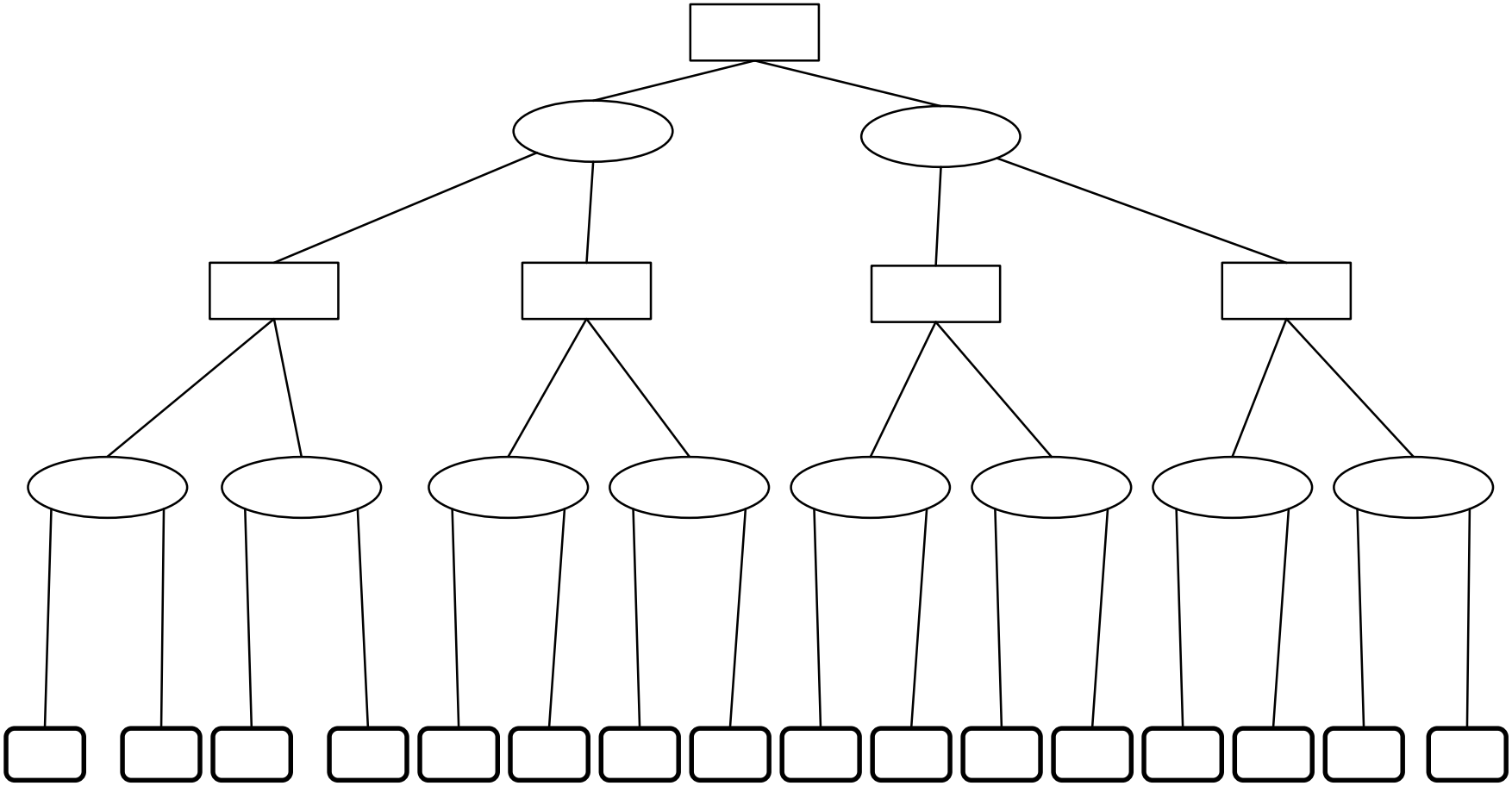
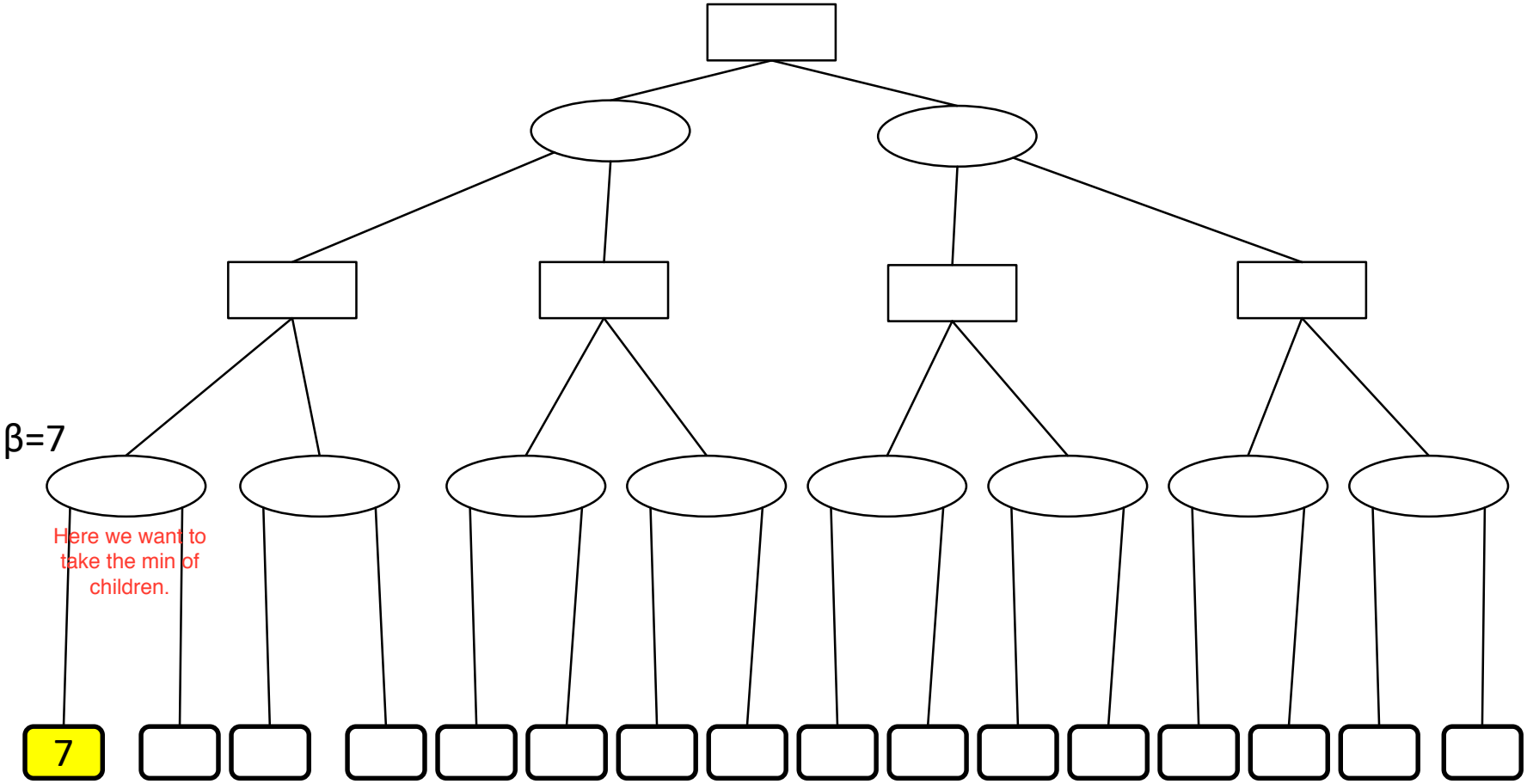
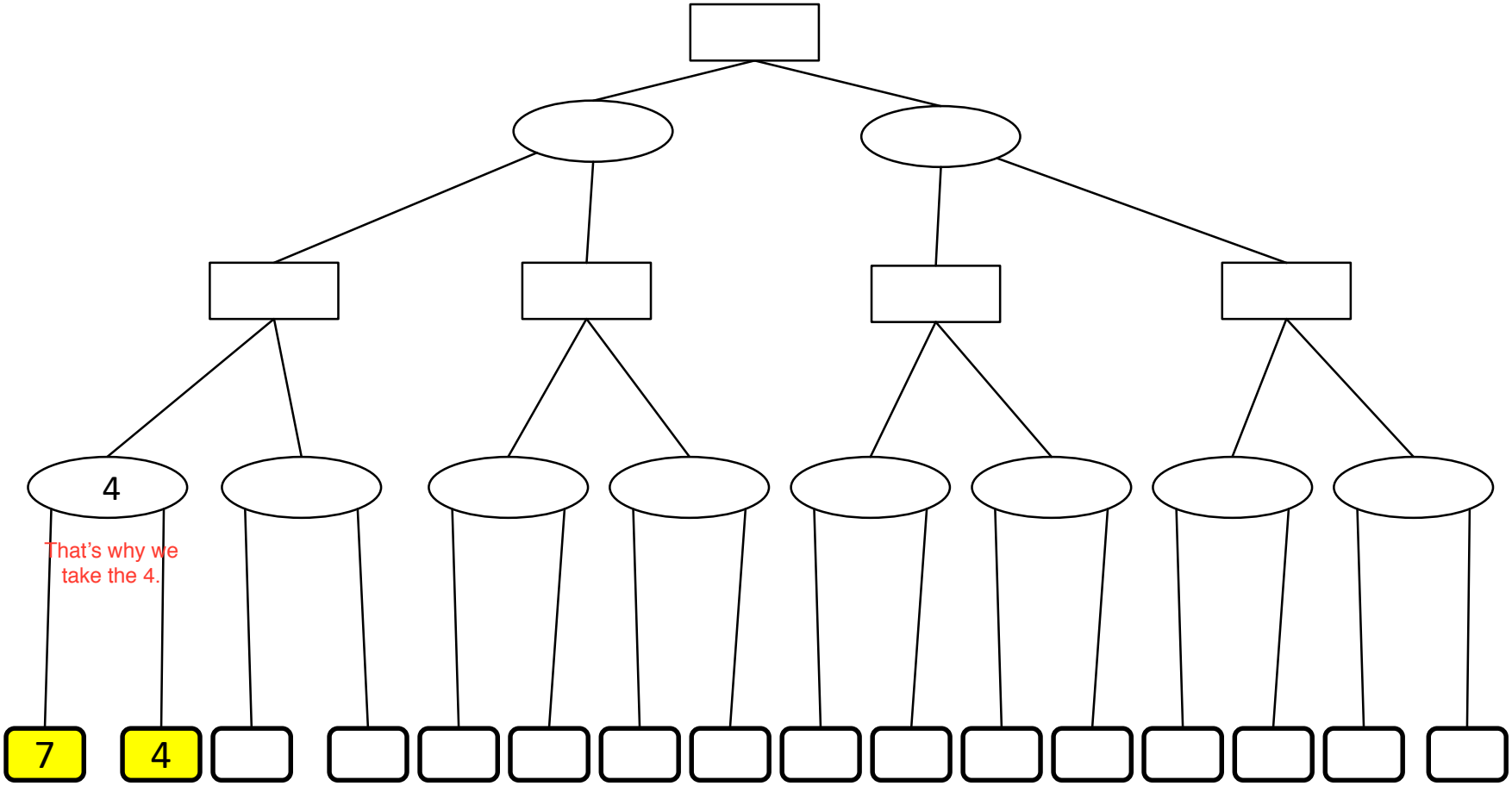
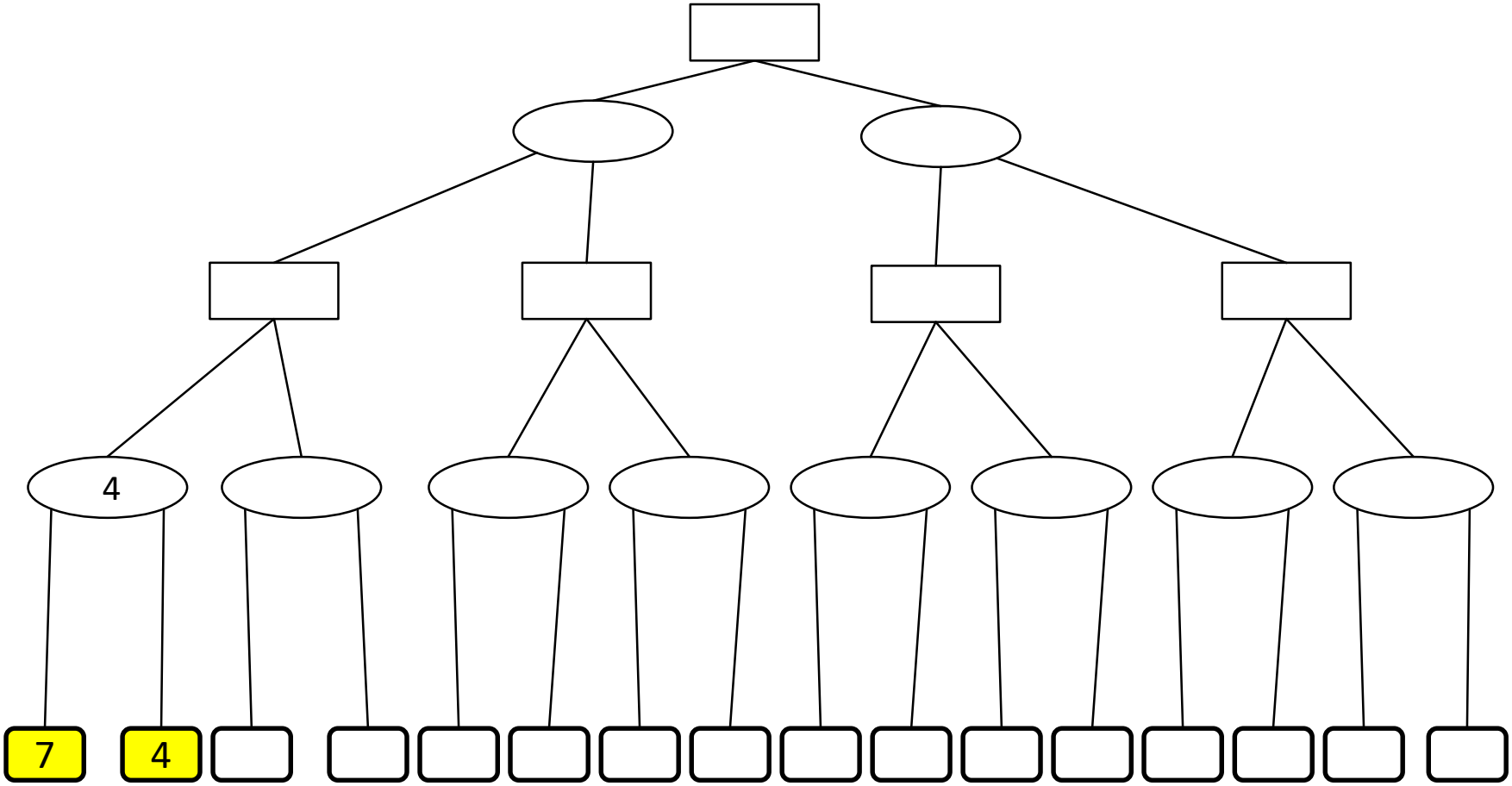
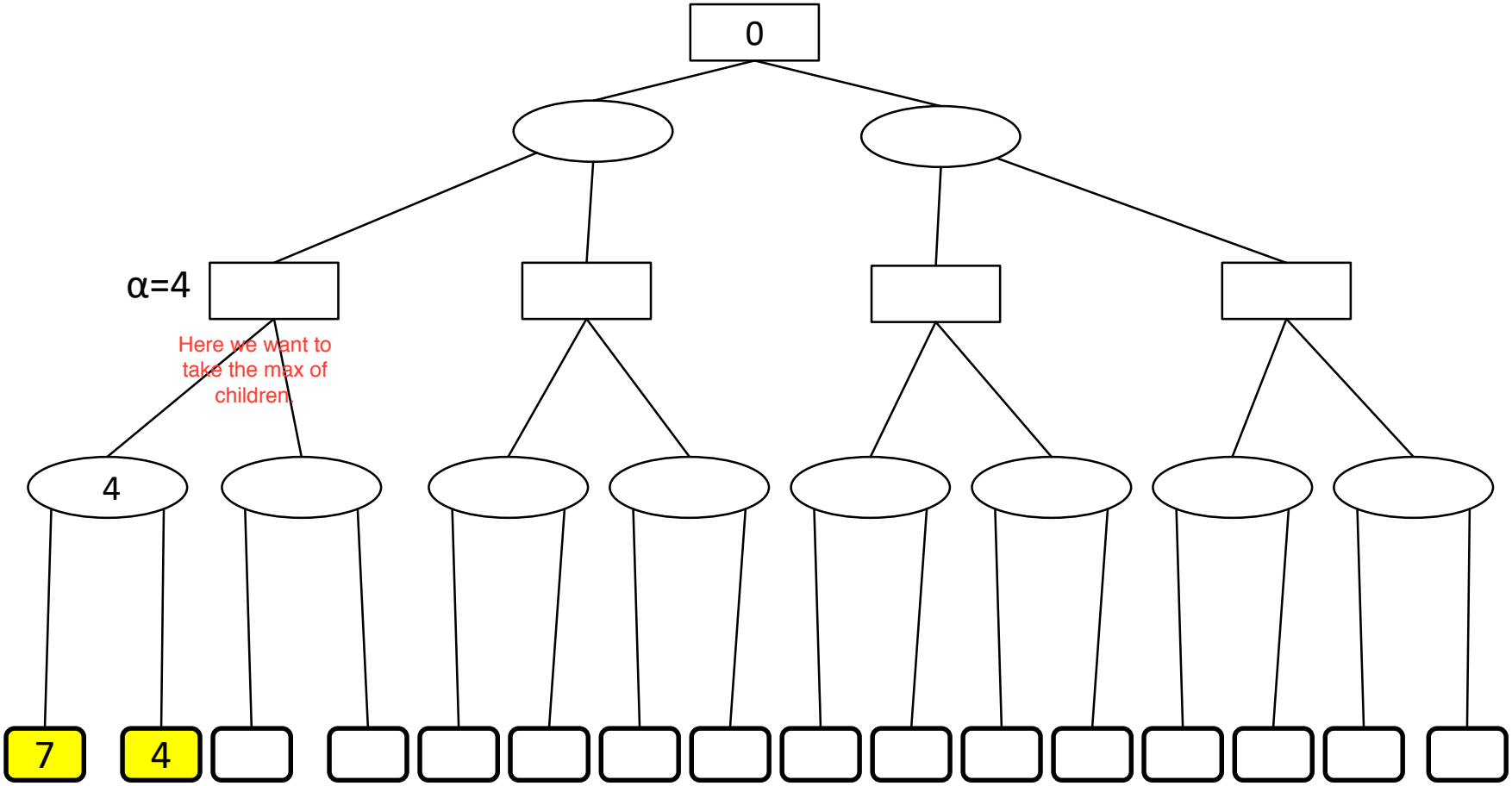
10-2) Search strategy: Pre-order (left partial tree first)

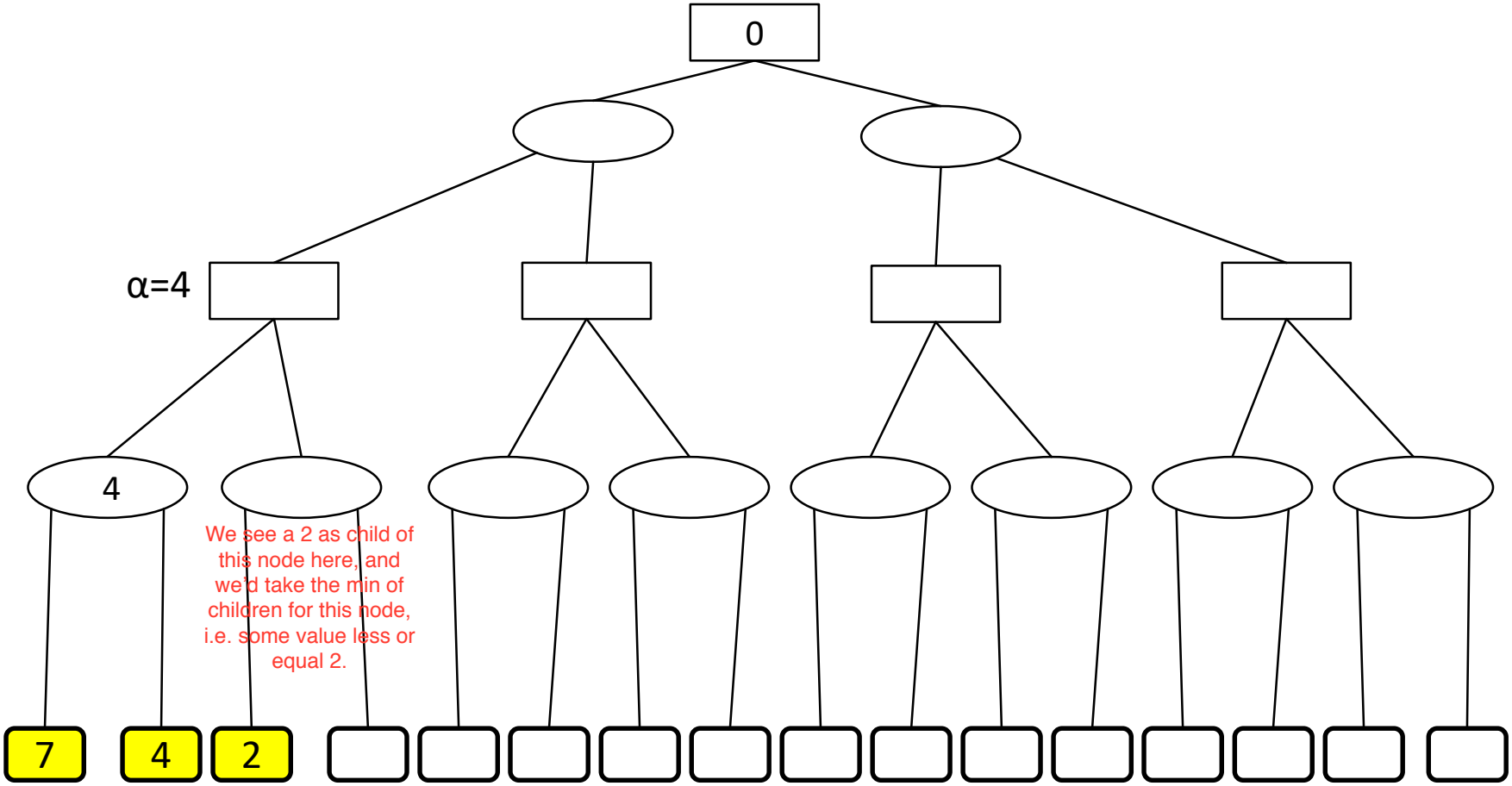


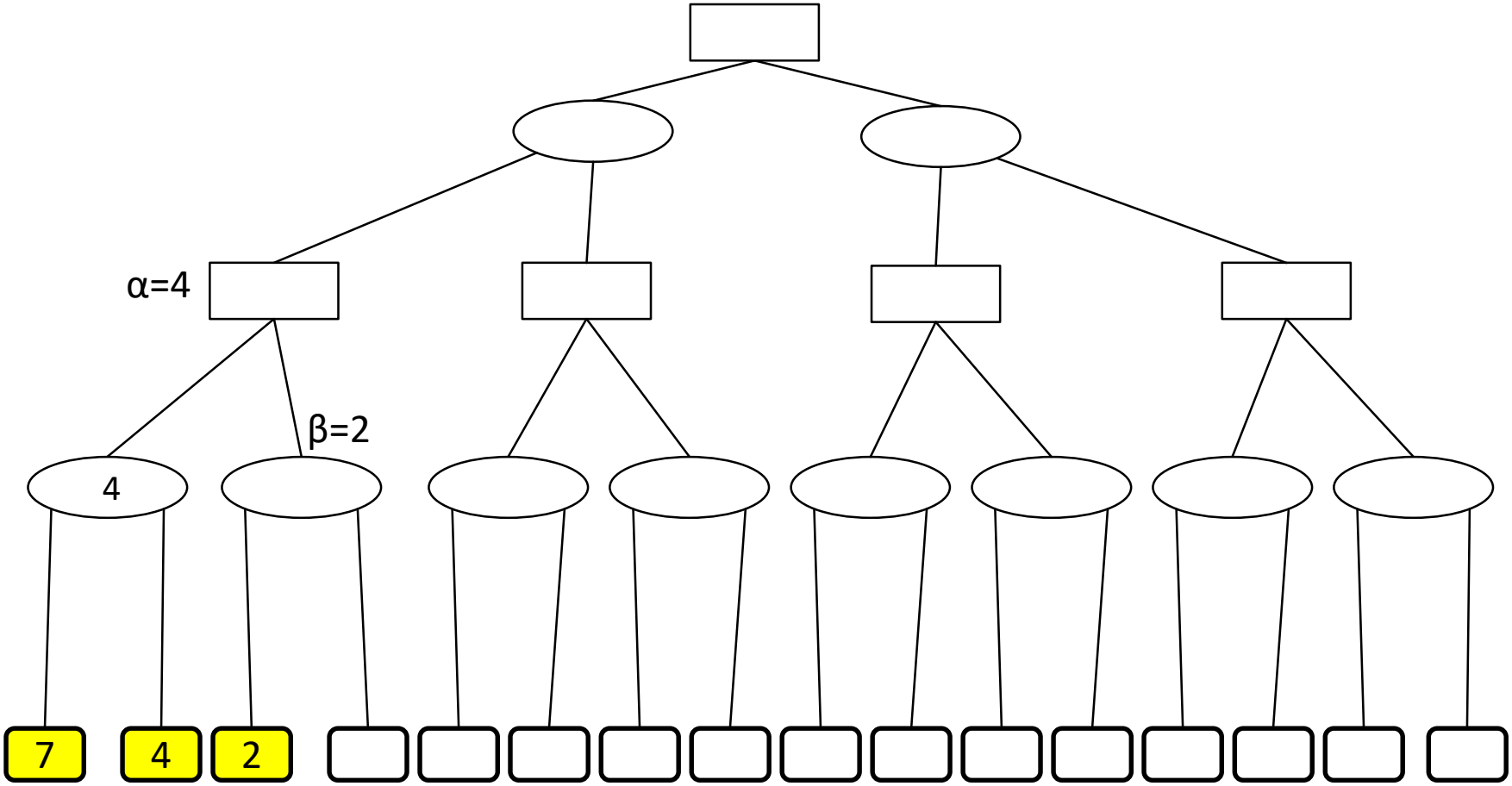

β=7
Here we want to take the min of children.
7

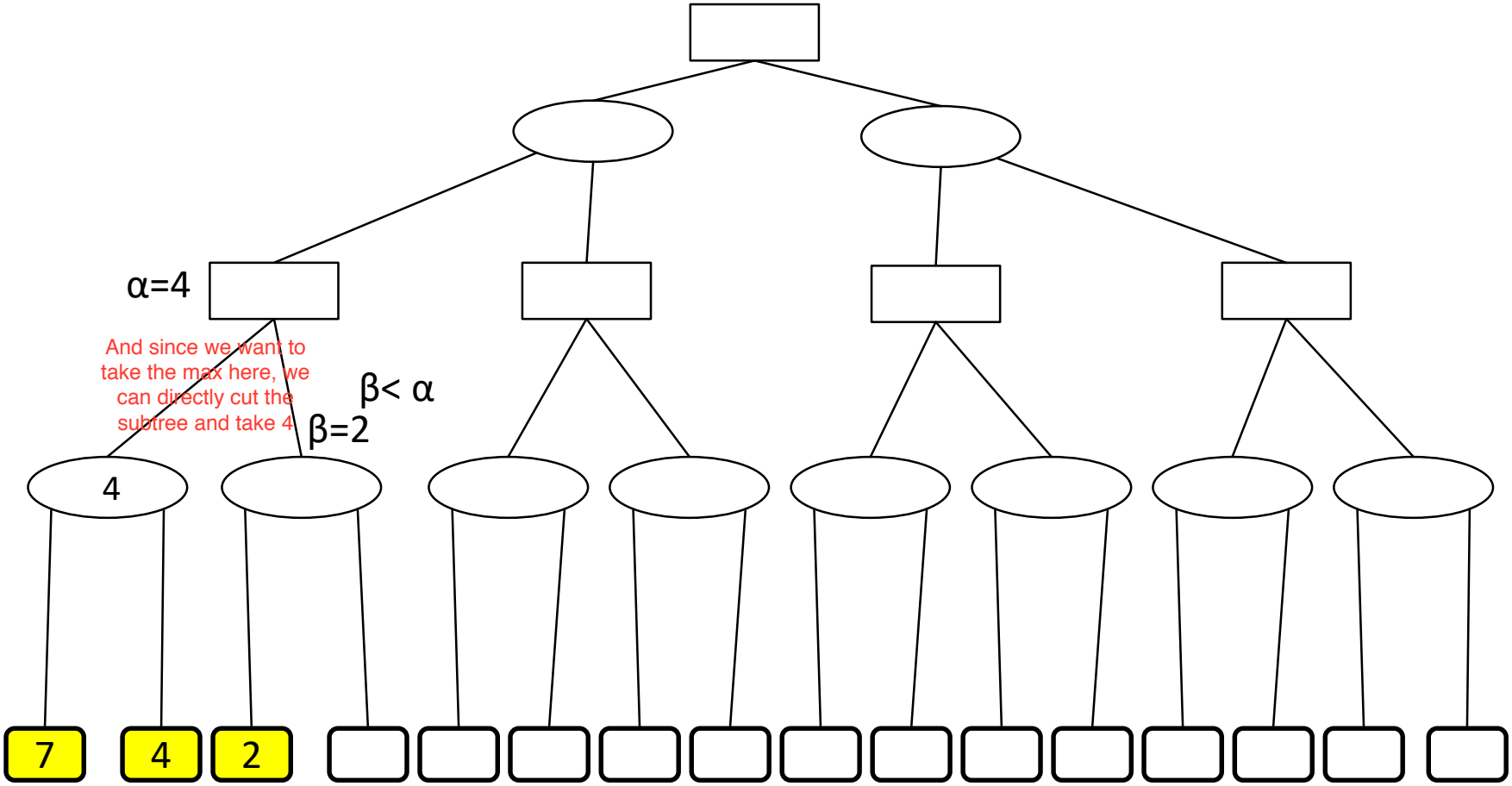

4
That's why we
take the 4.
7
4

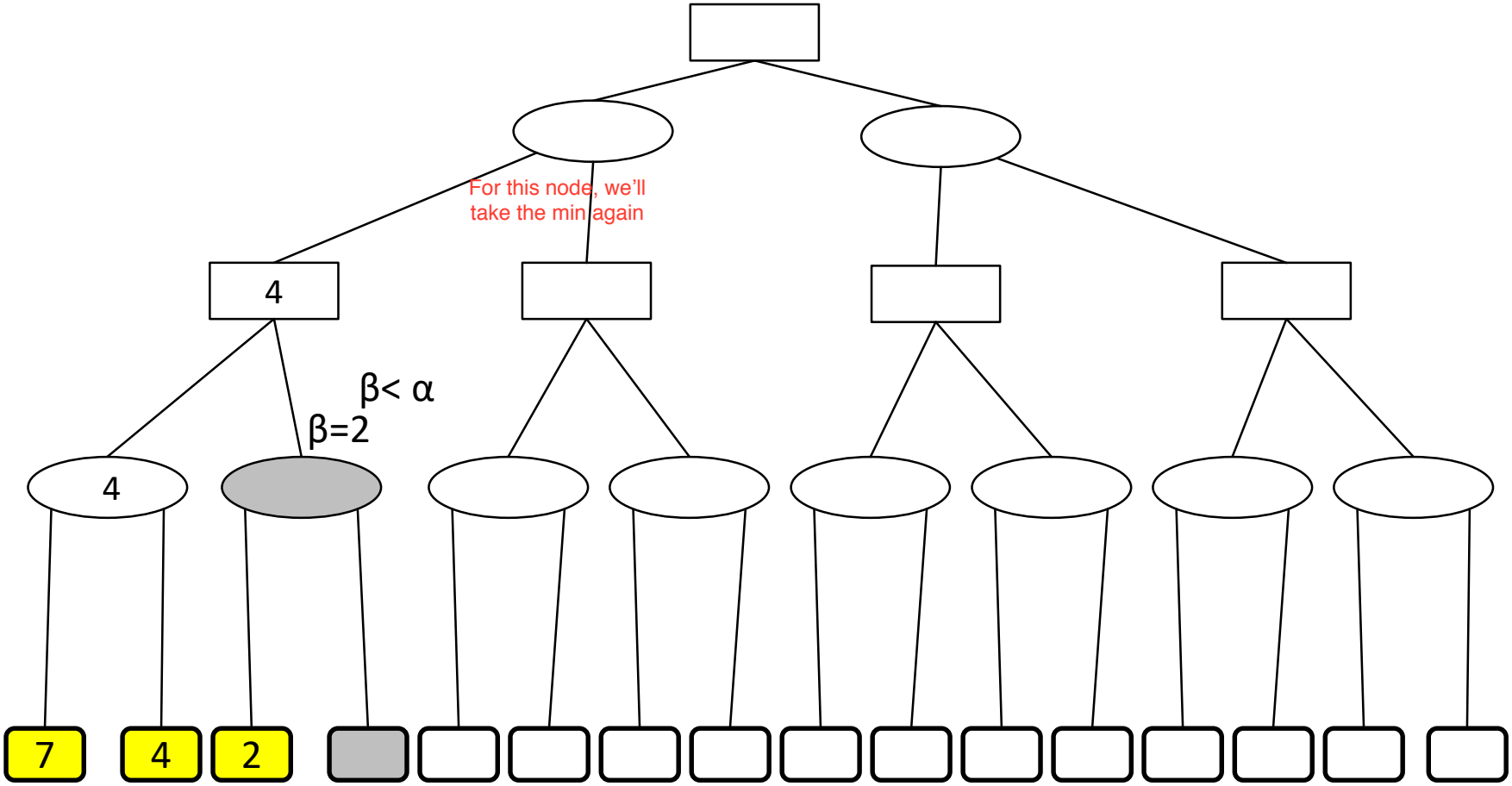

4
7
4

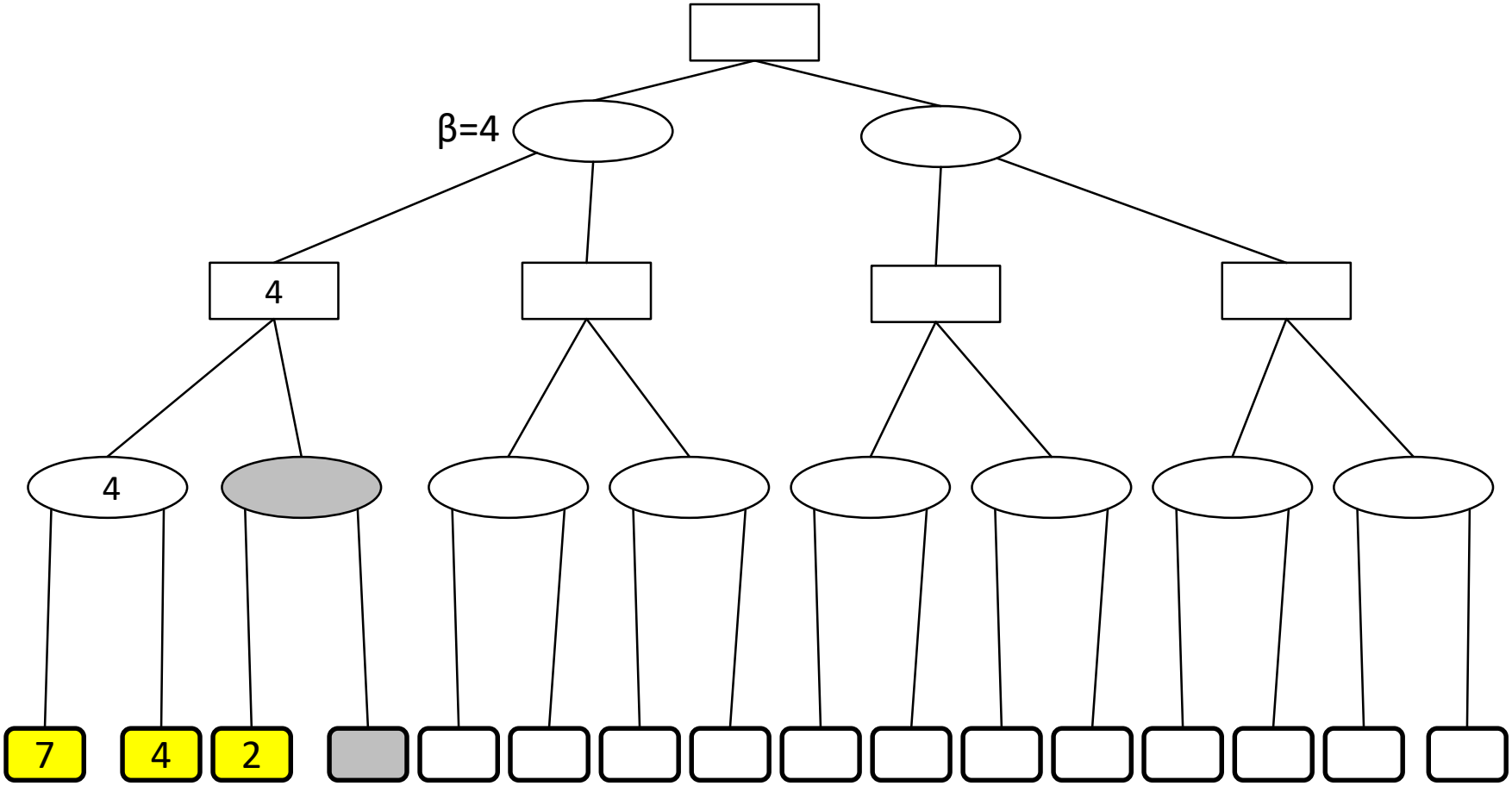

0
α=4
Here we want to take the max of children.
4
7
4

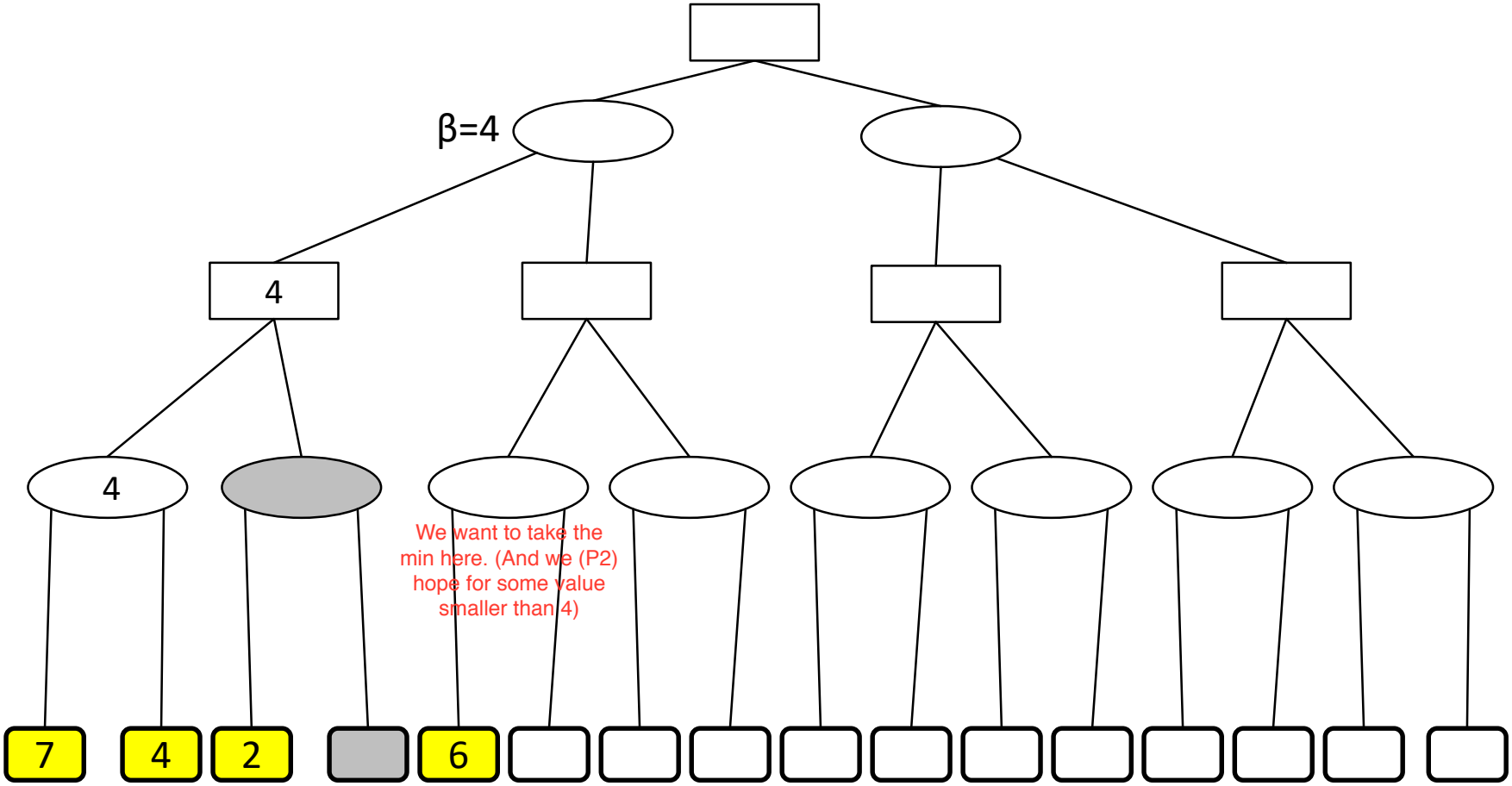

0
α=4
4
We see a 2 as child of this node here, and we'd take the min of children for this node, i.e. some value less or equal 2.
7
4
2

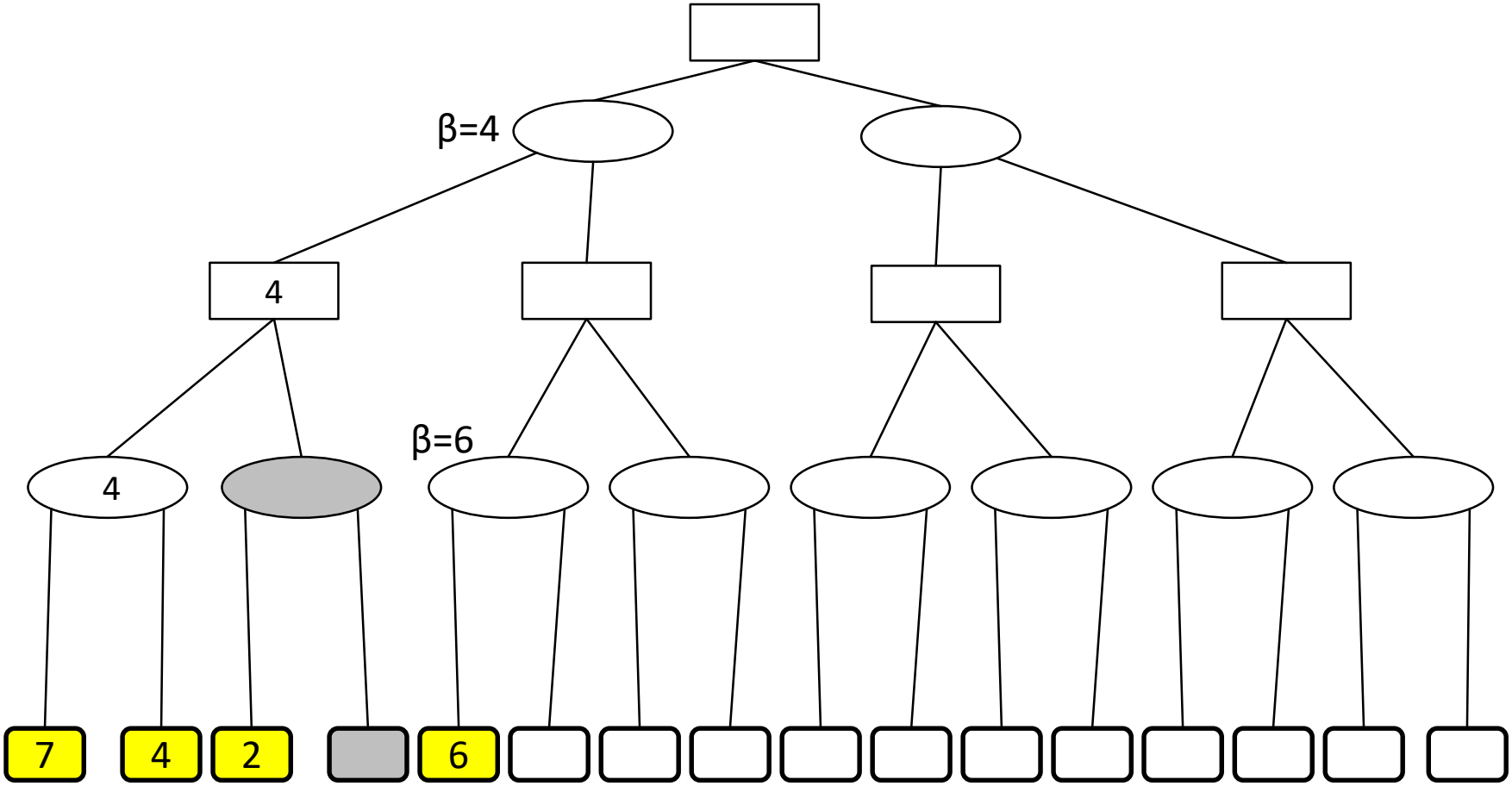

α=4
β=2
4
7
4
2

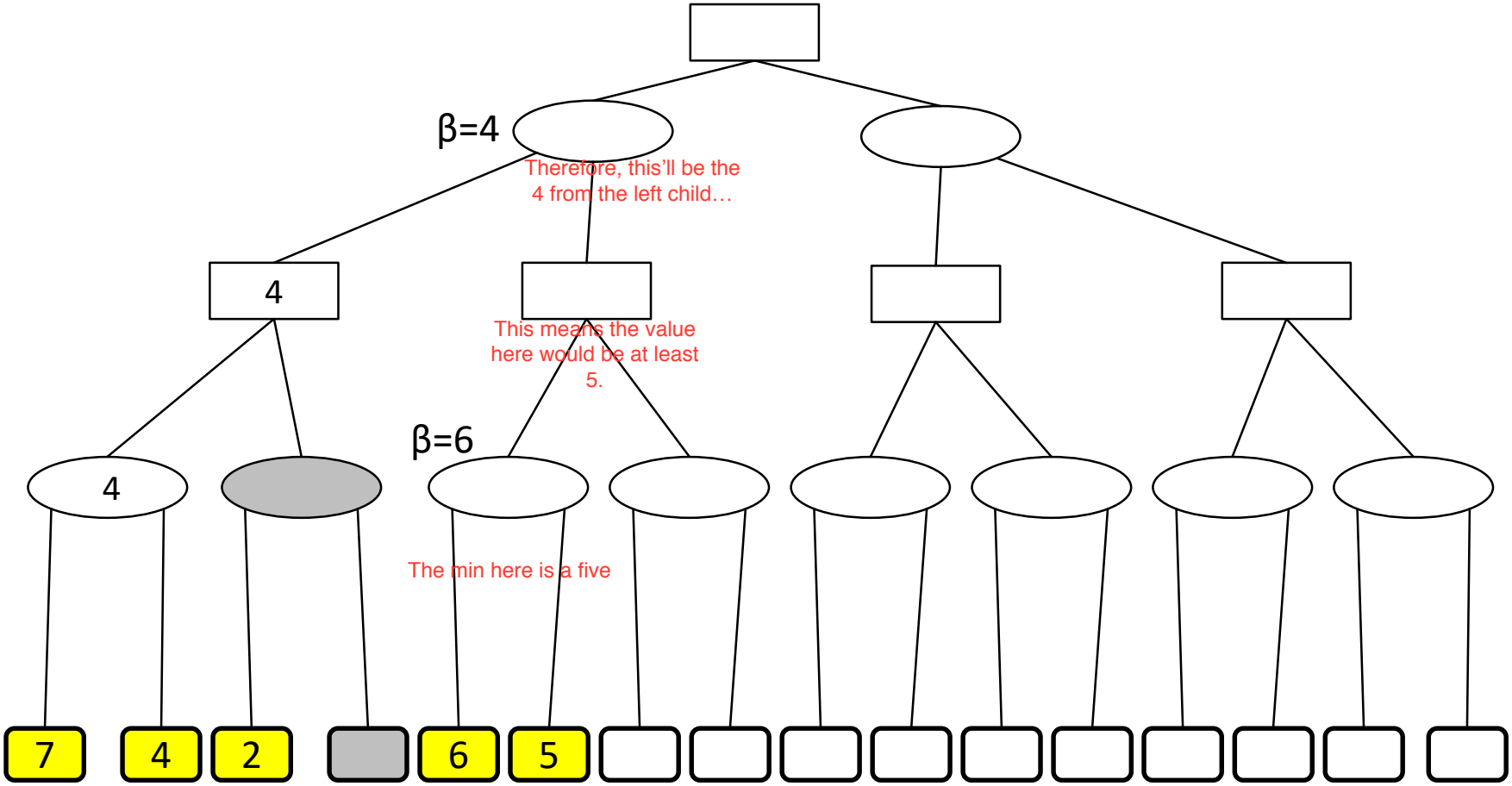

α=4
And since we want to take the max here, we can directly cut the subtree and take 4
β< α
β=2
4
7
4
2

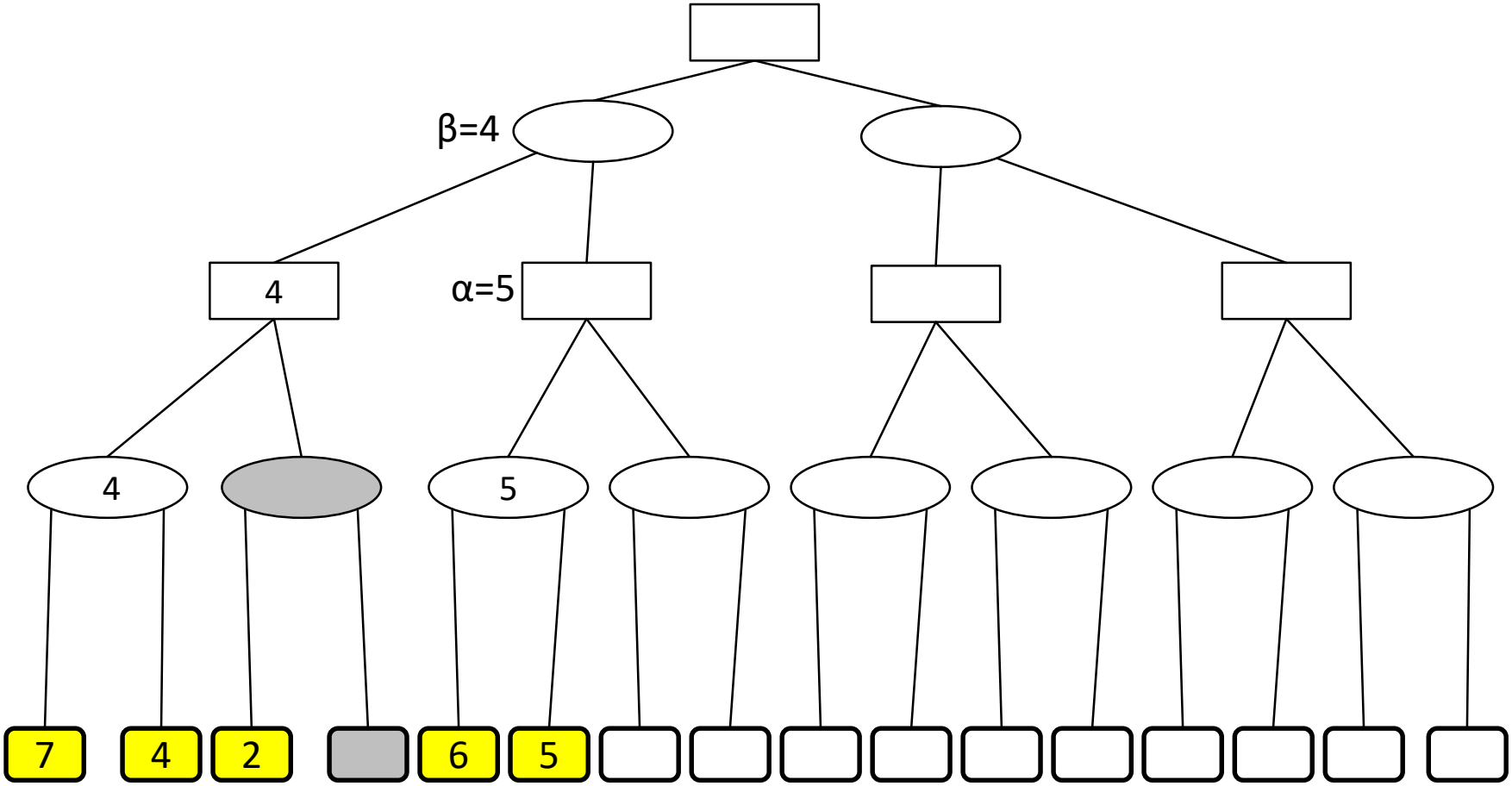

For this node, we'll
take the min again
4
β< α
β=2
4
7
4
2

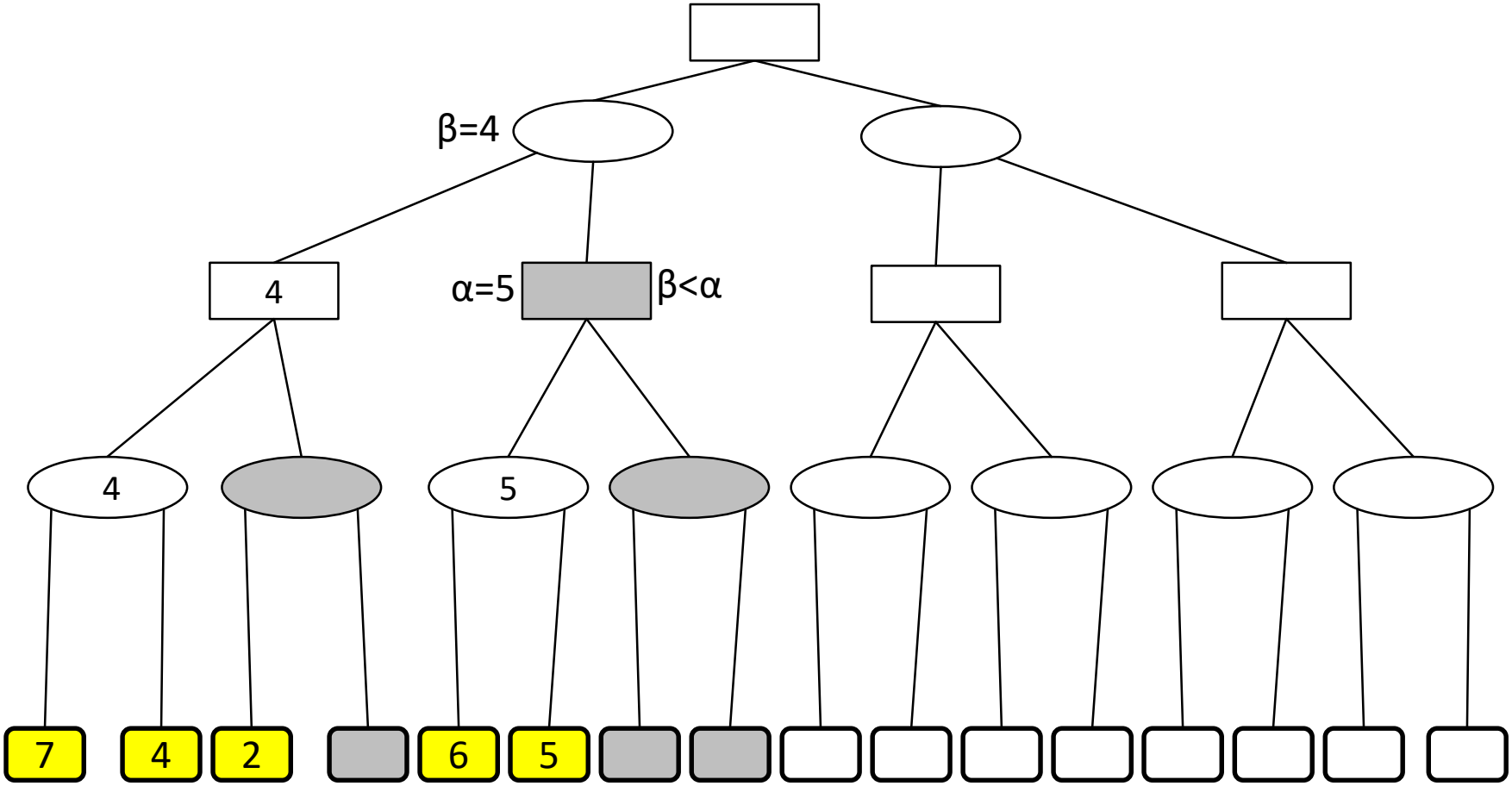

β=4
4
4
7
4
2

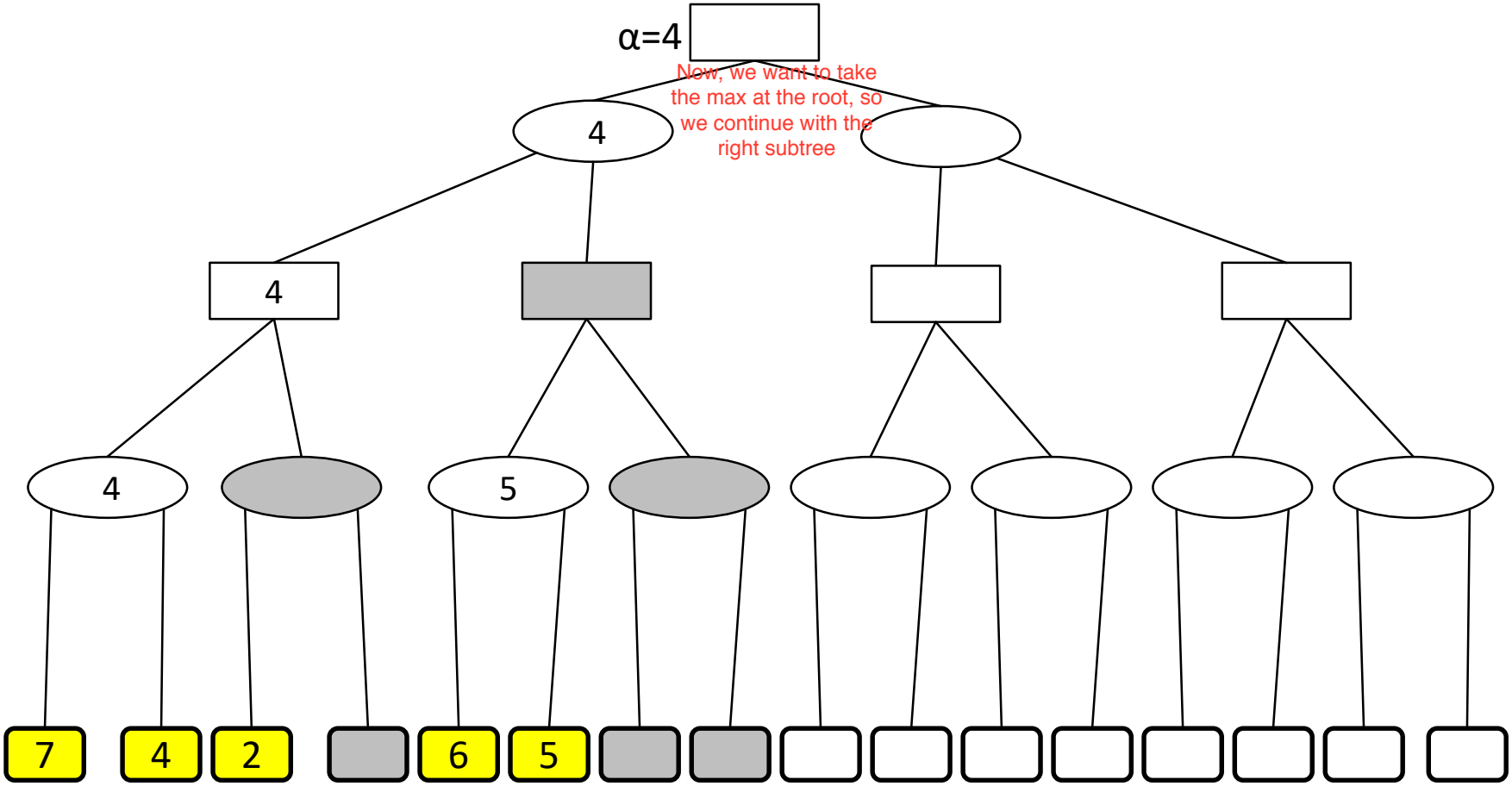

β=4
4
4
We want to take the min here. (And we (P2) hope for some value smaller than 4)
7
4
2
6

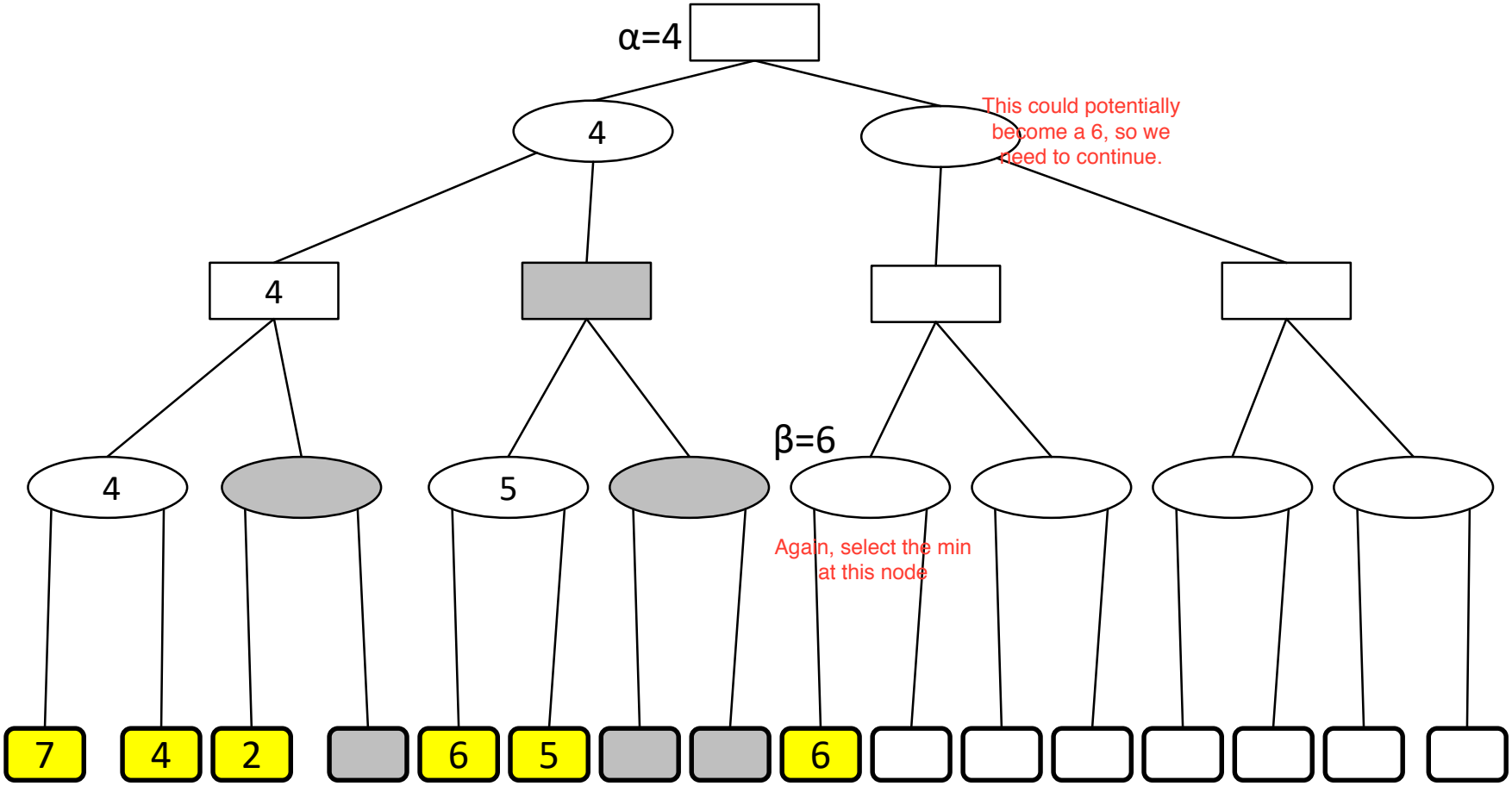

β=4
4
β=6
4
7
4
2
6

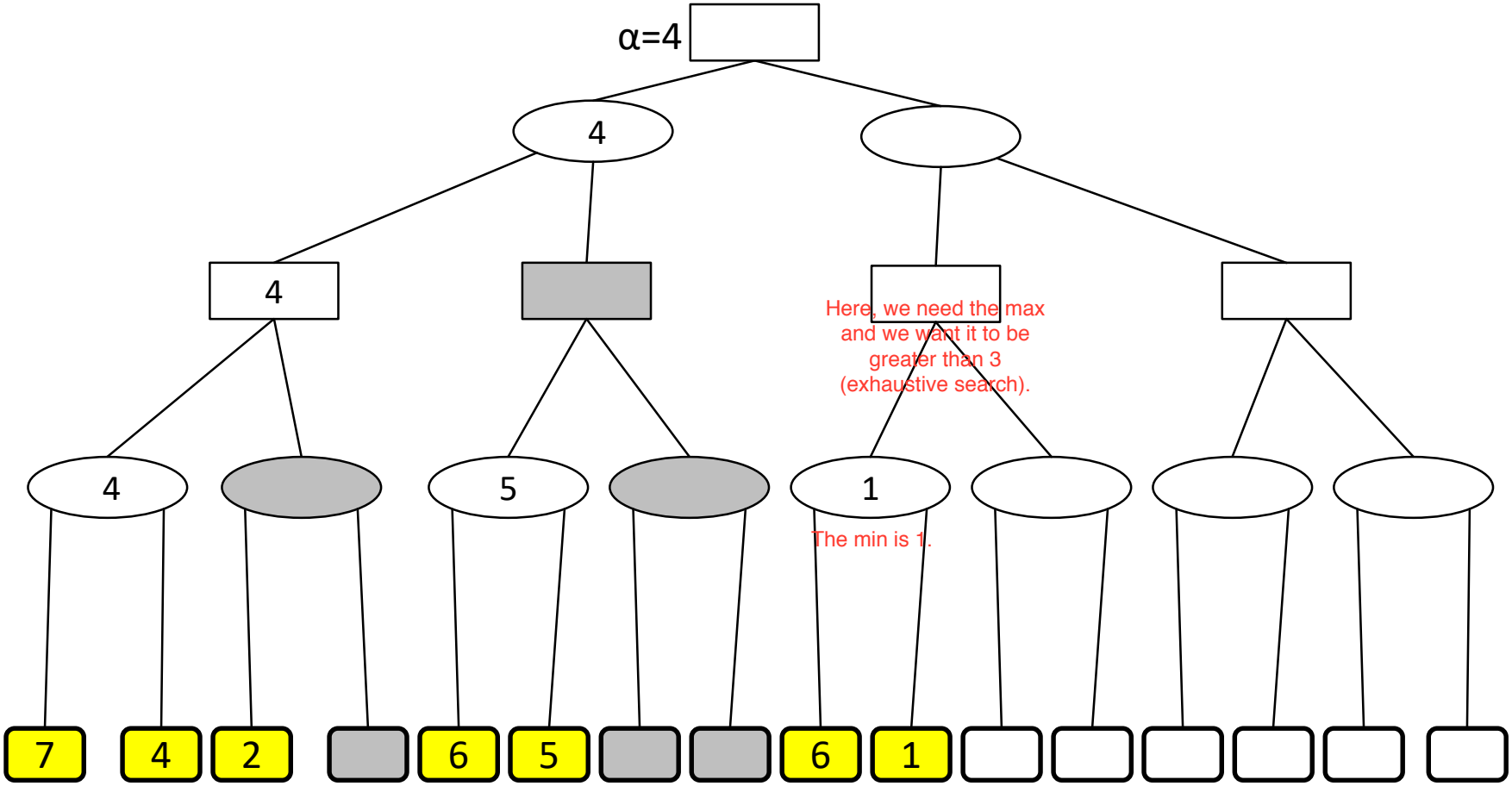

β=4
Therefore, this'll be the 4 from the left child…
4
This means the value here would be at least 5.
β=6
4
The min here is a five
7
4
2
6
5

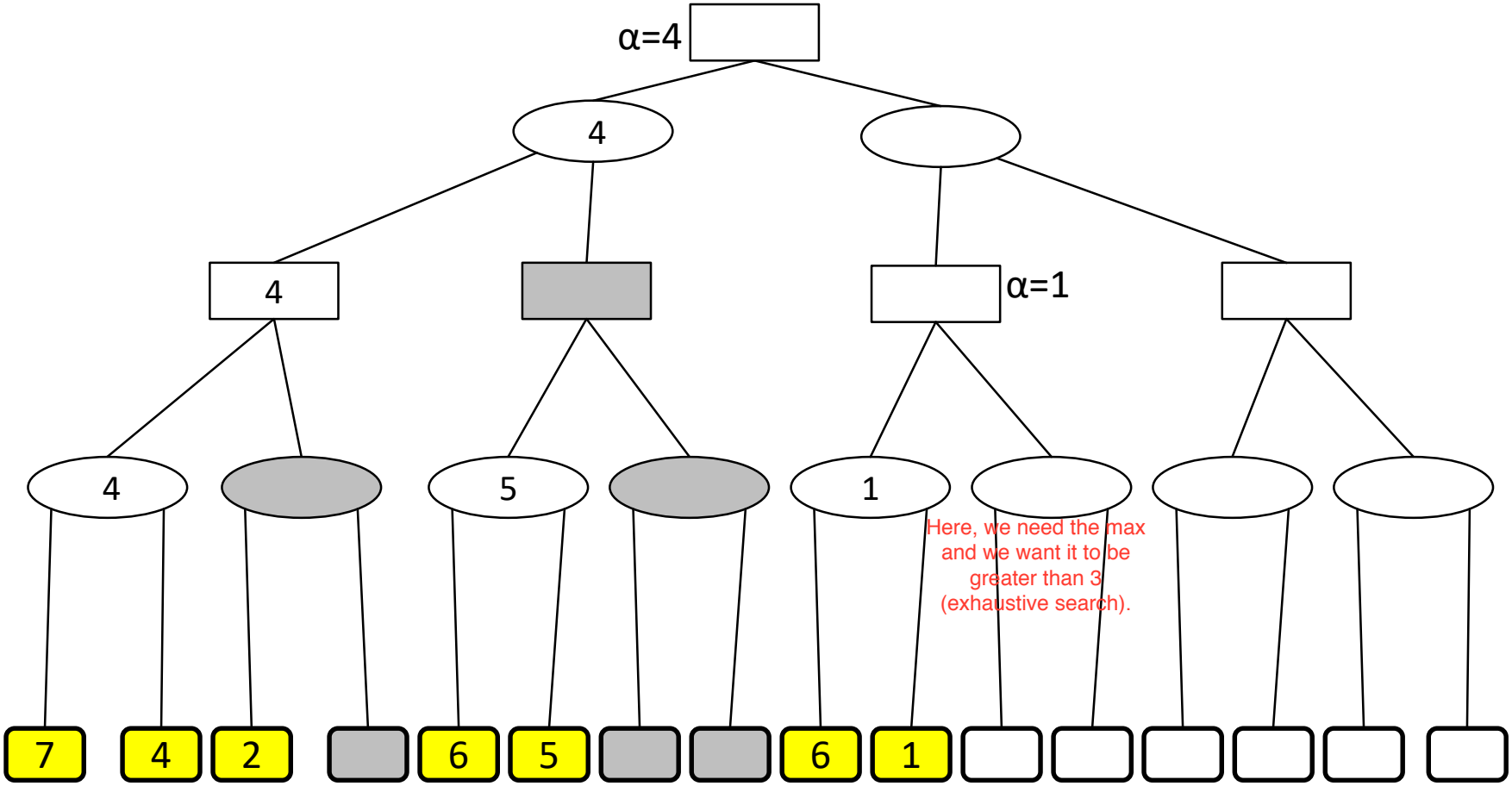

β=4
4
α=5
4
5
7
4
2
6
5

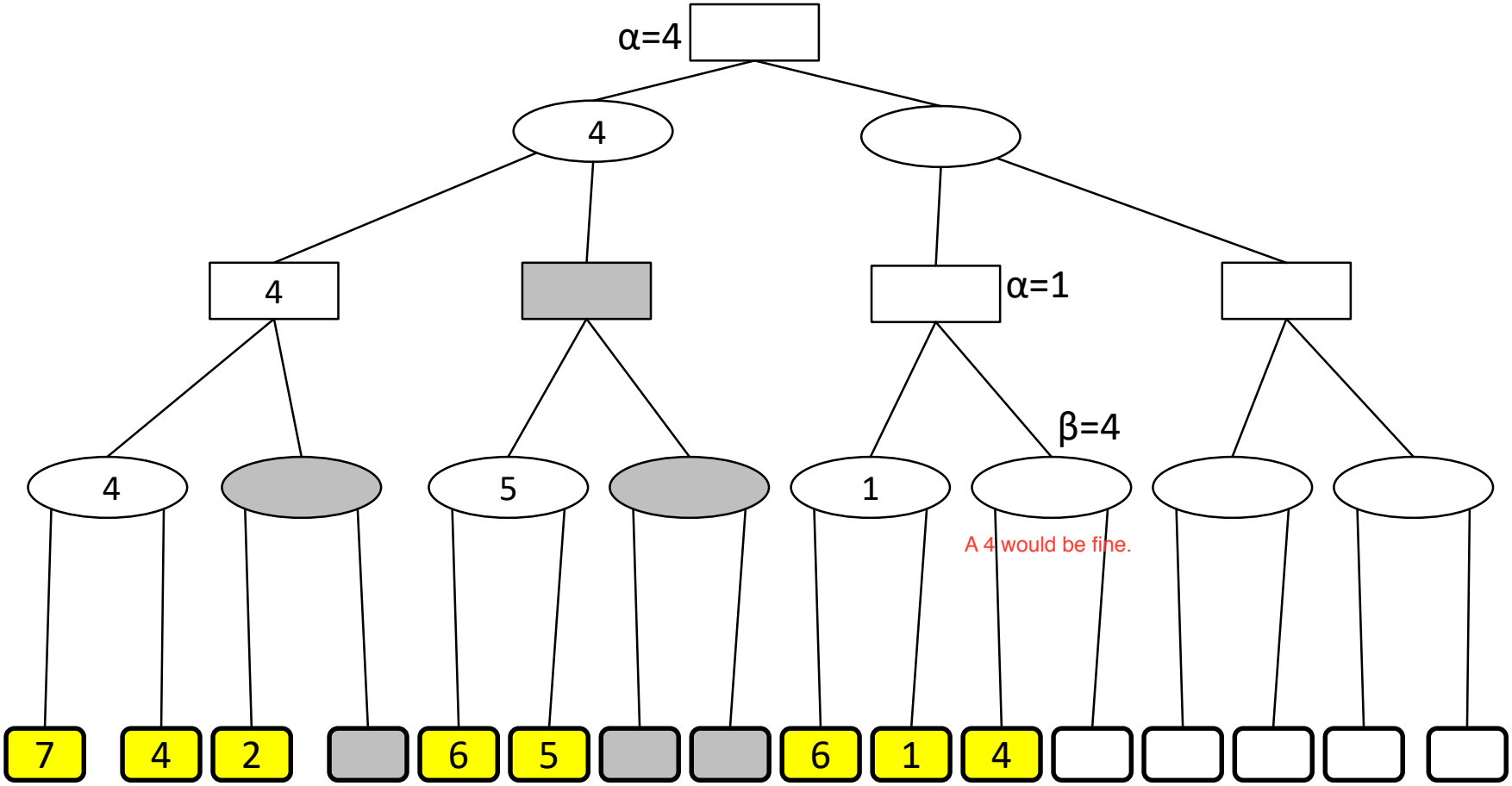

β=4
4
α=5
β<α
4
5
7
4
2
6
5

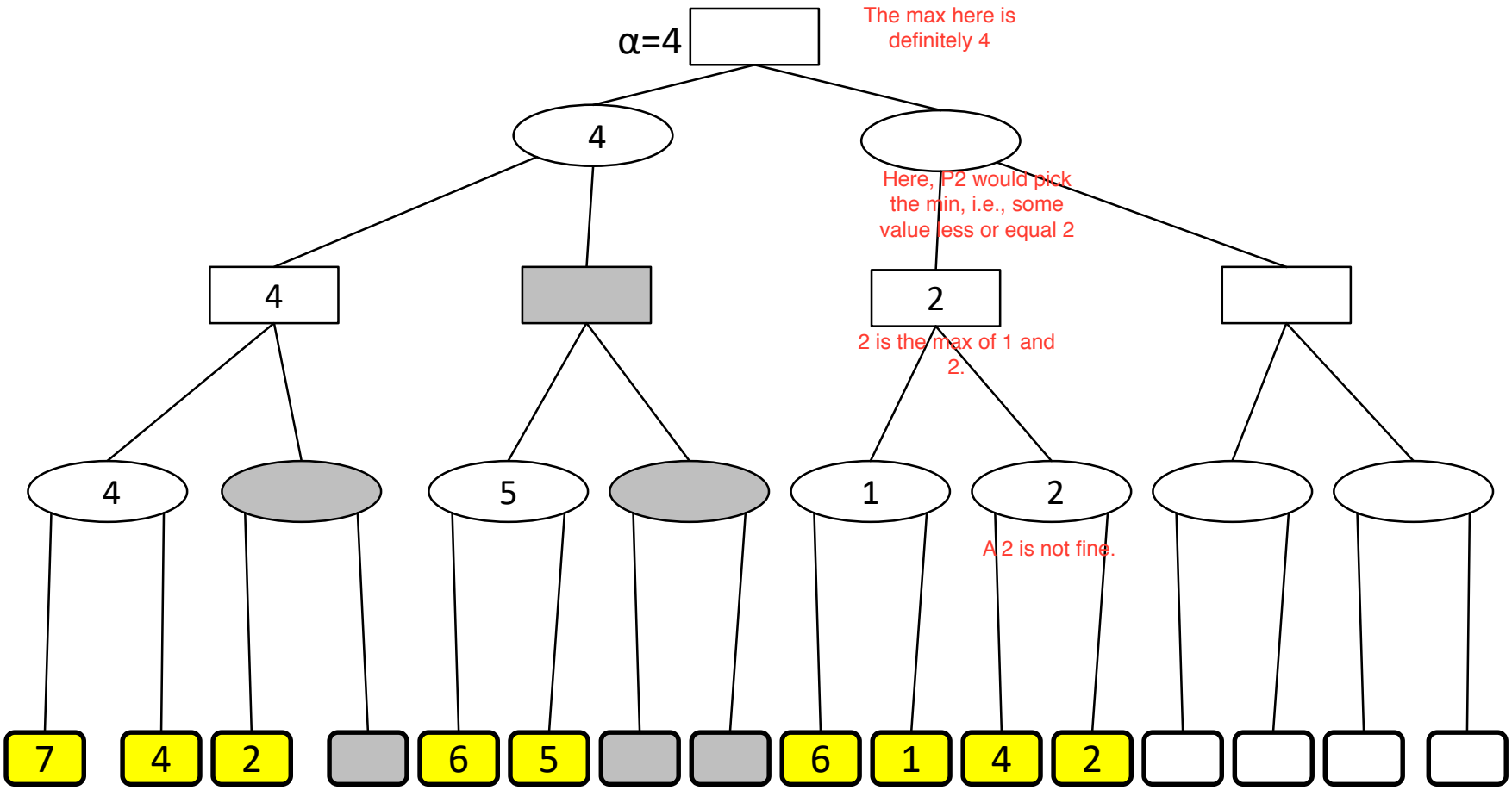

α=4
Now, we want to take the max at the root, so we continue with the right subtree
4
4
4
5
7
4
2
6
5

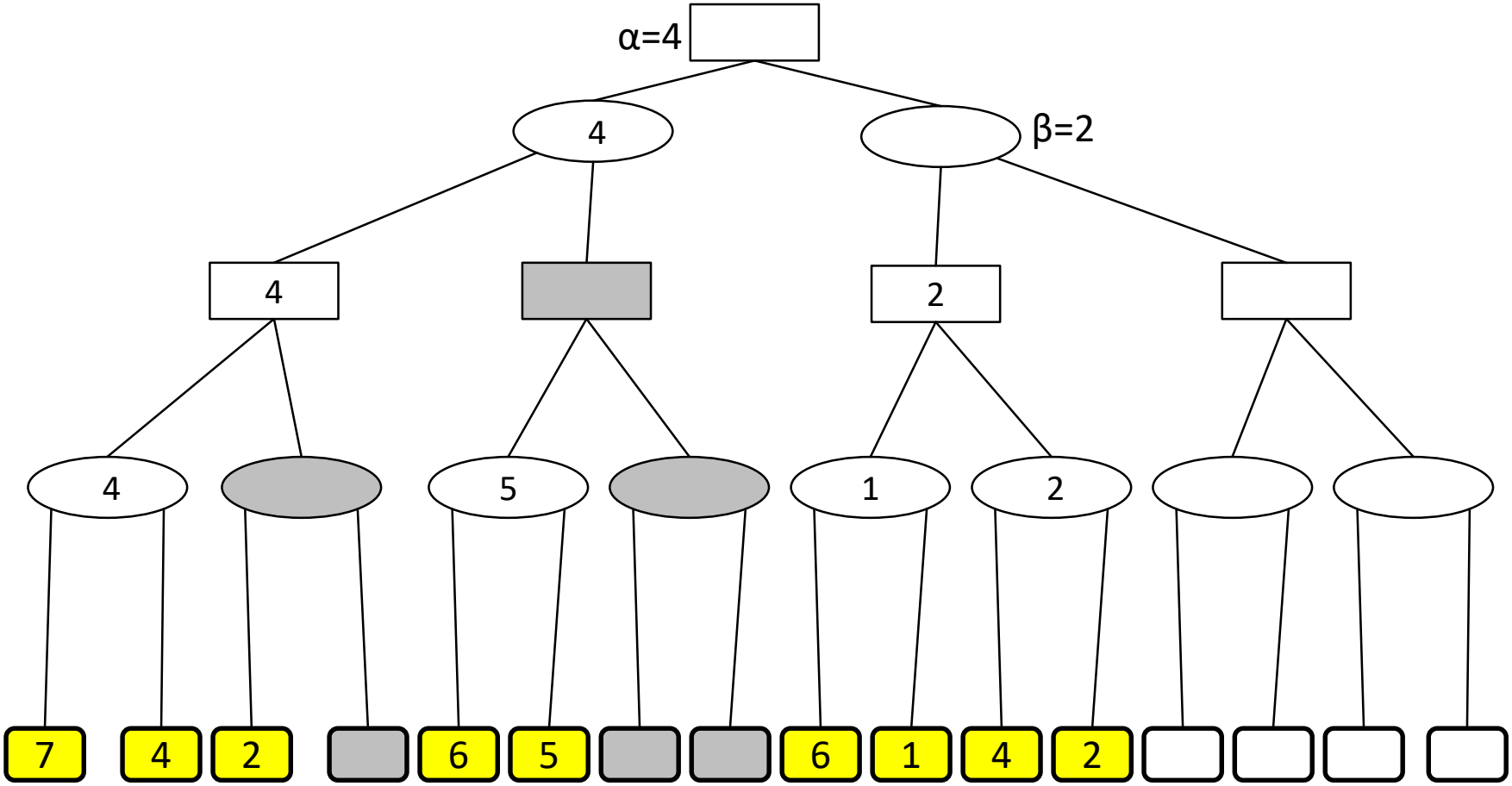

α=4
4
This could potentially become a 6, so we need to continue.
4
β=6
4
5
Again, select the min at this node
7
4
2
6
5
6

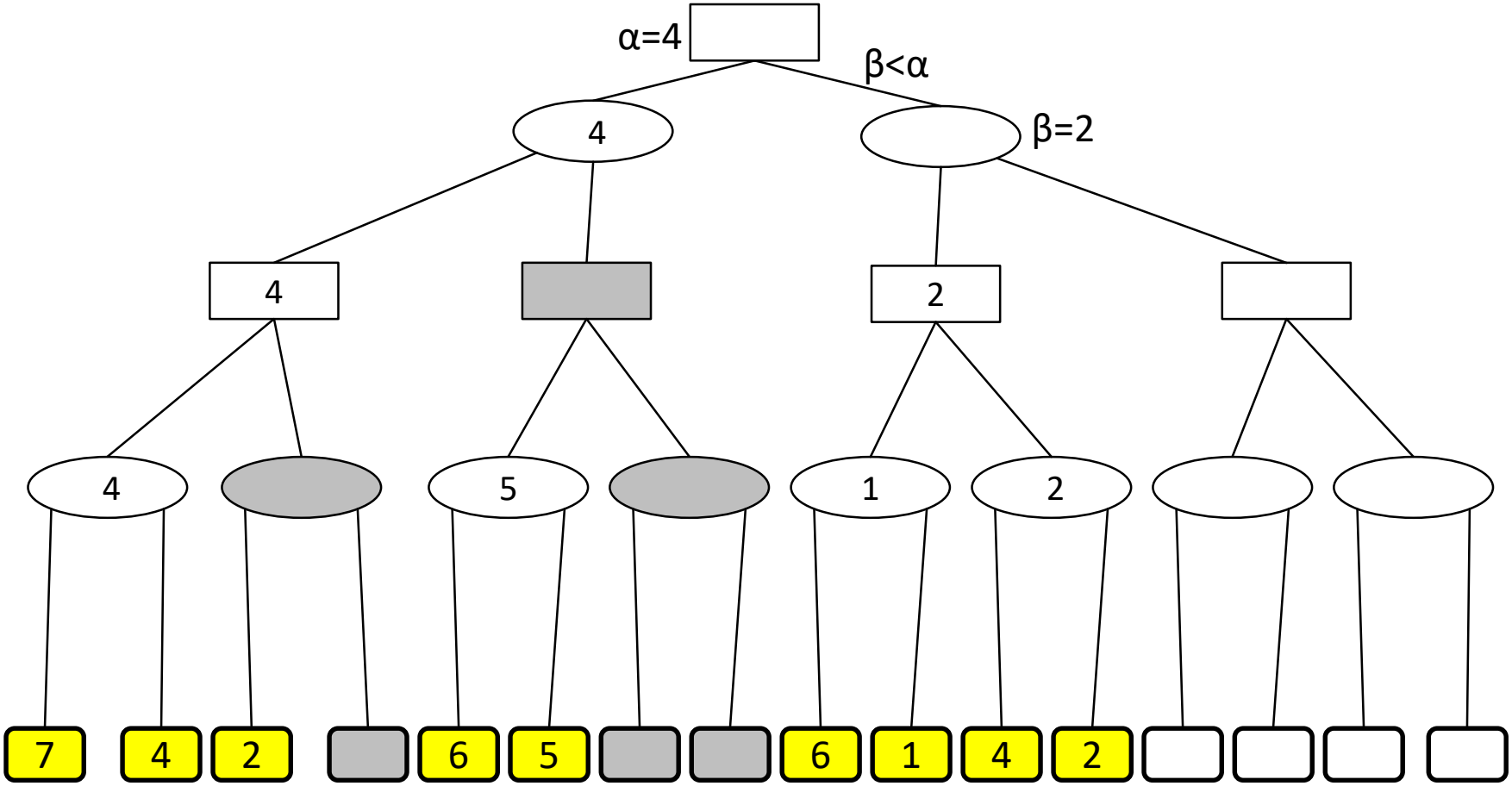

α=4
4
4
4
5
1
Here, we need the max
and we want it to be
greater than 3
(exhaustive search).
The min is 1.
7
4
2
6
5
6
1

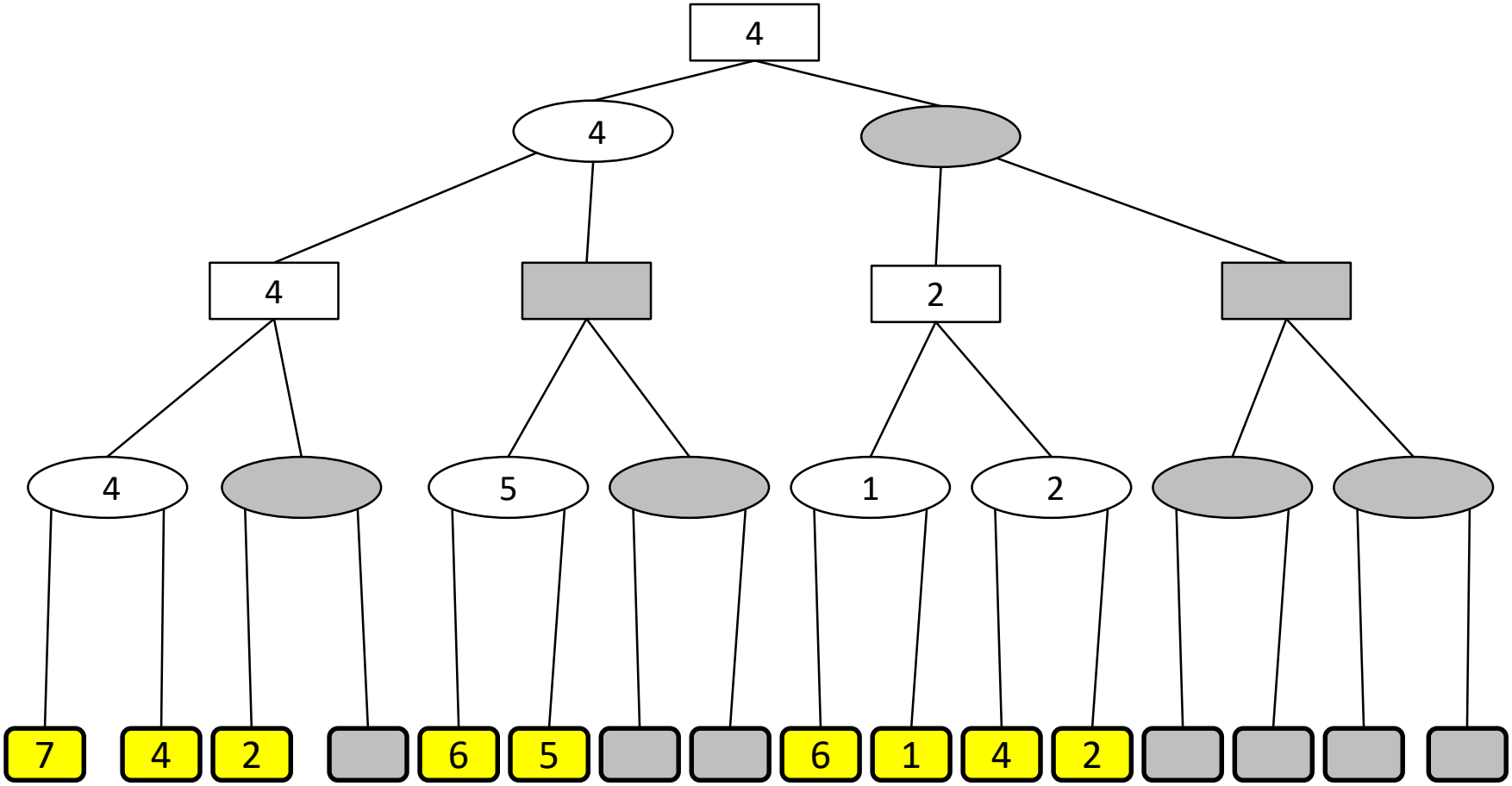

α=4
4
4
α=1
4
5
1
Here, we need the max and we want it to be greater than 3 (exhaustive search).
7
4
2
6
5
6
1


α=4
4
4
α=1
β=4
4
5
1
A 4 would be fine.
7
4
2
6
5
6
1
4

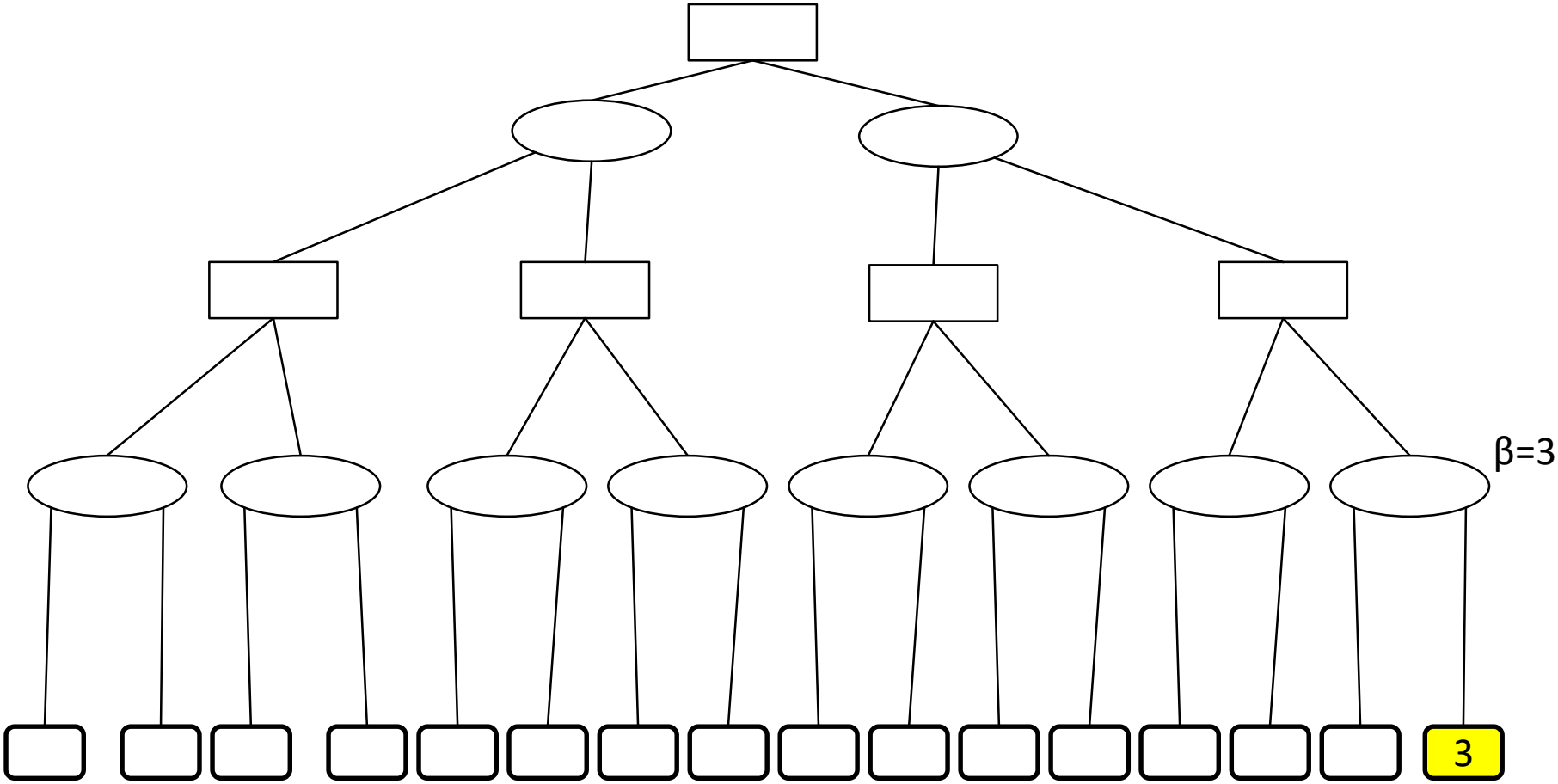

α=4
The max here is definitely 4
4
Here, P2 would pick the min, i.e., some value less or equal 2
4
2
2 is the max of 1 and 2.
4
5
1
2
A 2 is not fine.
7
4
2
6
5
6
1
4
2

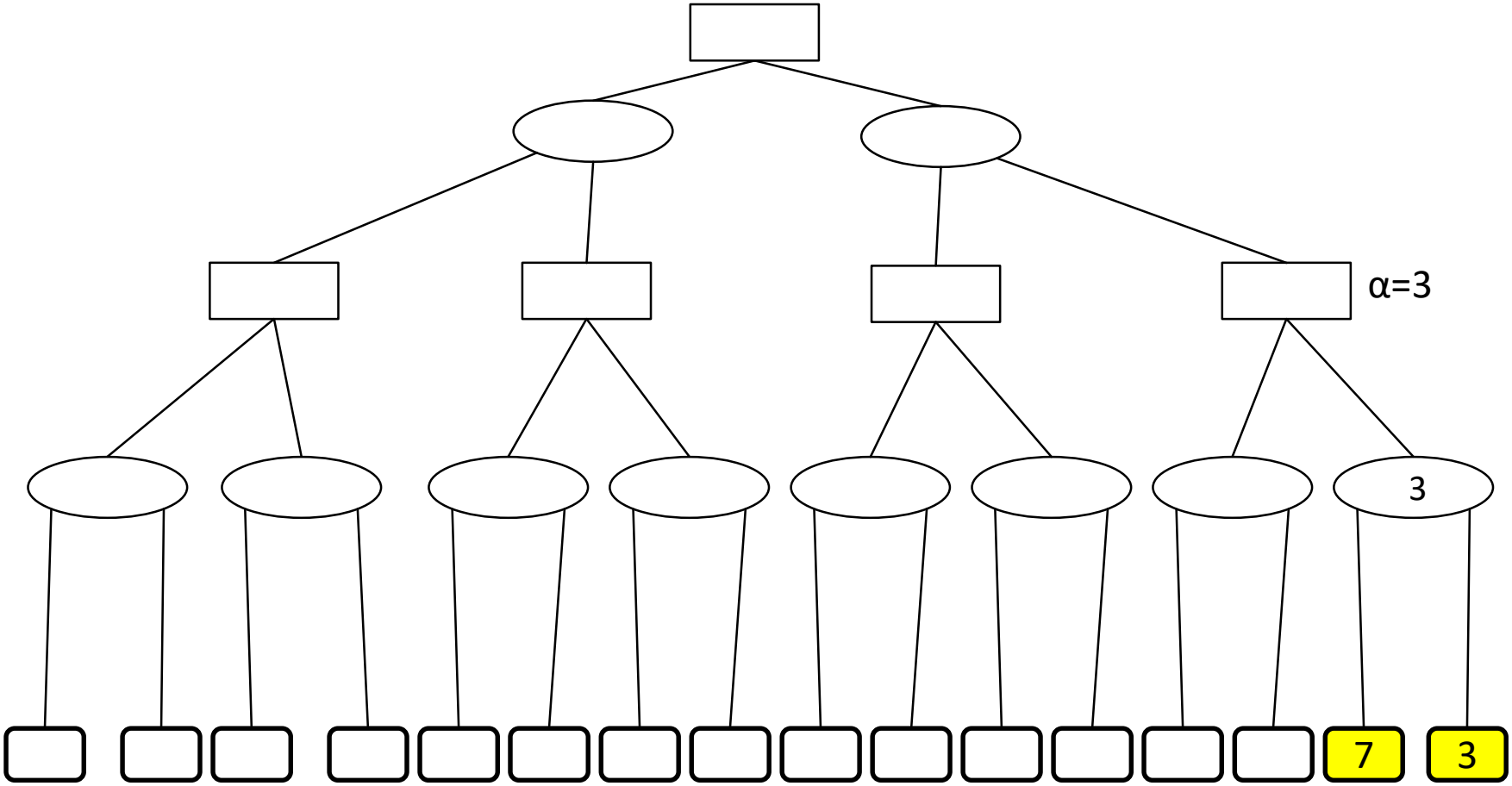

α=4
4
β=2
4
2
4
5
1
2
7
4
2
6
5
6
1
4
2

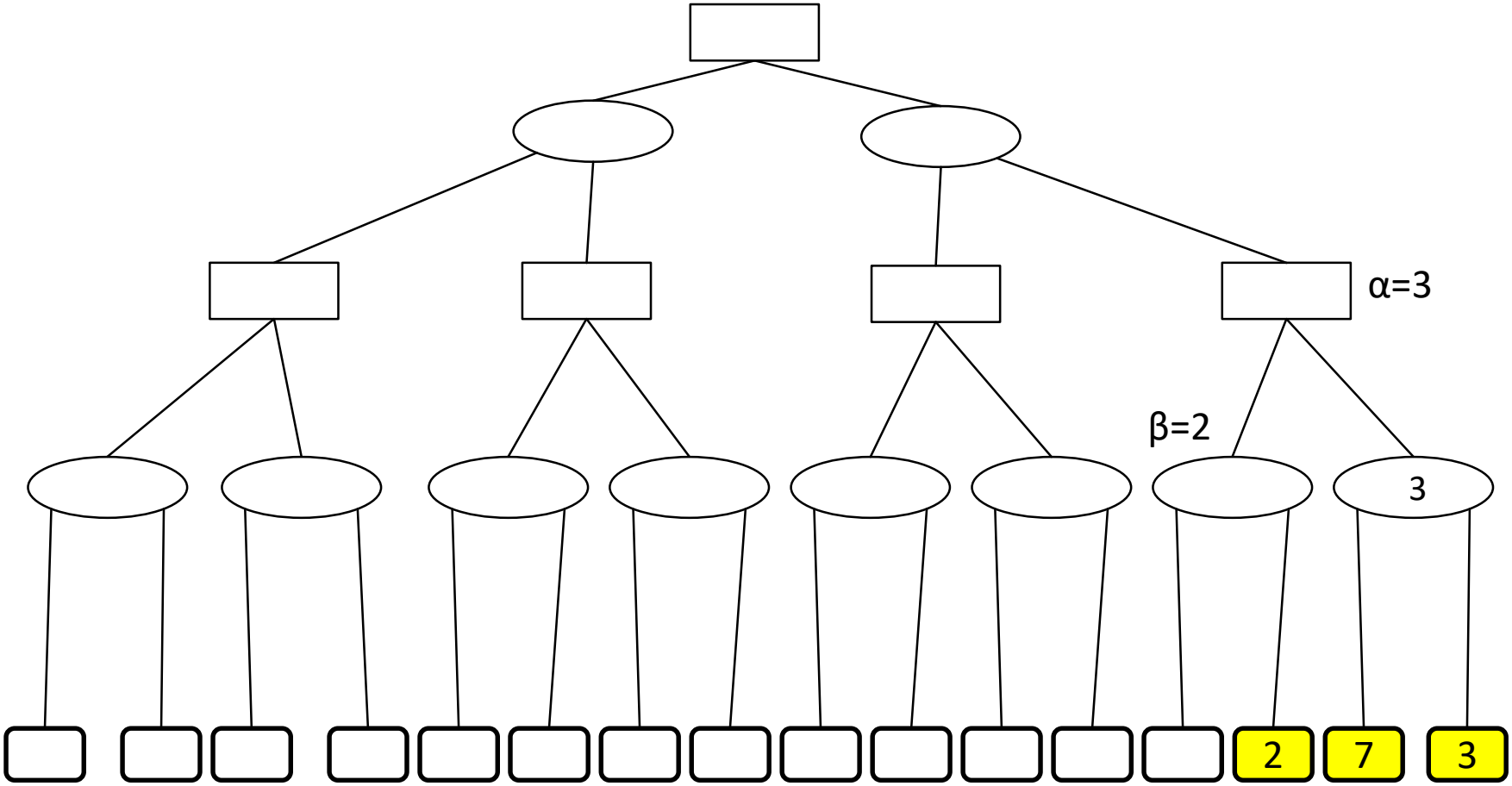

α=4
β<α
4
β=2
4
2
4
5
1
2
7
4
2
6
5
6
1
4
2

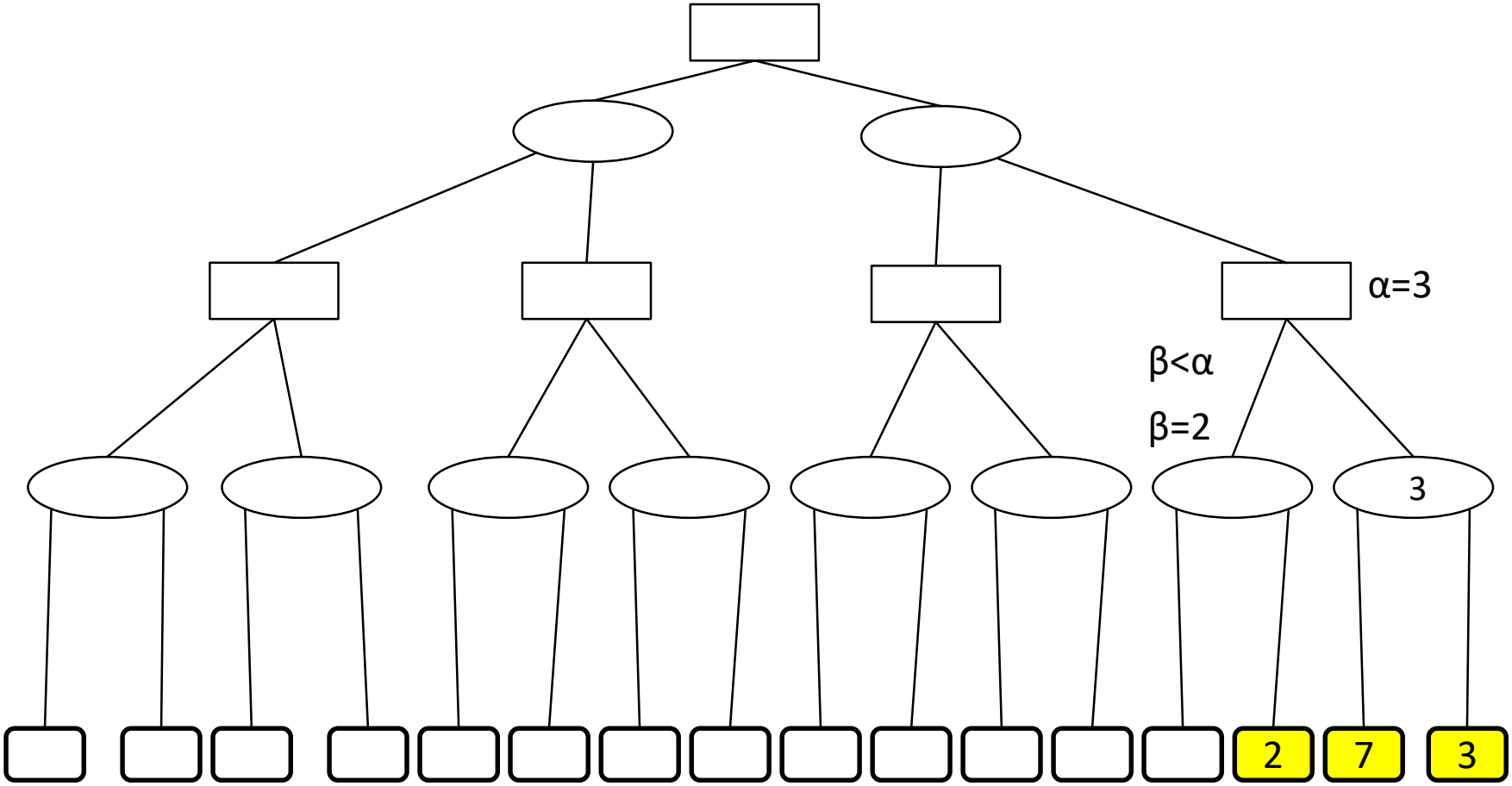

4
4
4
2
4
5
1
2
7
4
2
6
5
6
1
4
2

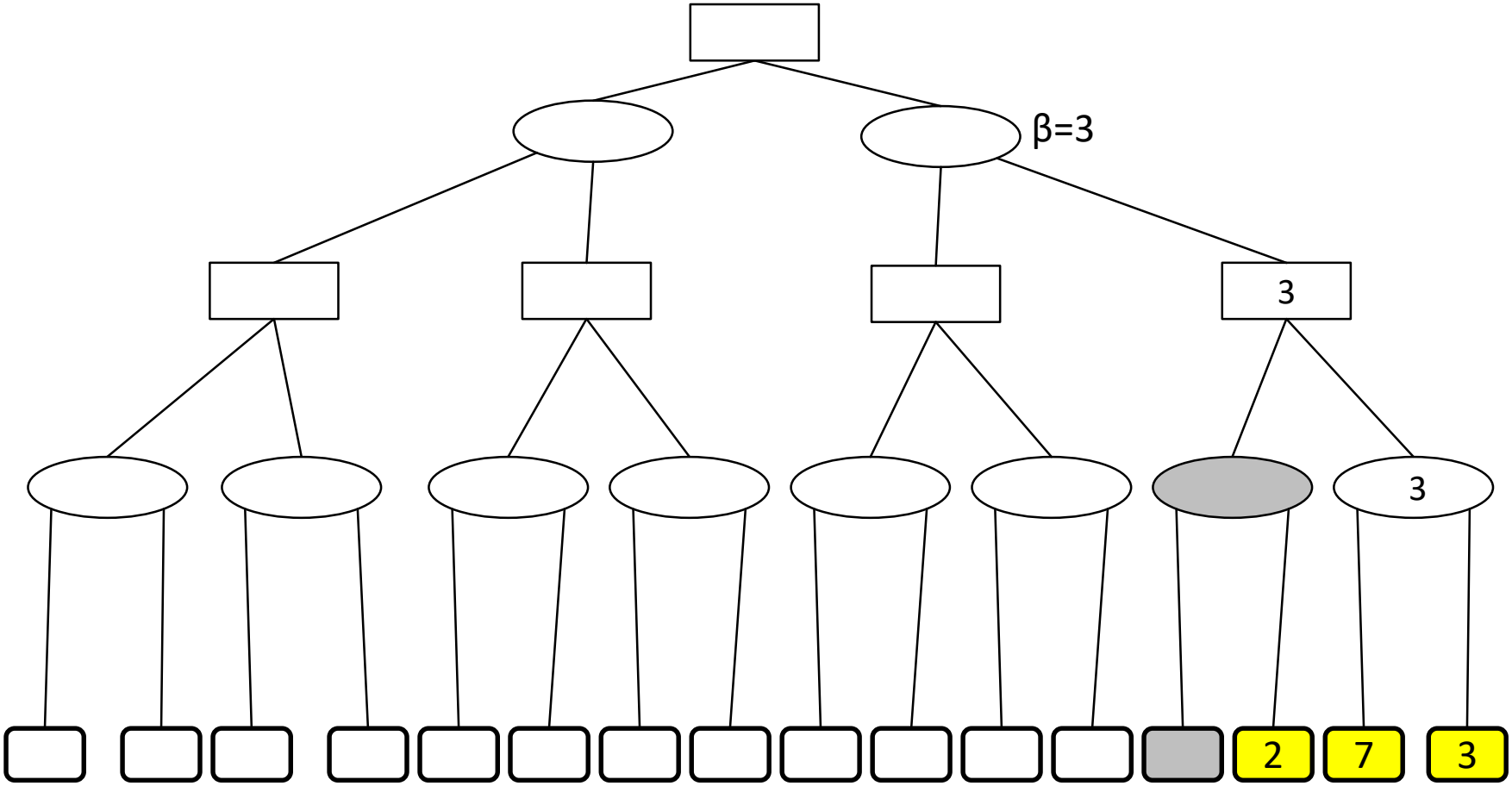
10-2) Search strategy: Post-order (right partial tree first)

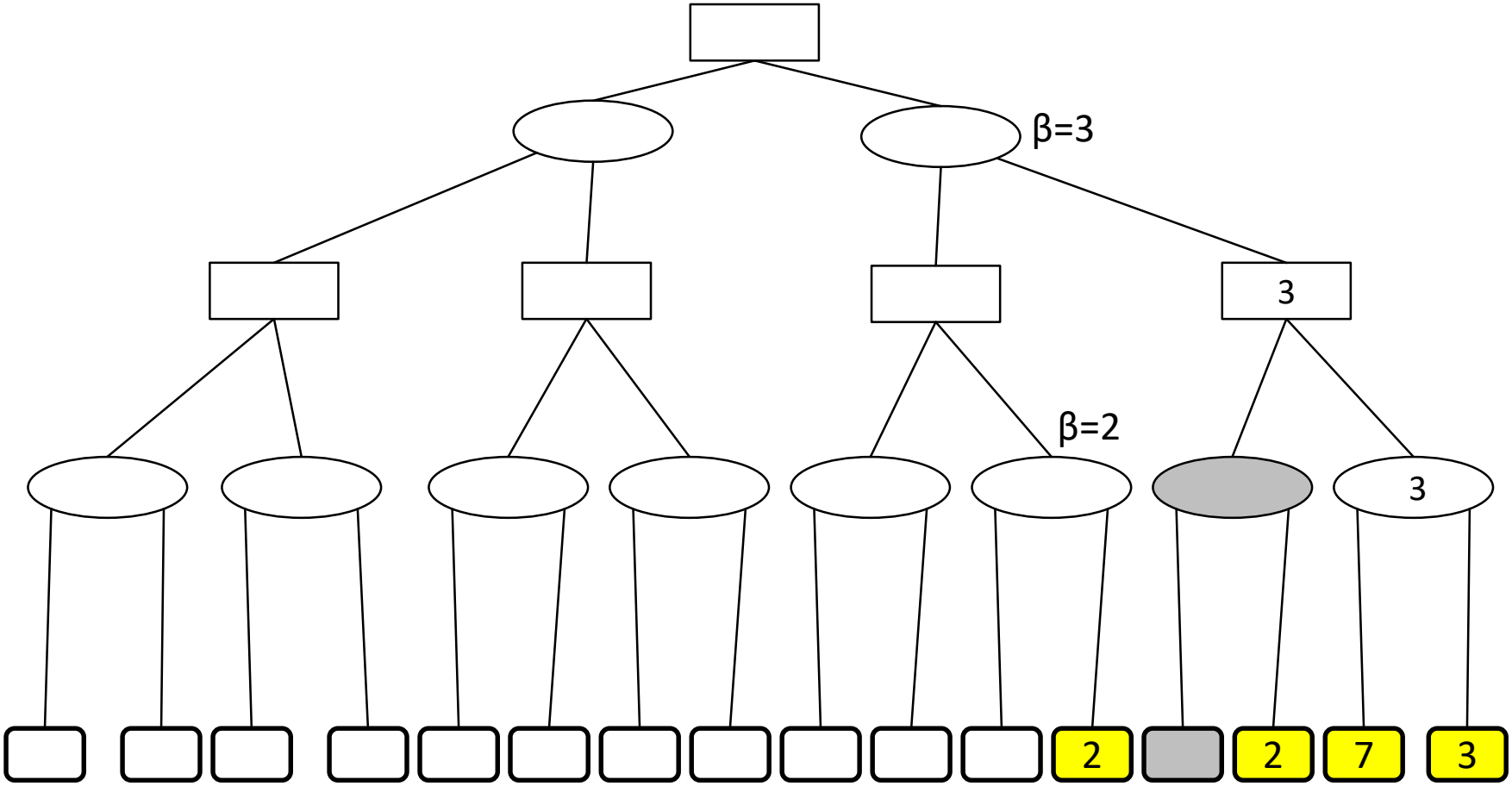

β=3
3

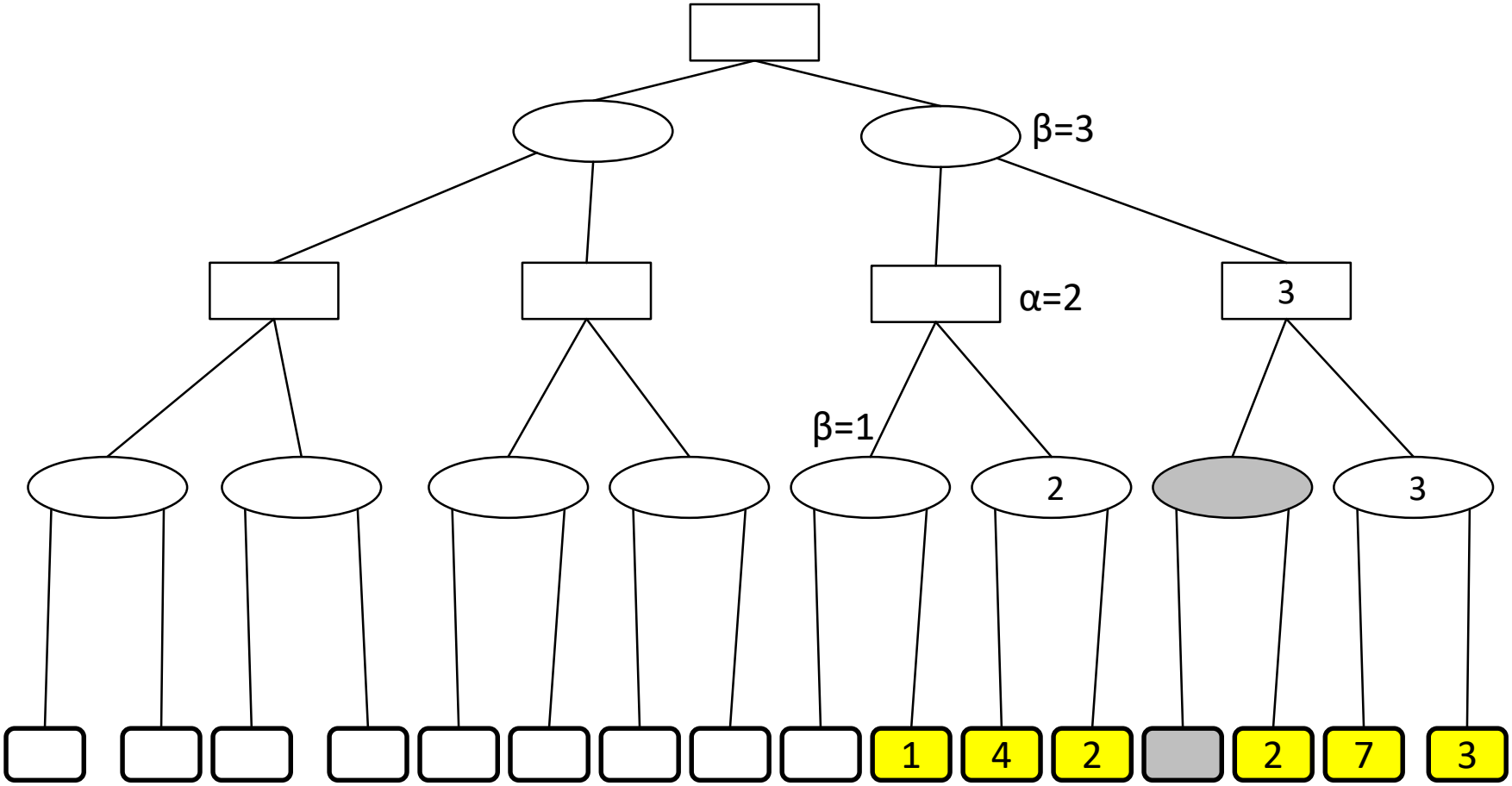

α=3
3
7
3

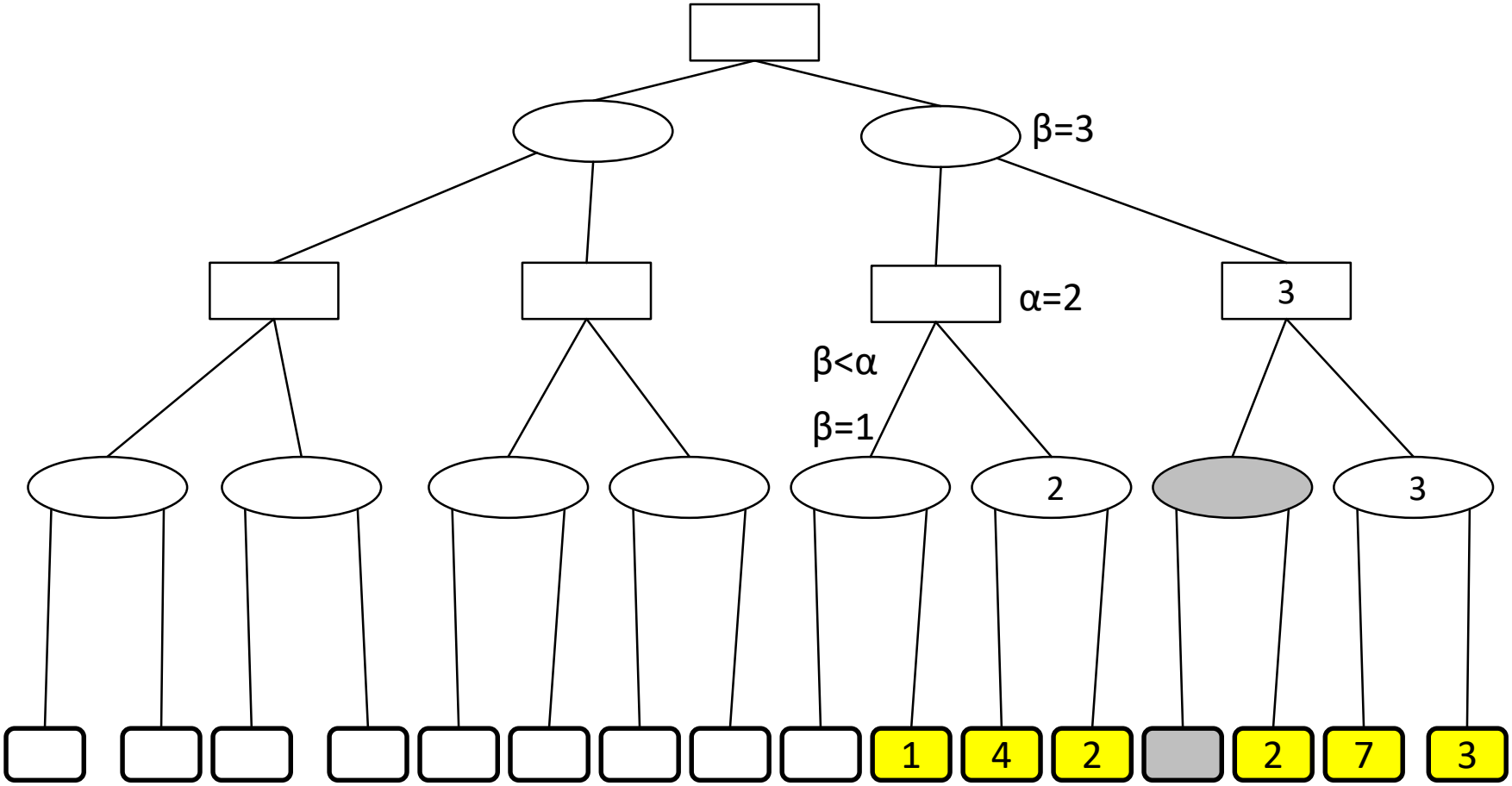

α=3
β=2
3
2
7
3

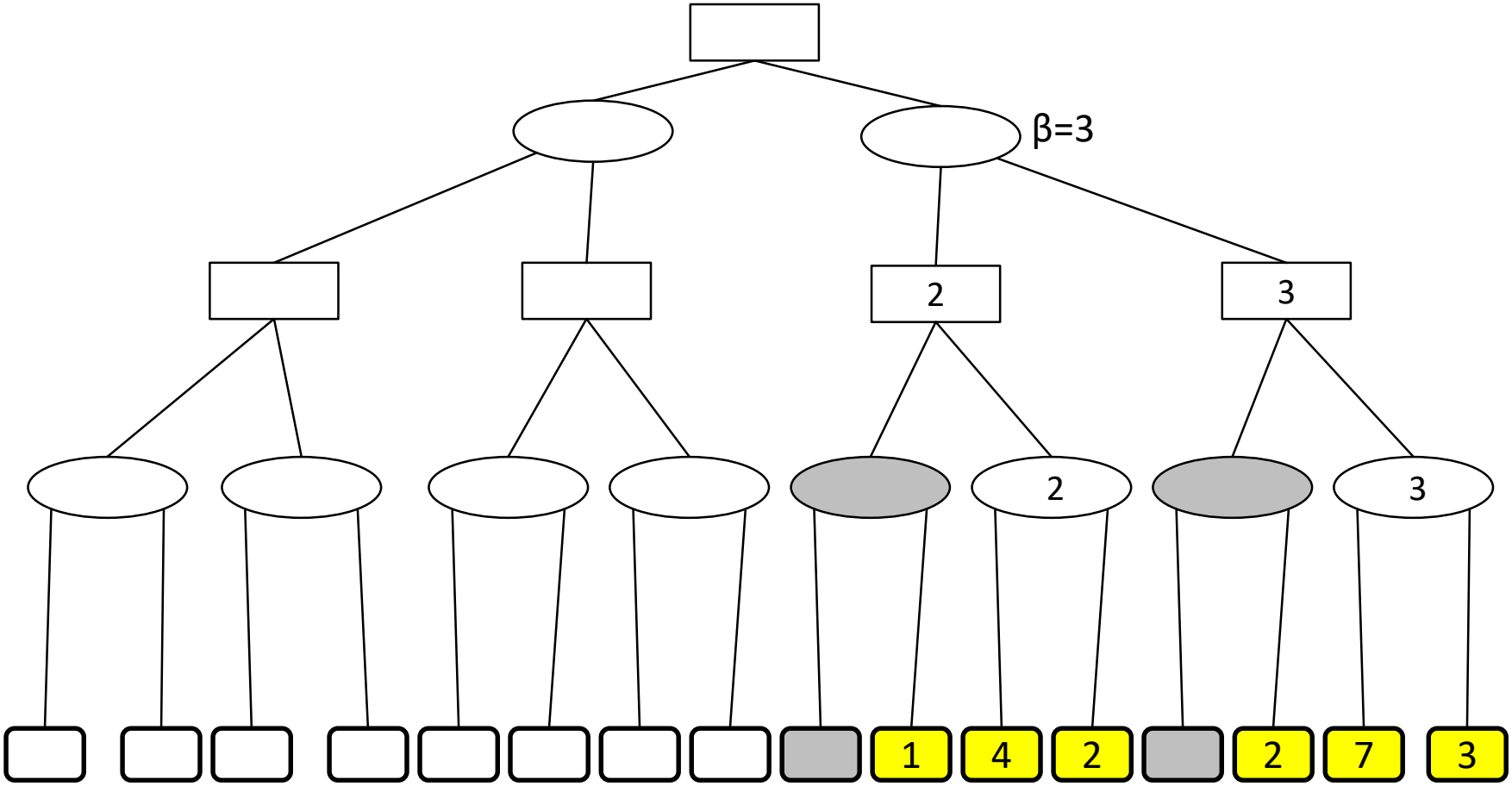

α=3
β<α
β=2
3
2
7
3

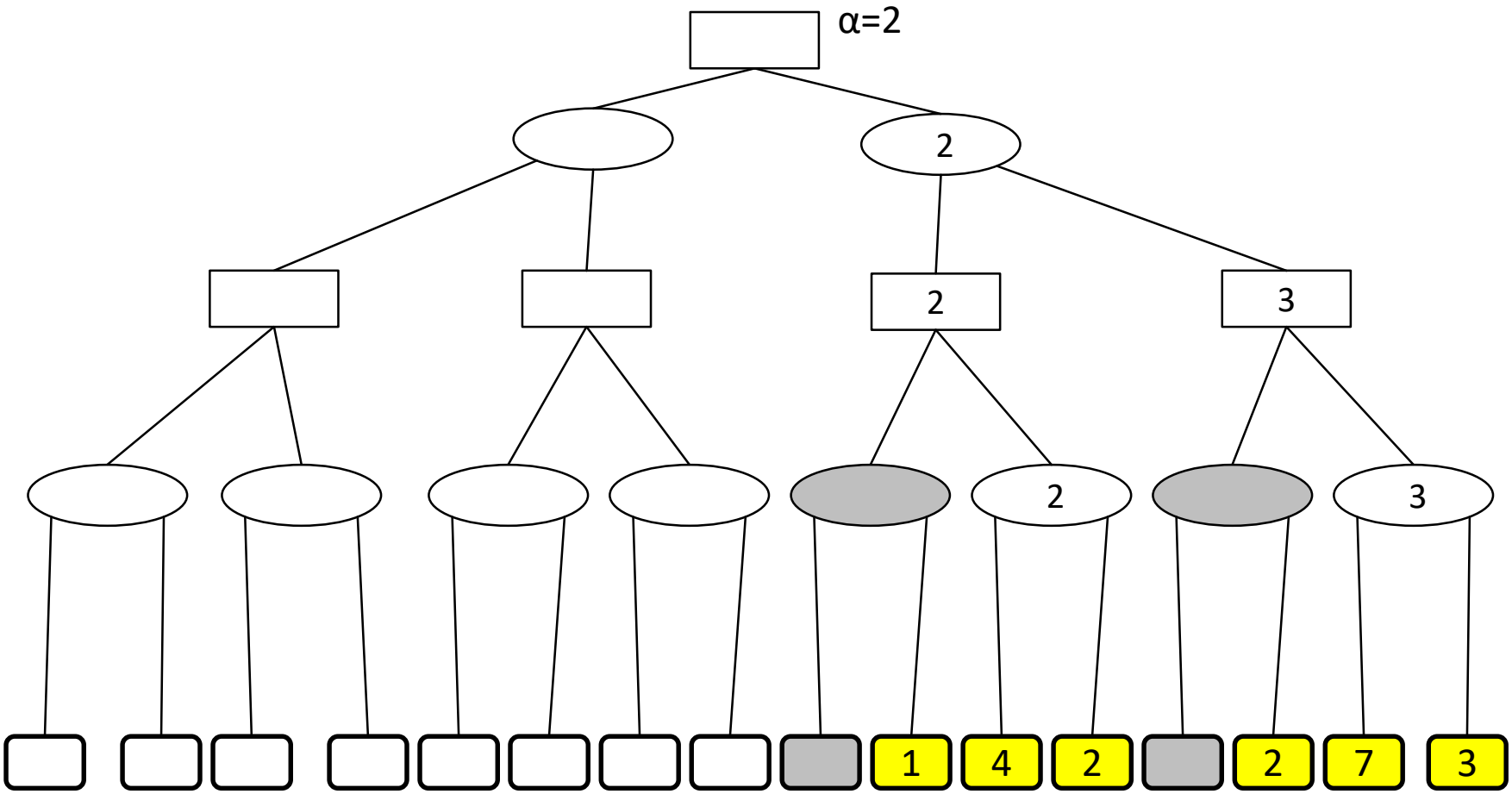

β=3
3
3
2
7
3

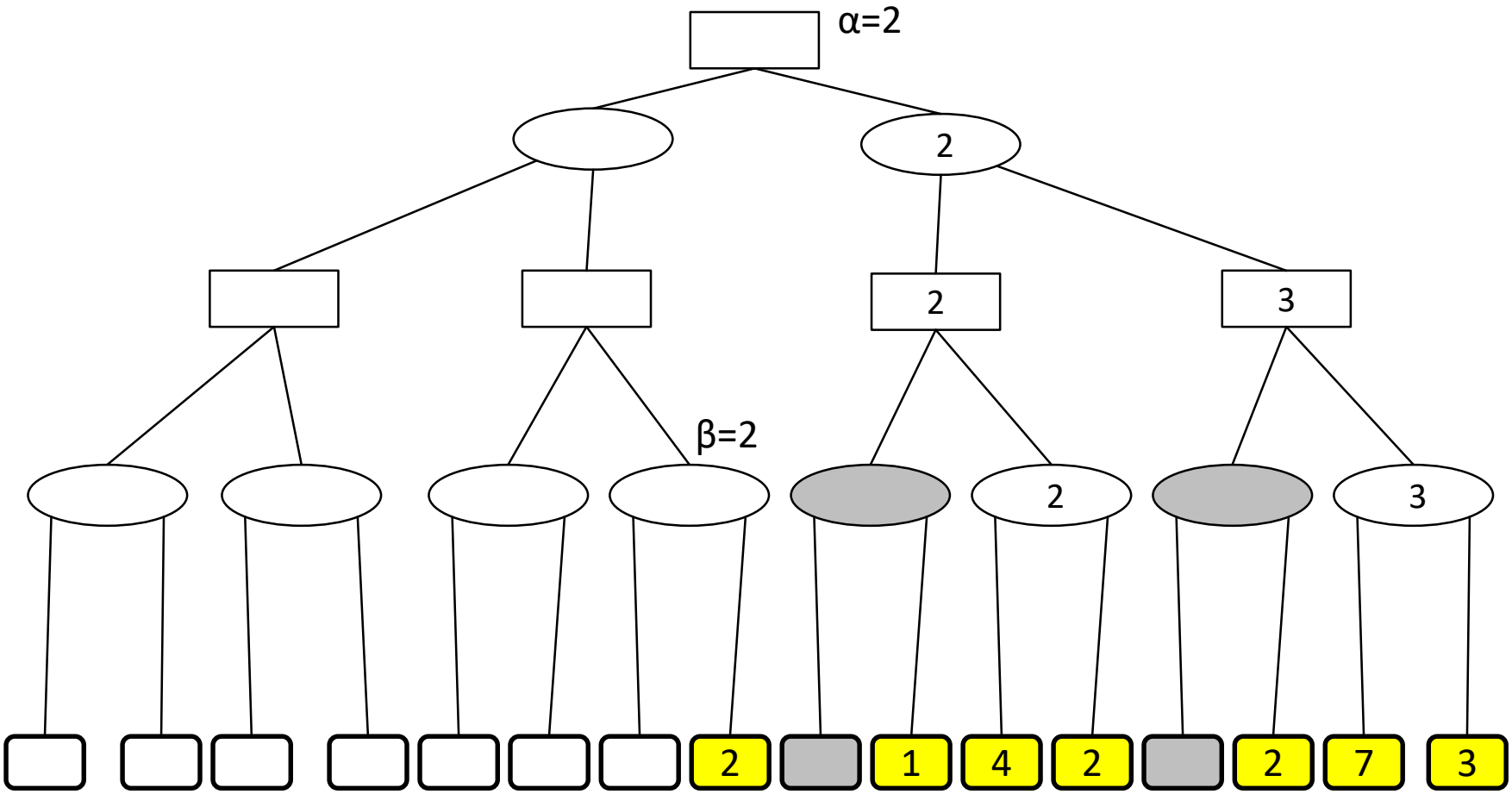

β=3
3
β=2
3
2
2
7
3

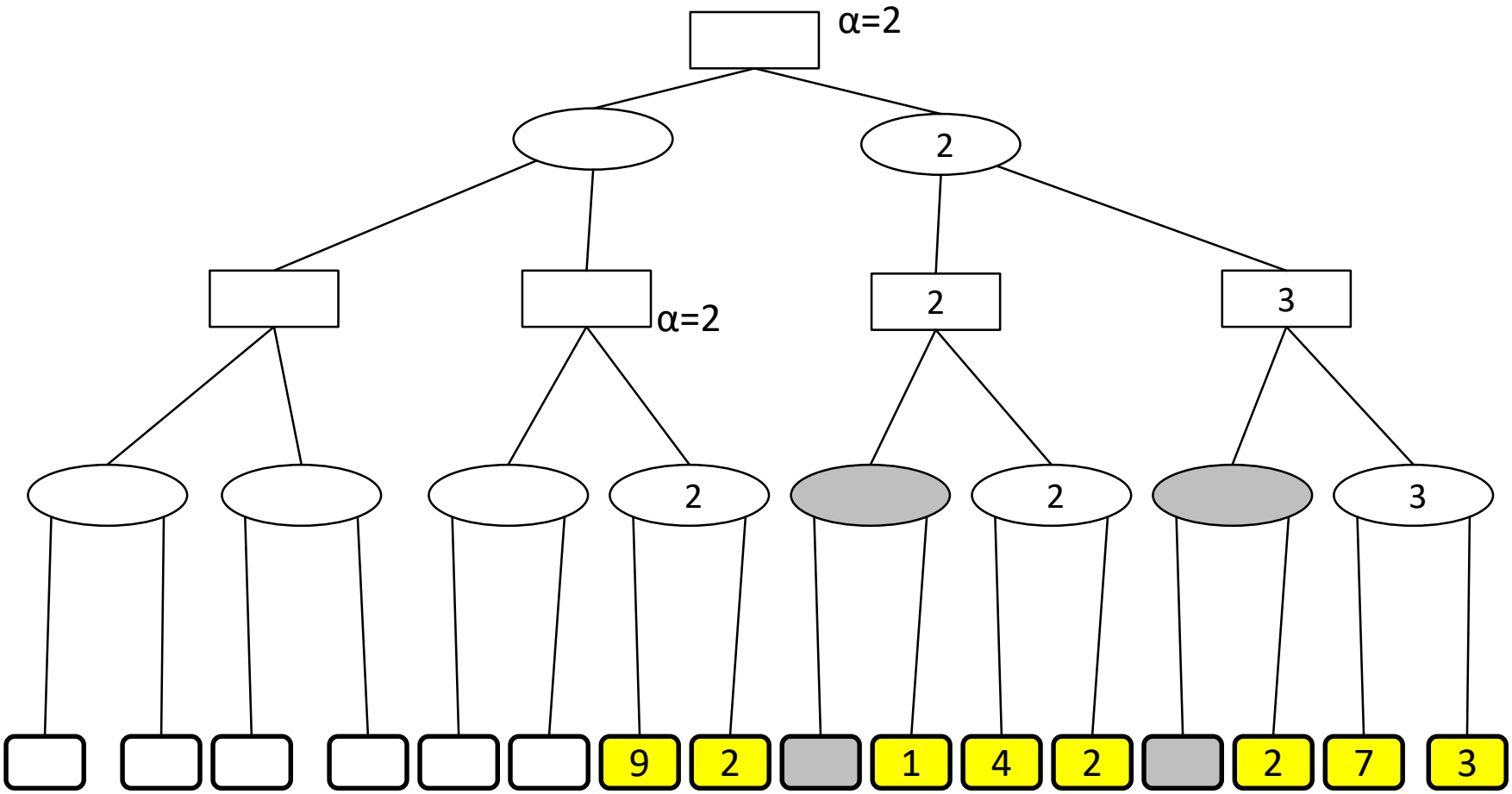

β=3
α=2
3
β=1
2
3
1
4
2
2
7
3

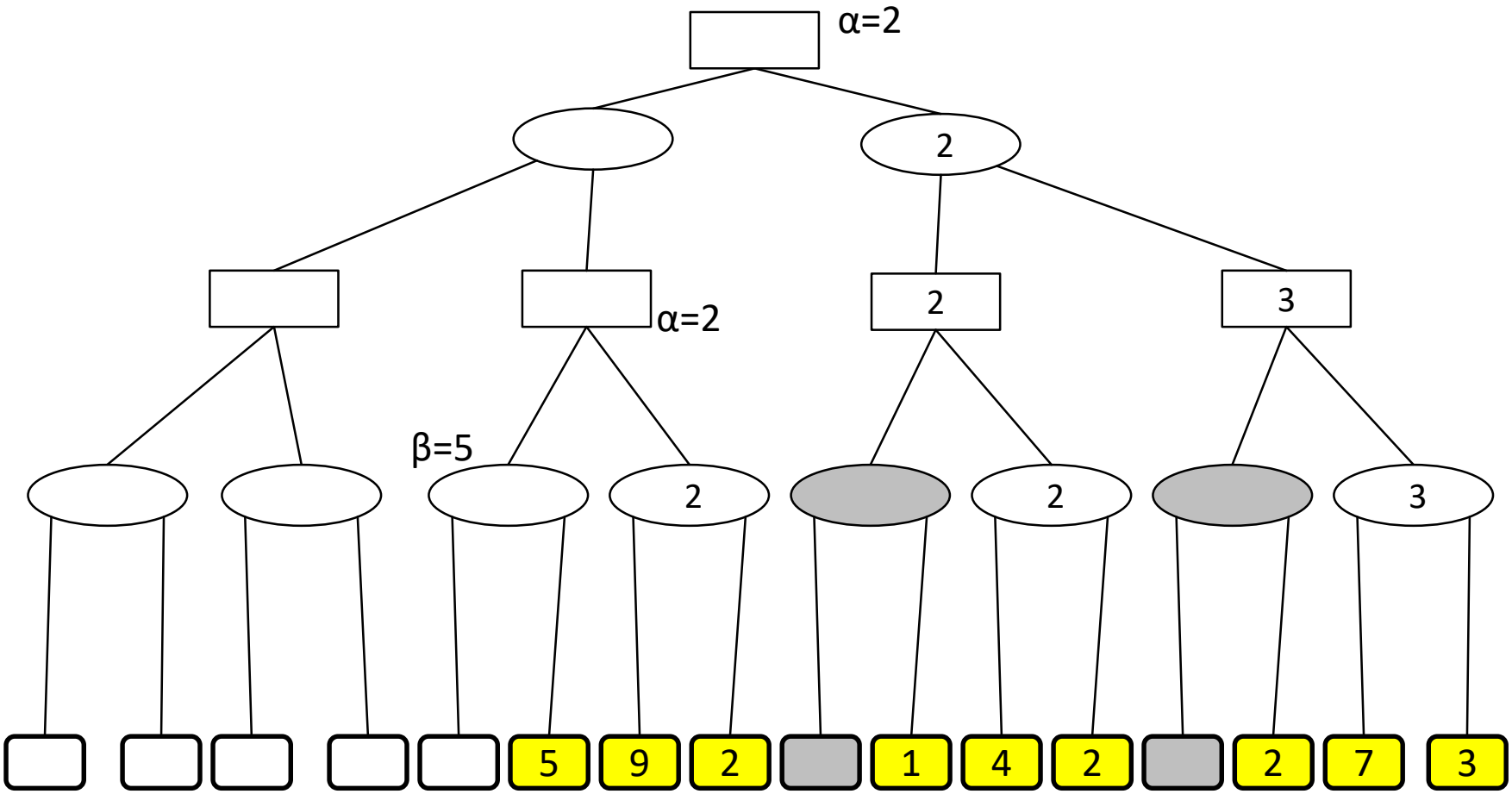

β=3
α=2
3
β<α
β=1
2
3
1
4
2
2
7
3

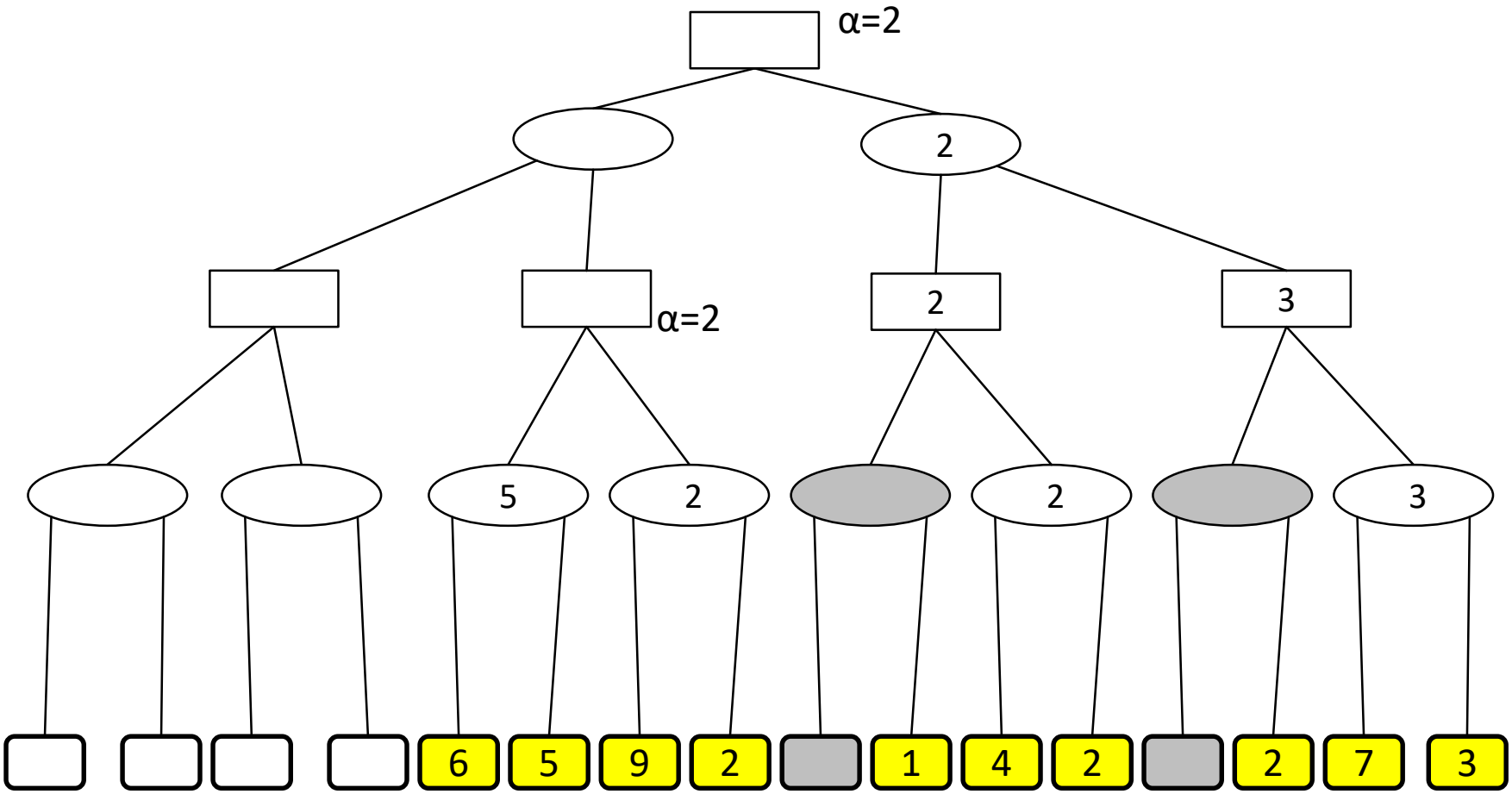

β=3
2
3
2
3
1
4
2
2
7
3

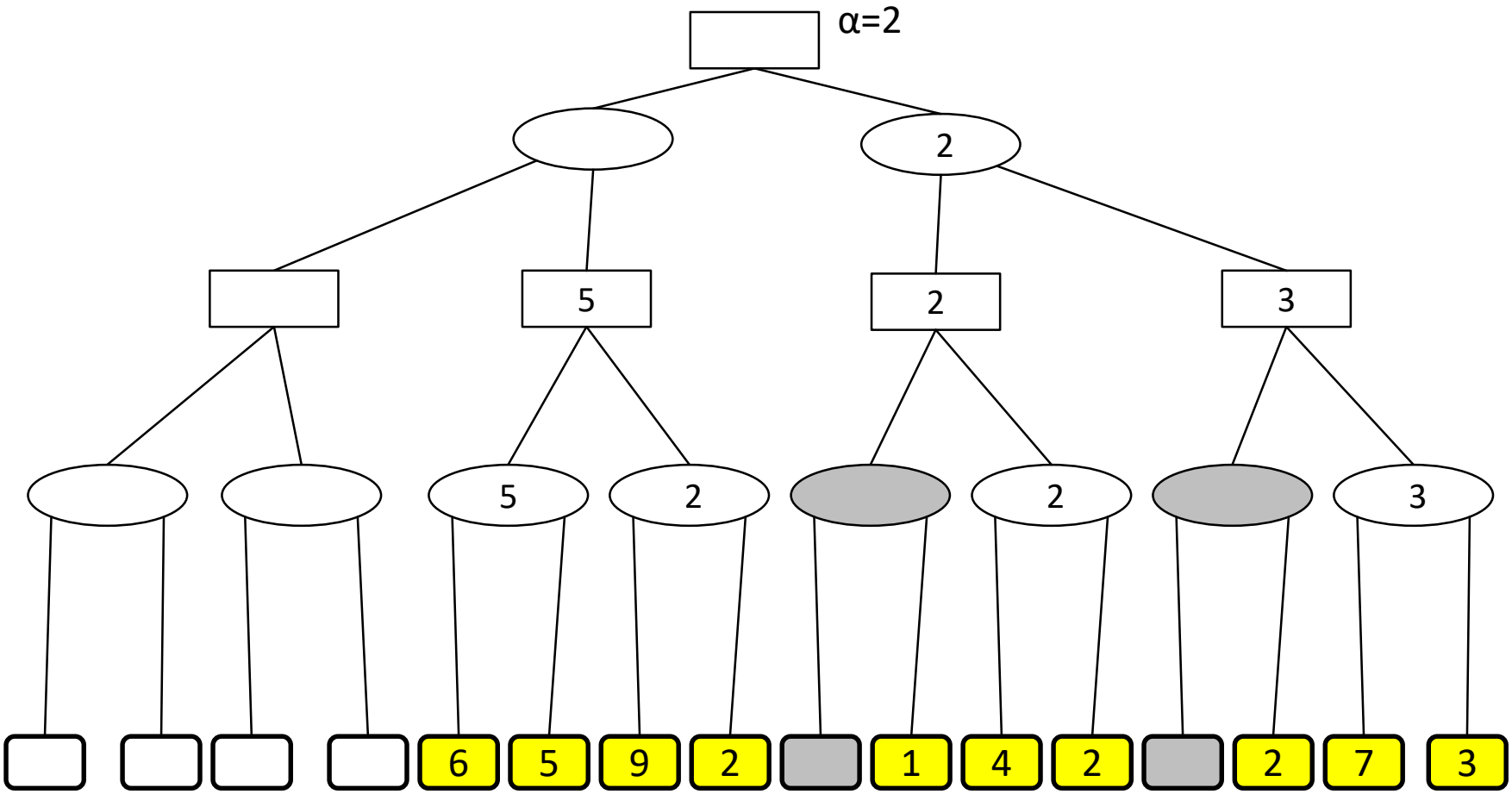

α=2
2
2
3
2
3
1
4
2
2
7
3

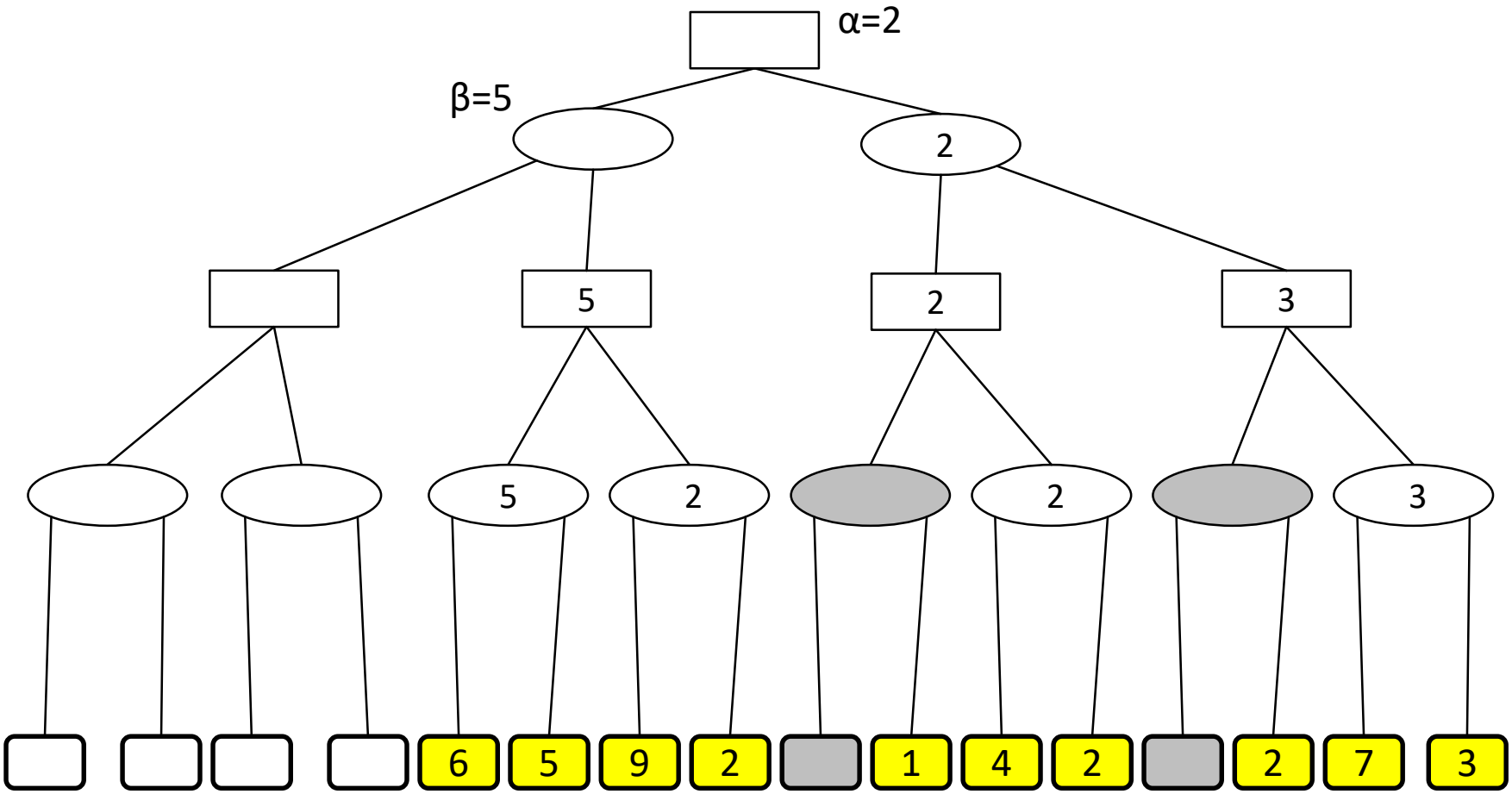

α=2
2
2
3
β=2
2
3
2
1
4
2
2
7
3

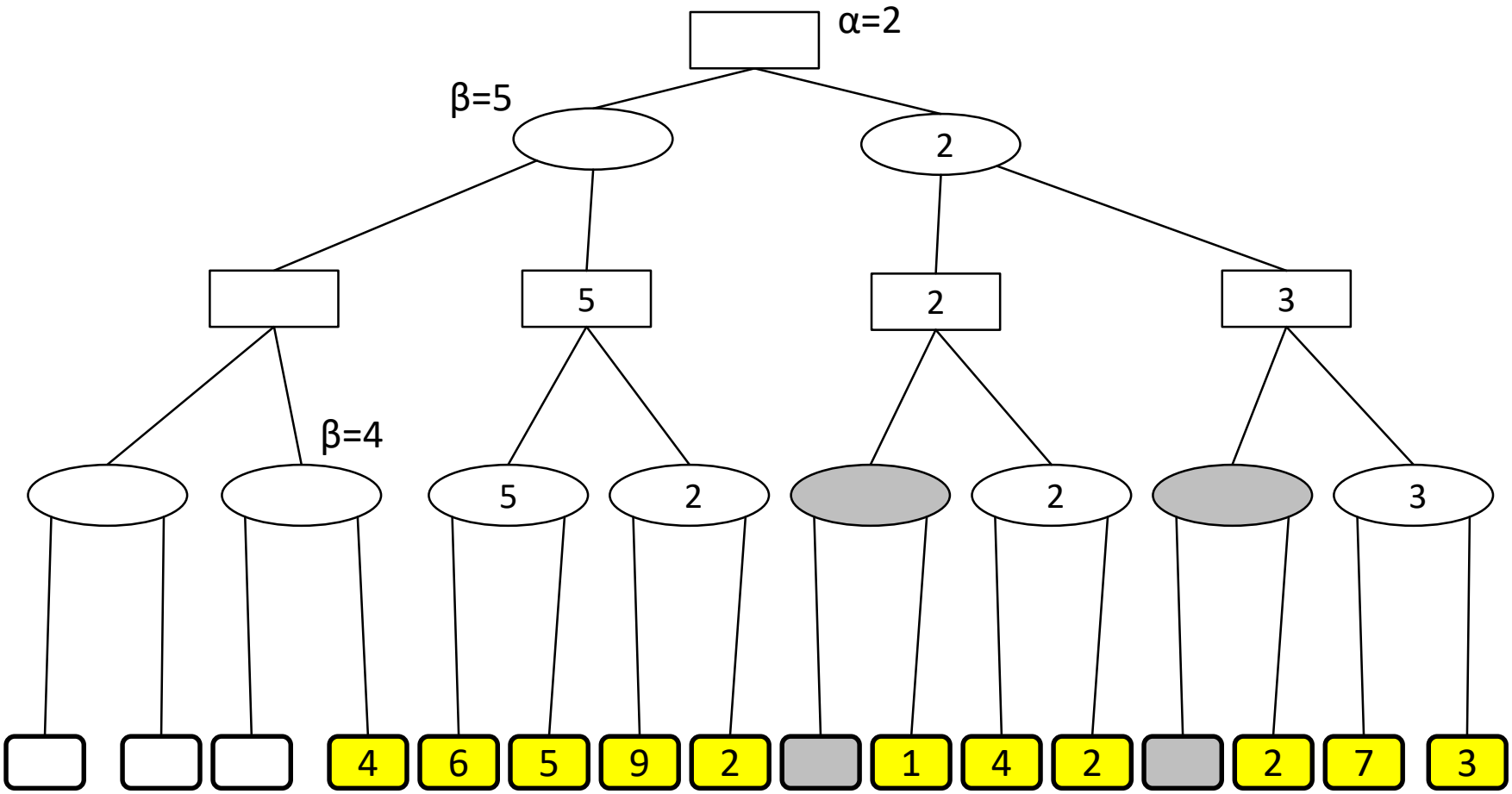

α=2
2
α=2
2
3
2
2
3
9
2
1
4
2
2
7
3

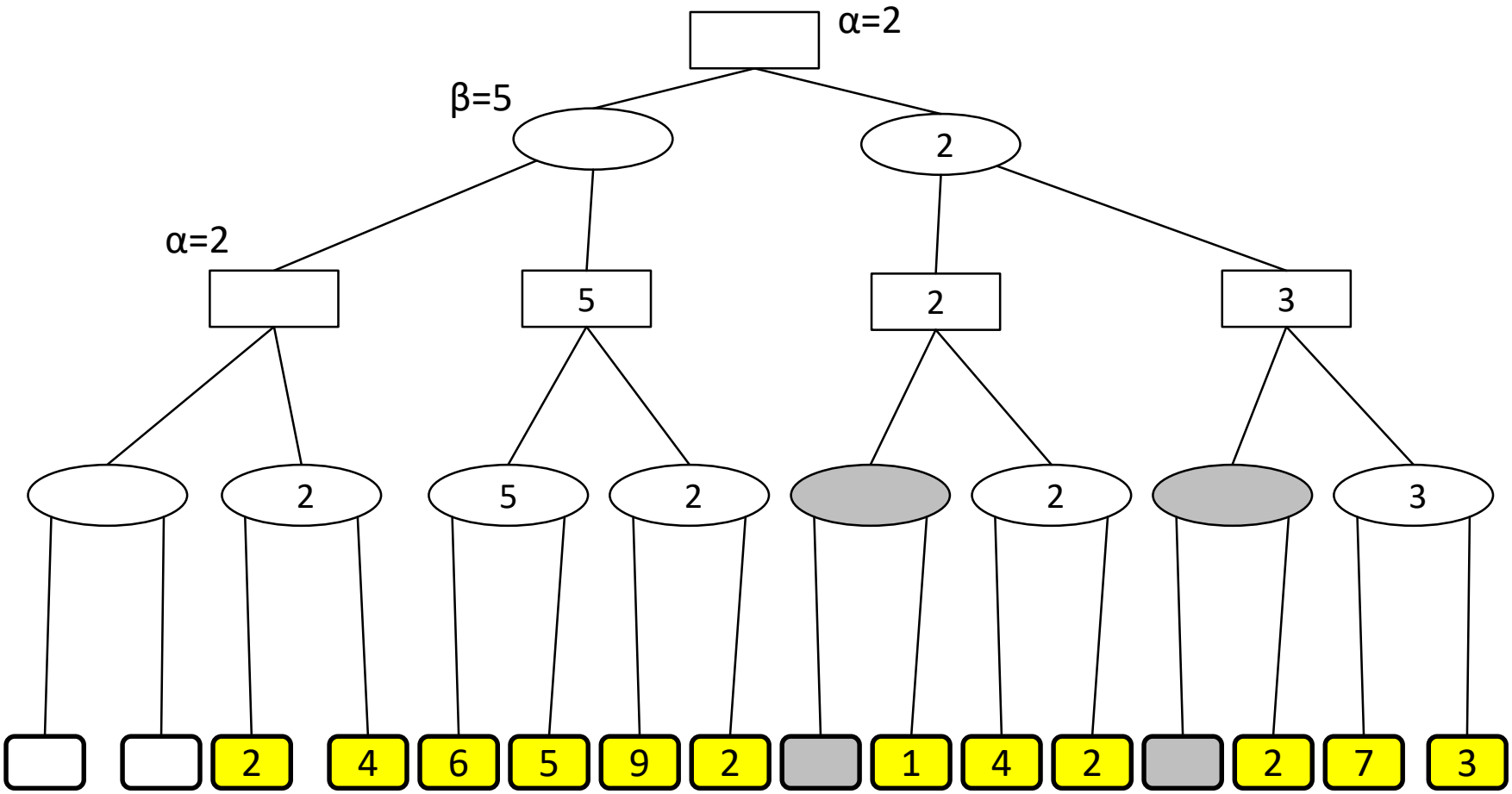

α=2
2
α=2
2
3
β=5
2
2
3
5
9
2
1
4
2
2
7
3

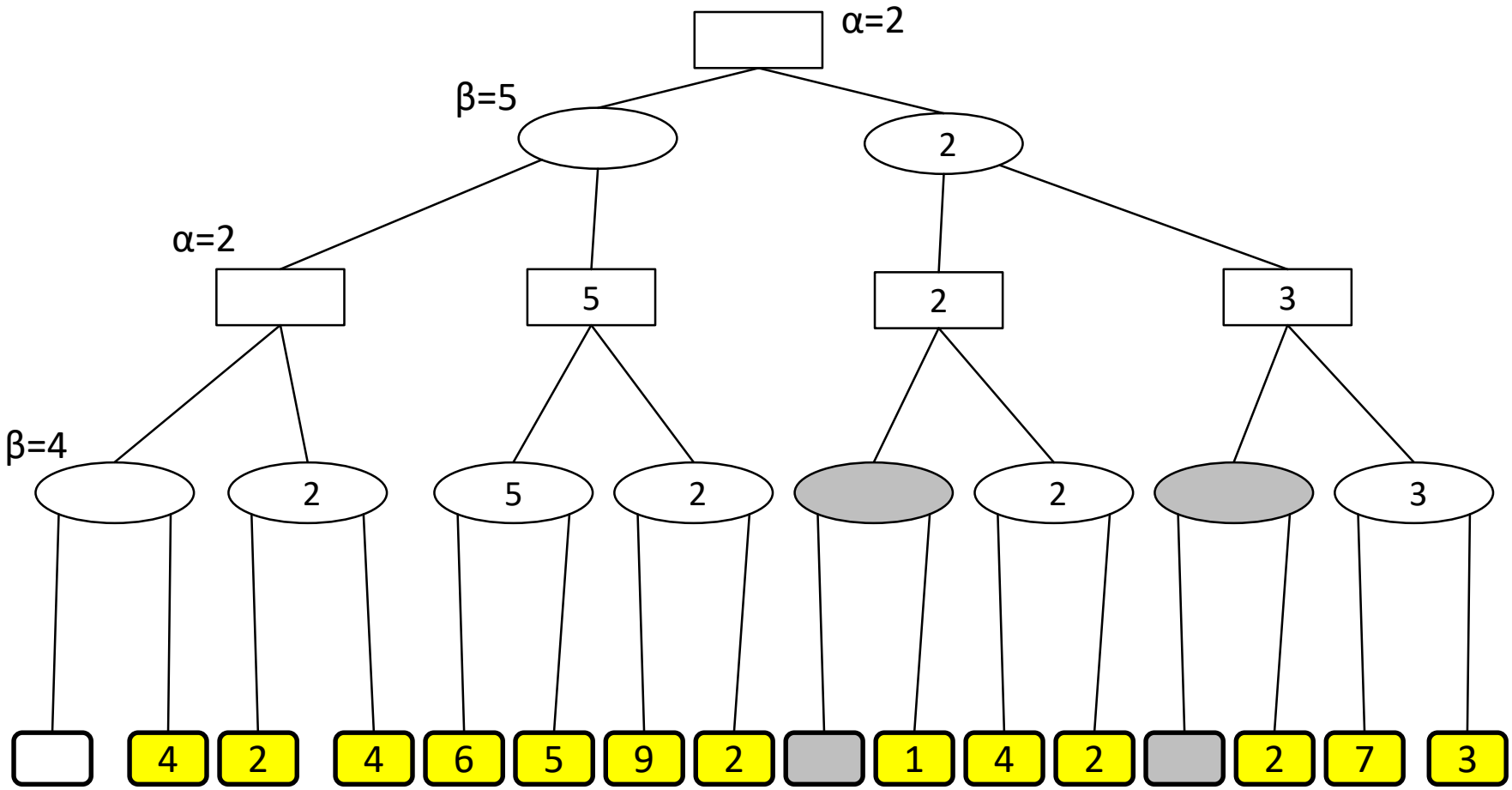

α=2
2
α=2
2
3
5
2
2
3
6
5
9
2
1
4
2
2
7
3

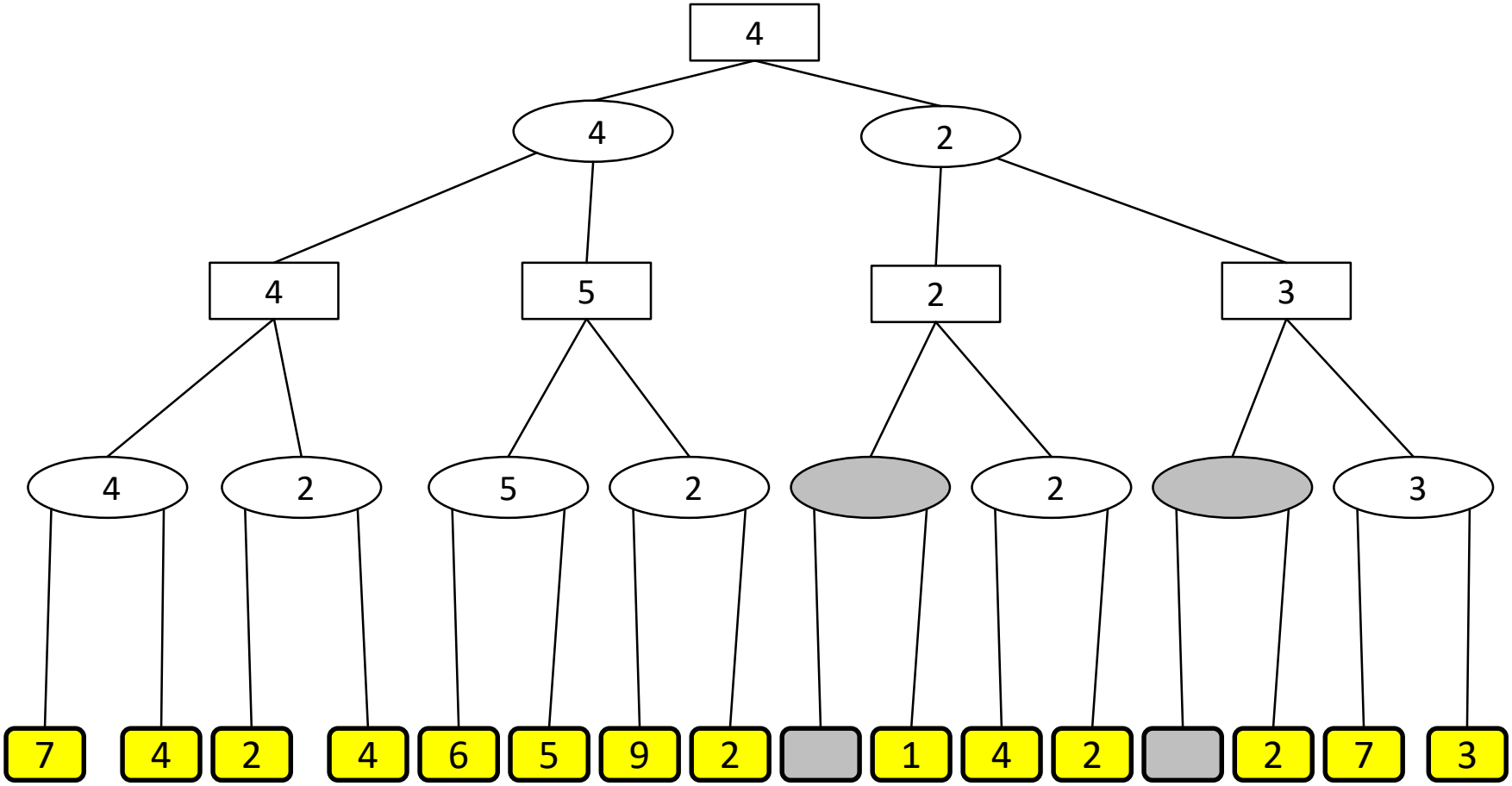

α=2
2
5
2
3
5
2
2
3
6
5
9
2
1
4
2
2
7
3

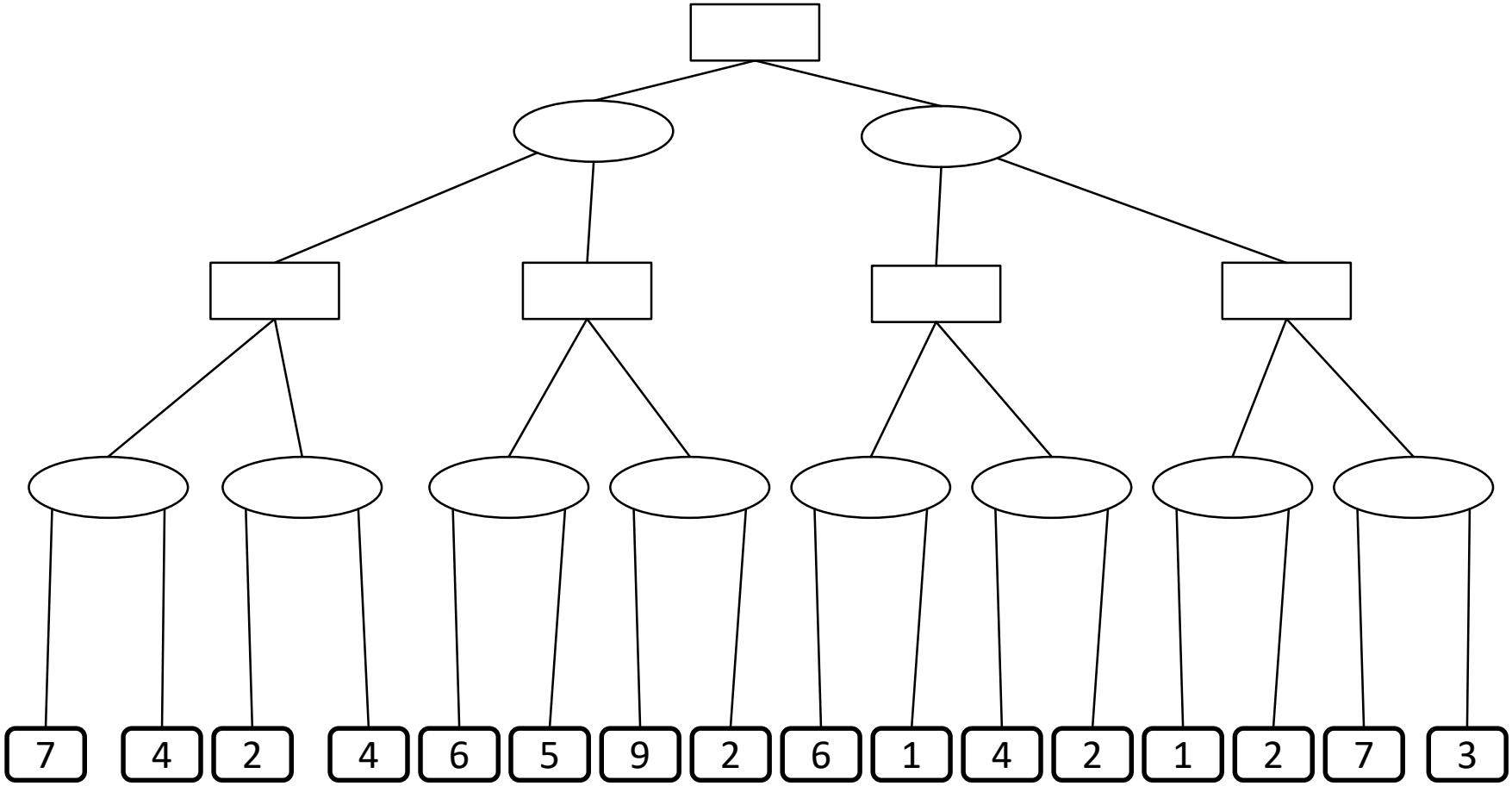

α=2
β=5
2
5
2
3
5
2
2
3
6
5
9
2
1
4
2
2
7
3


α=2
β=5
2
5
2
3
β=4
5
2
2
3
4
6
5
9
2
1
4
2
2
7
3


α=2
β=5
2
α=2
5
2
3
2
5
2
2
3
2
4
6
5
9
2
1
4
2
2
7
3


α=2
β=5
2
α=2
5
2
3
β=4
2
5
2
2
3
4
2
4
6
5
9
2
1
4
2
2
7
3


4
4
2
4
5
2
3
4
2
5
2
2
3
7
4
2
4
6
5
9
2
1
4
2
2
7
3


7
4
2
4
6
5
9
2
6
1
4
2
1
2
7
3