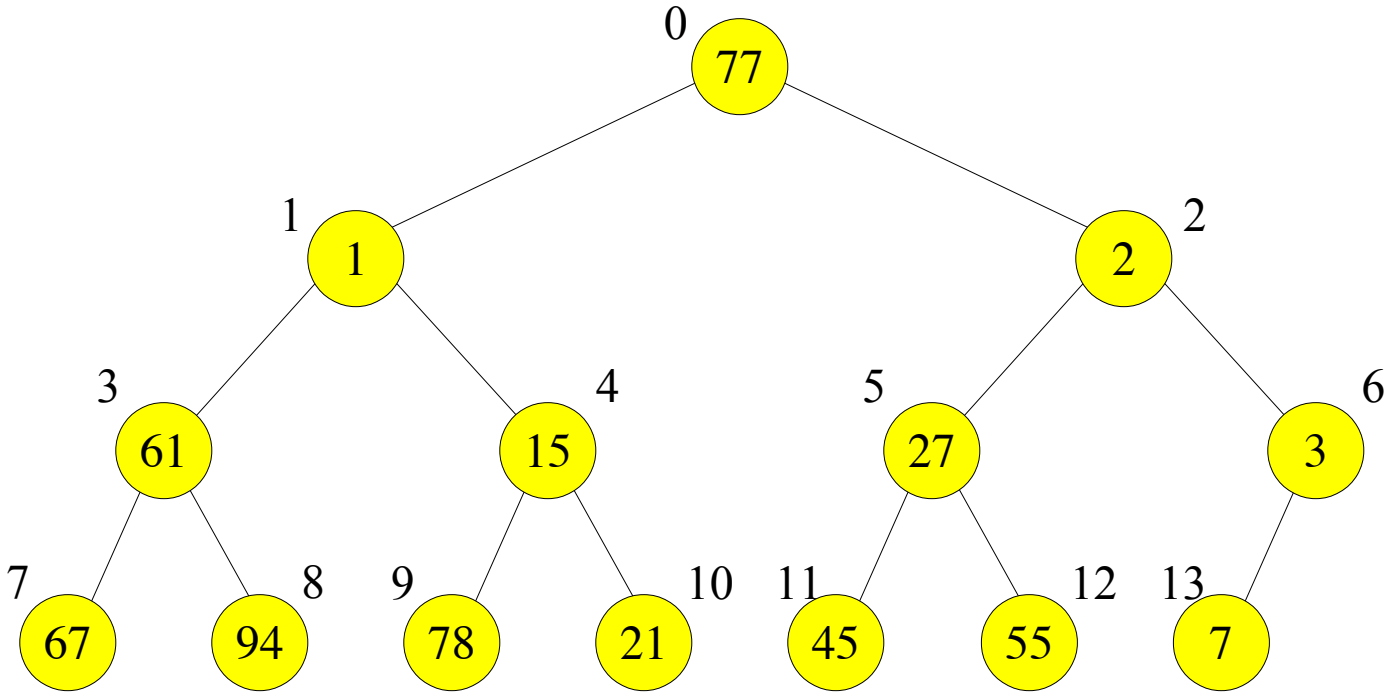
Percolate Down



77	1	2	61	15	27	3	67	94	78	21	45	55	7
0	1	2	3	4	5	6	7	8	9	10	11	12	13

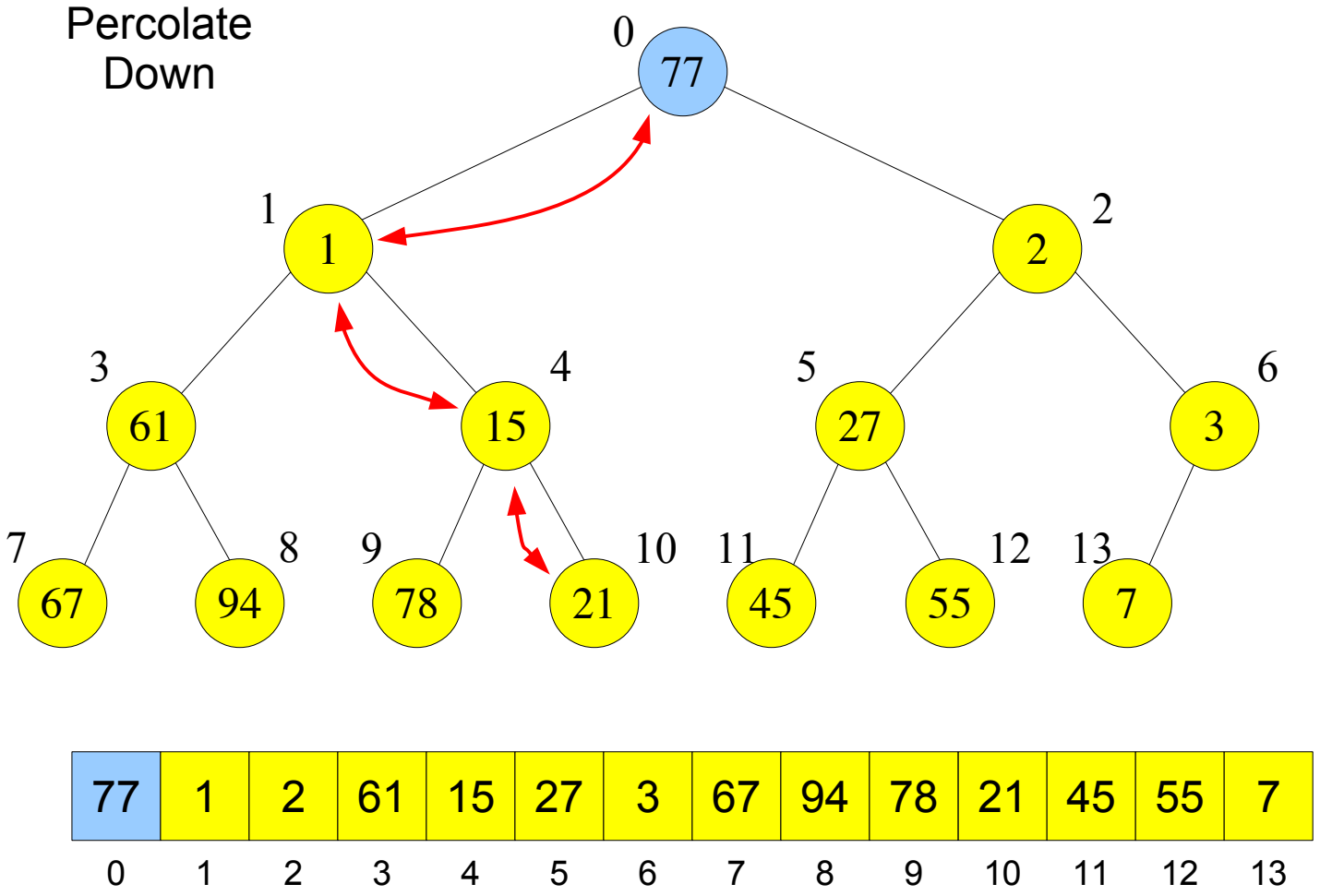
Constructing a Heap from a Vector

Percolate Down

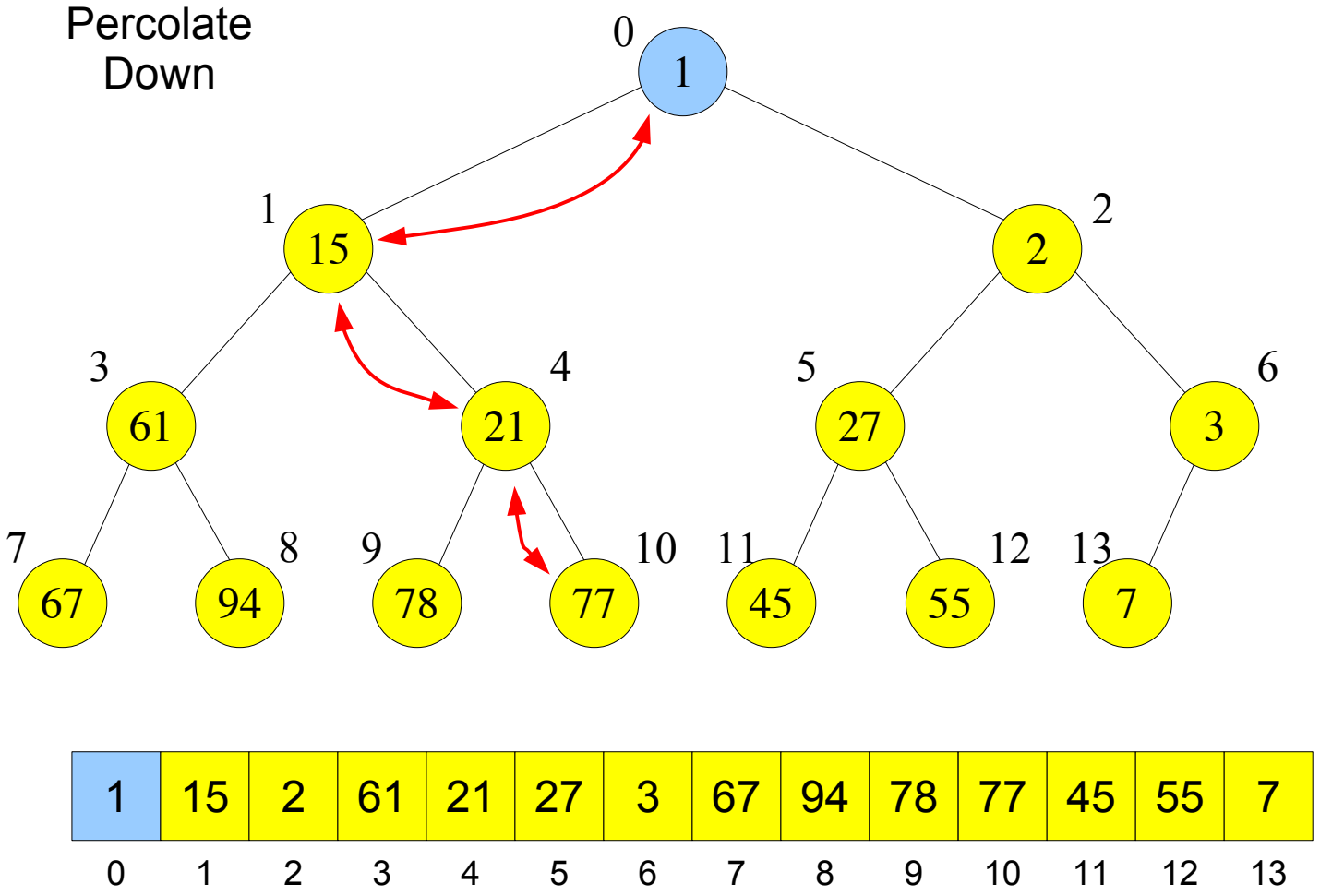


77	1	2	61	15	27	3	67	94	78	21	45	55	7
0	1	2	3	4	5	6	7	8	9	10	11	12	13

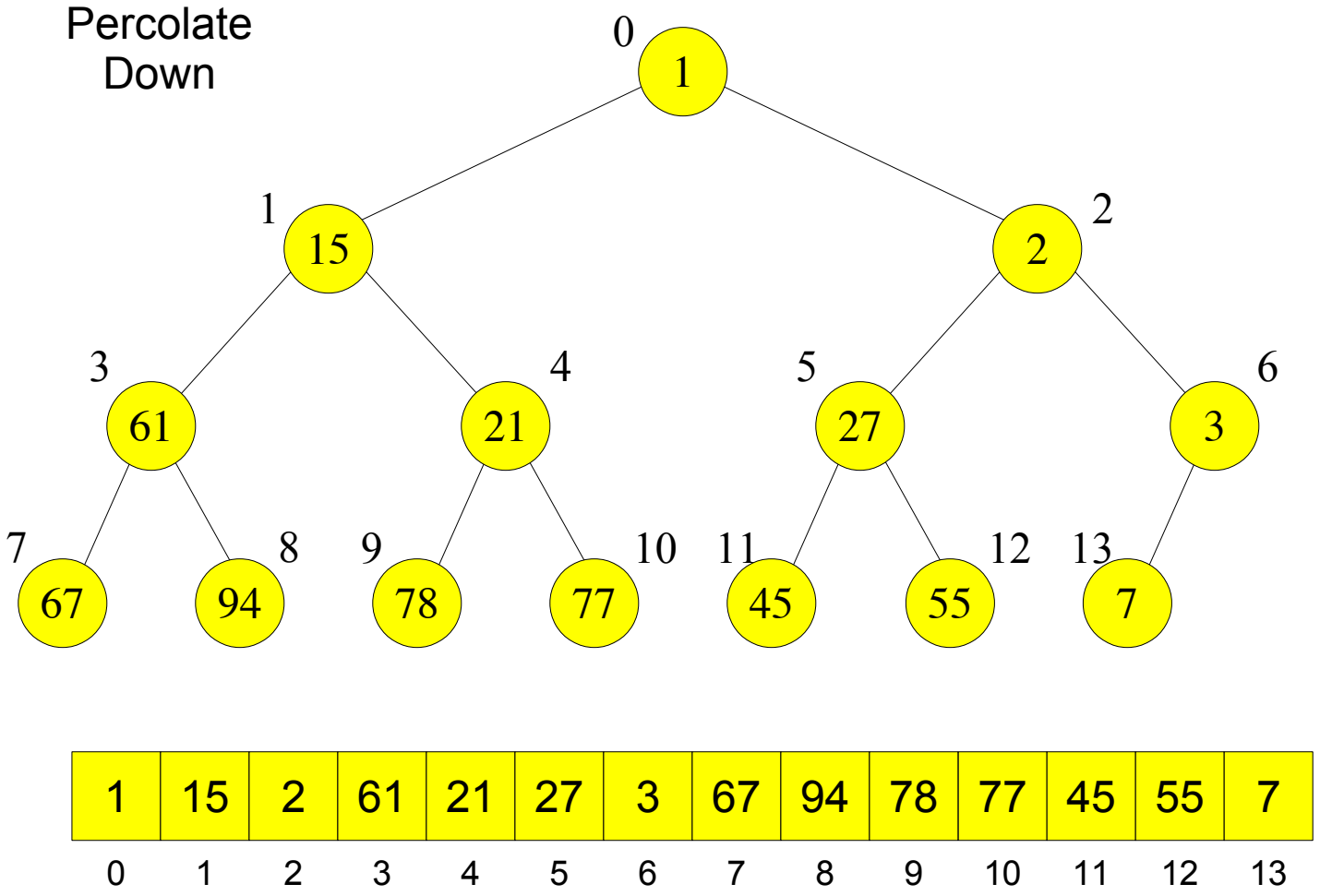
Constructing a Heap from a Vector



Constructing a Heap from a Vector



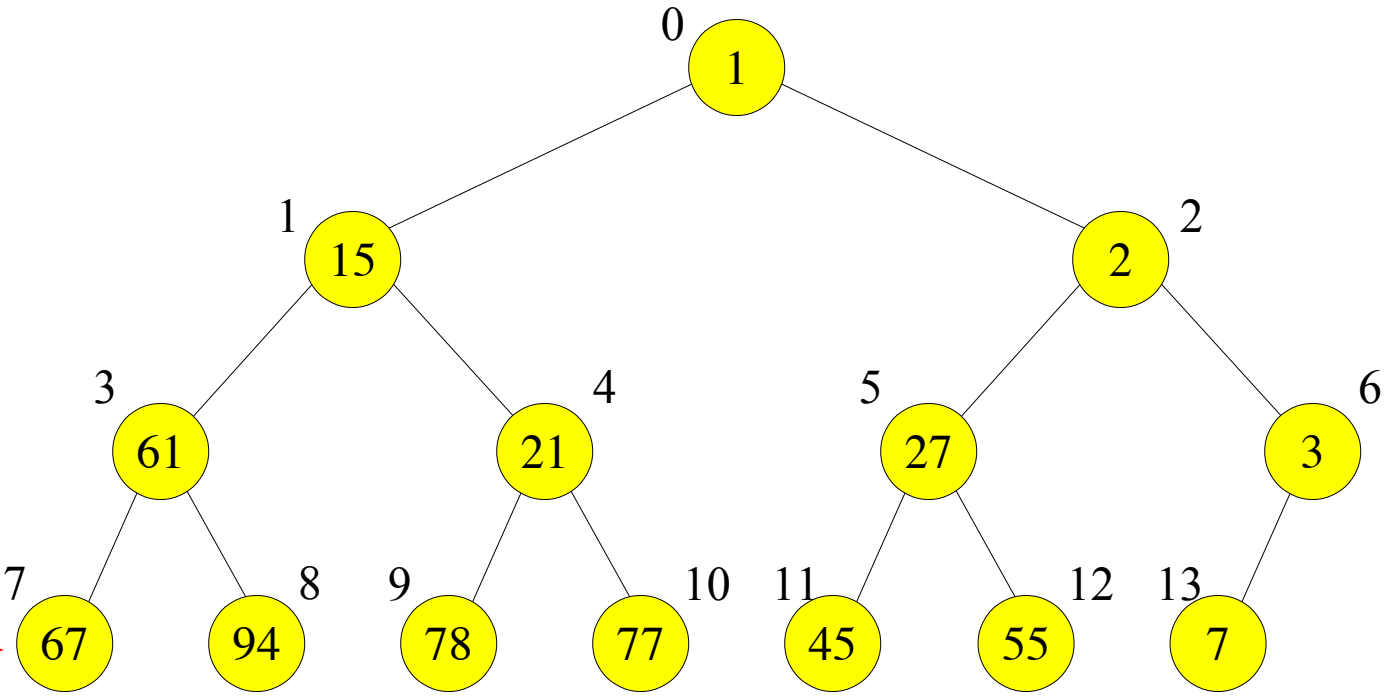
Constructing a Heap from a Vector



Constructing a Heap from a Vector

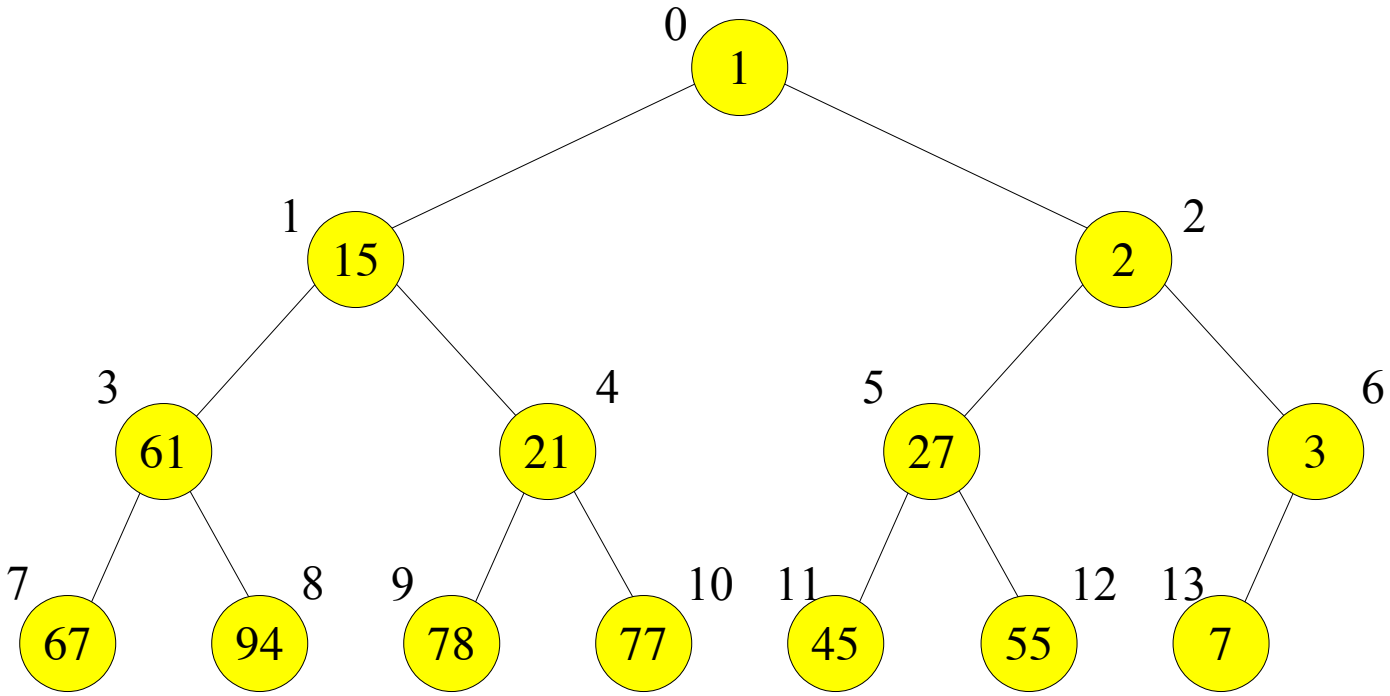
Think about the running time:

7 Percolates of H=1



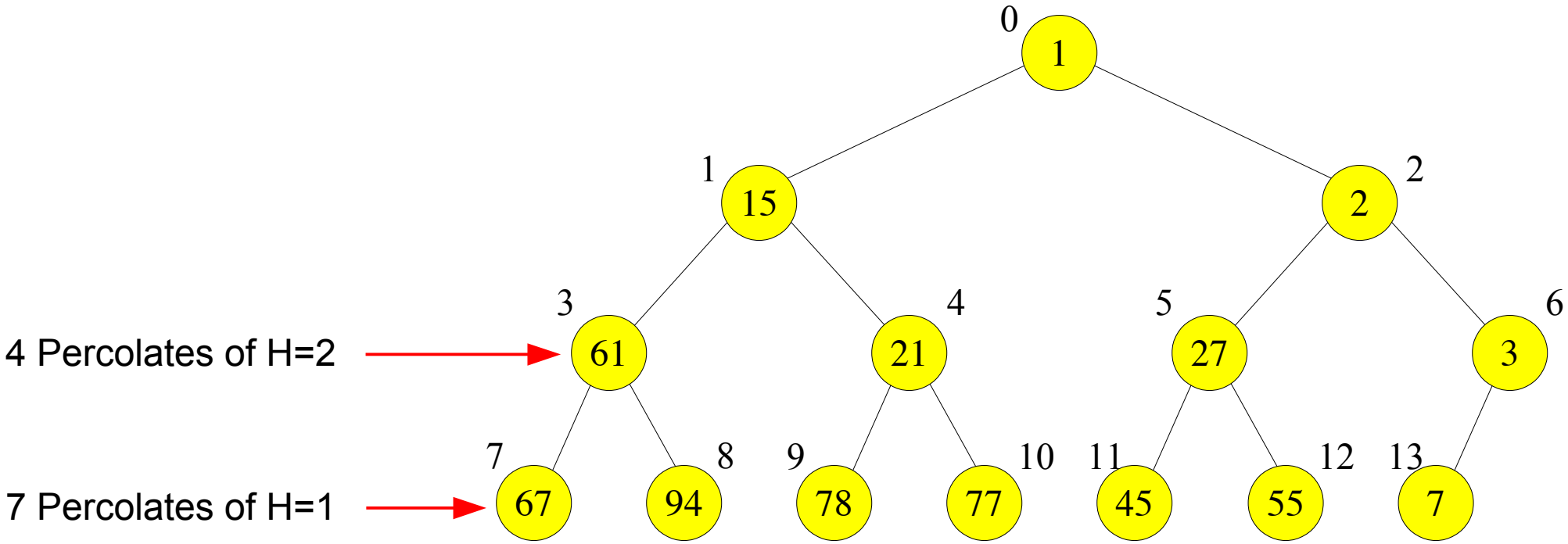
Constructing a Heap from a Vector

Think about the running time:



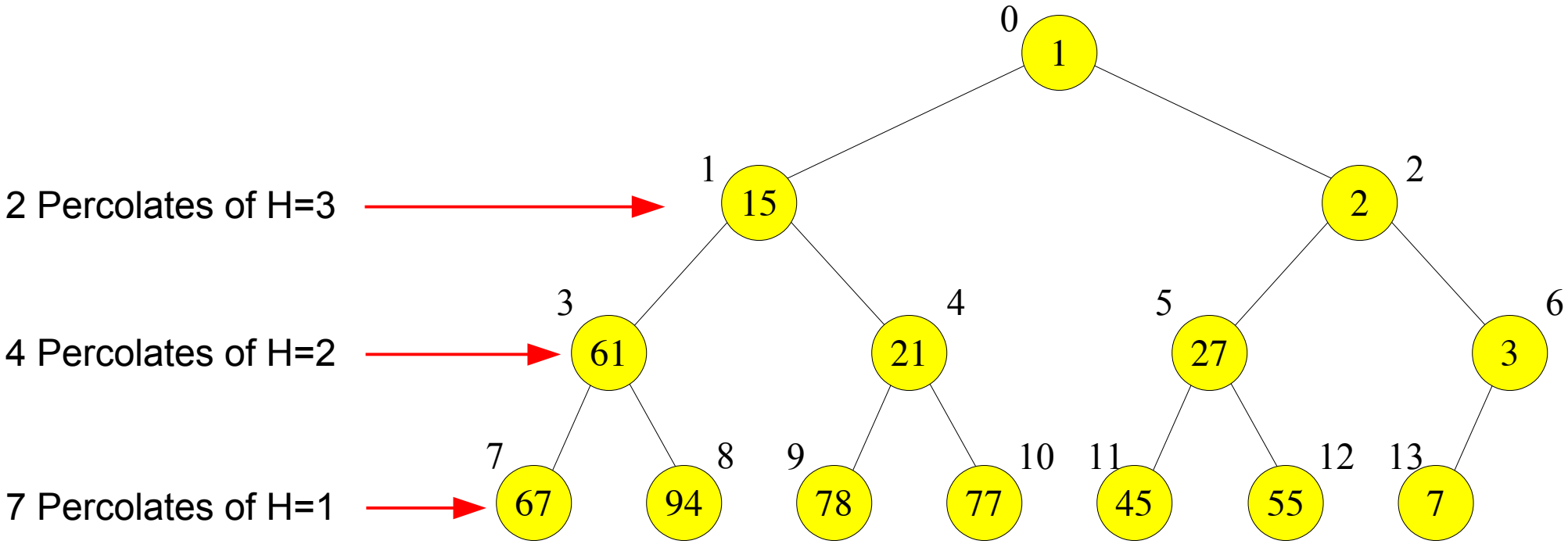
Constructing a Heap from a Vector

Think about the running time:



Constructing a Heap from a Vector

Think about the running time:



Constructing a Heap from a Vector

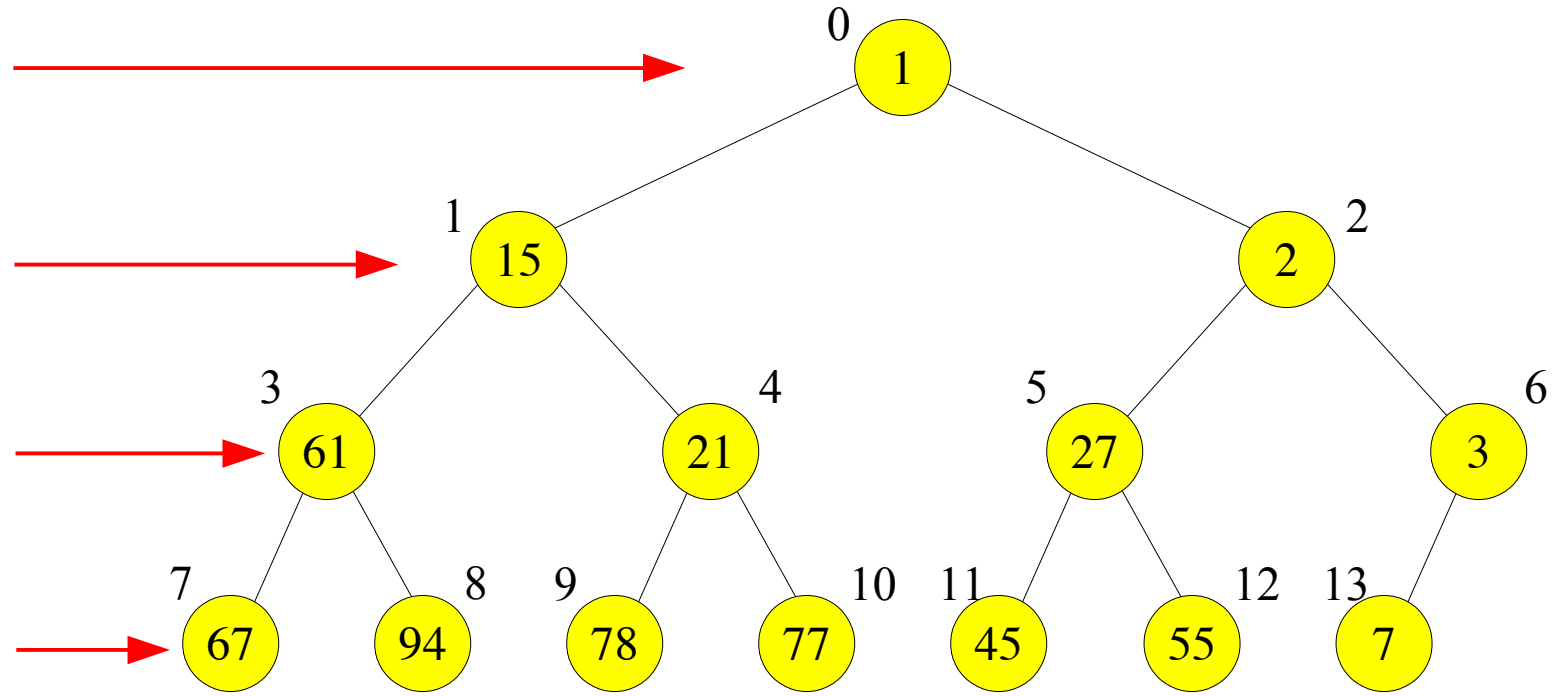
Think about the running time:

1 Percolate of H=4

2 Percolates of H=3

4 Percolates of H=2

7 Percolates of H=1



Constructing a Heap from a Vector

(Write a program that reads in n, and calculates RT)