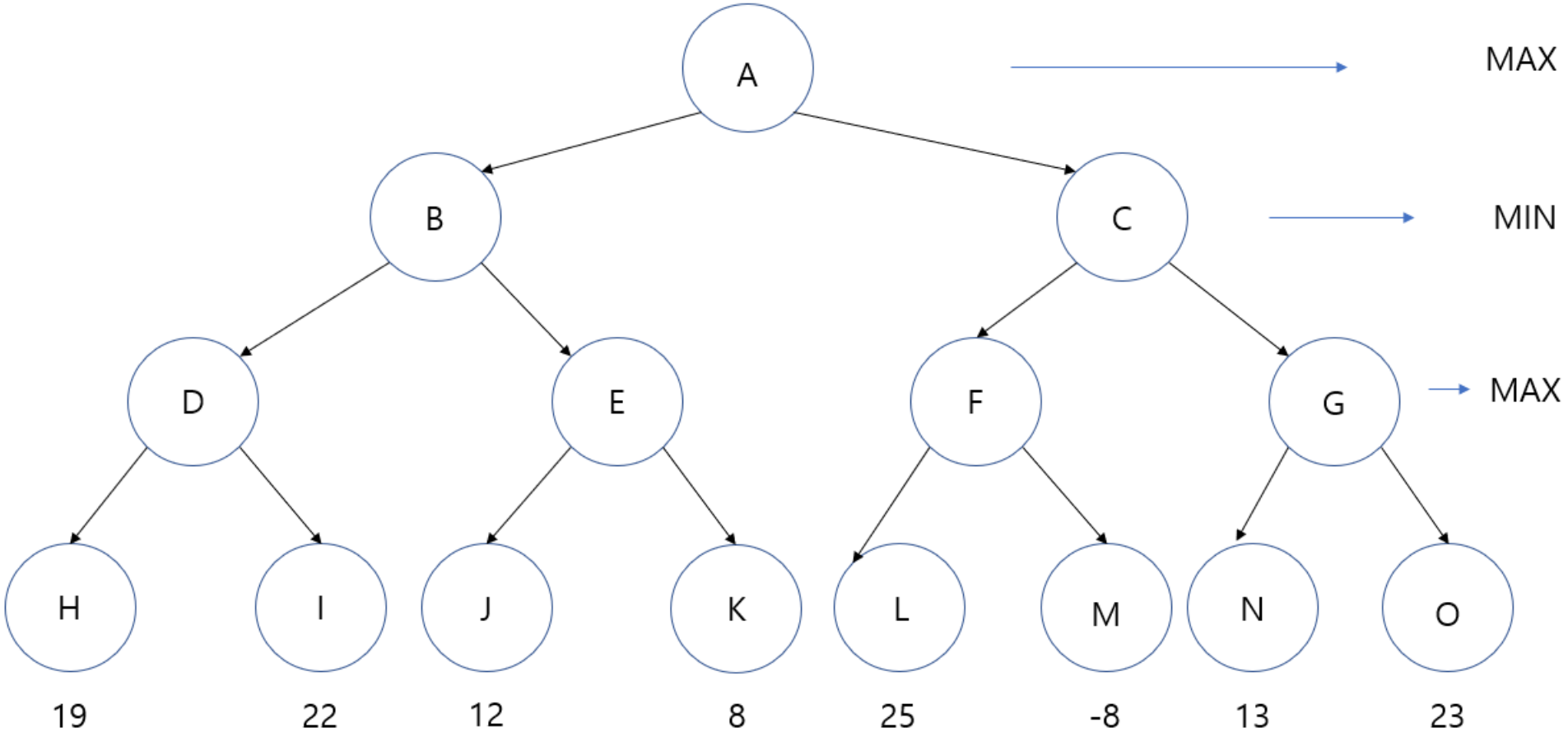
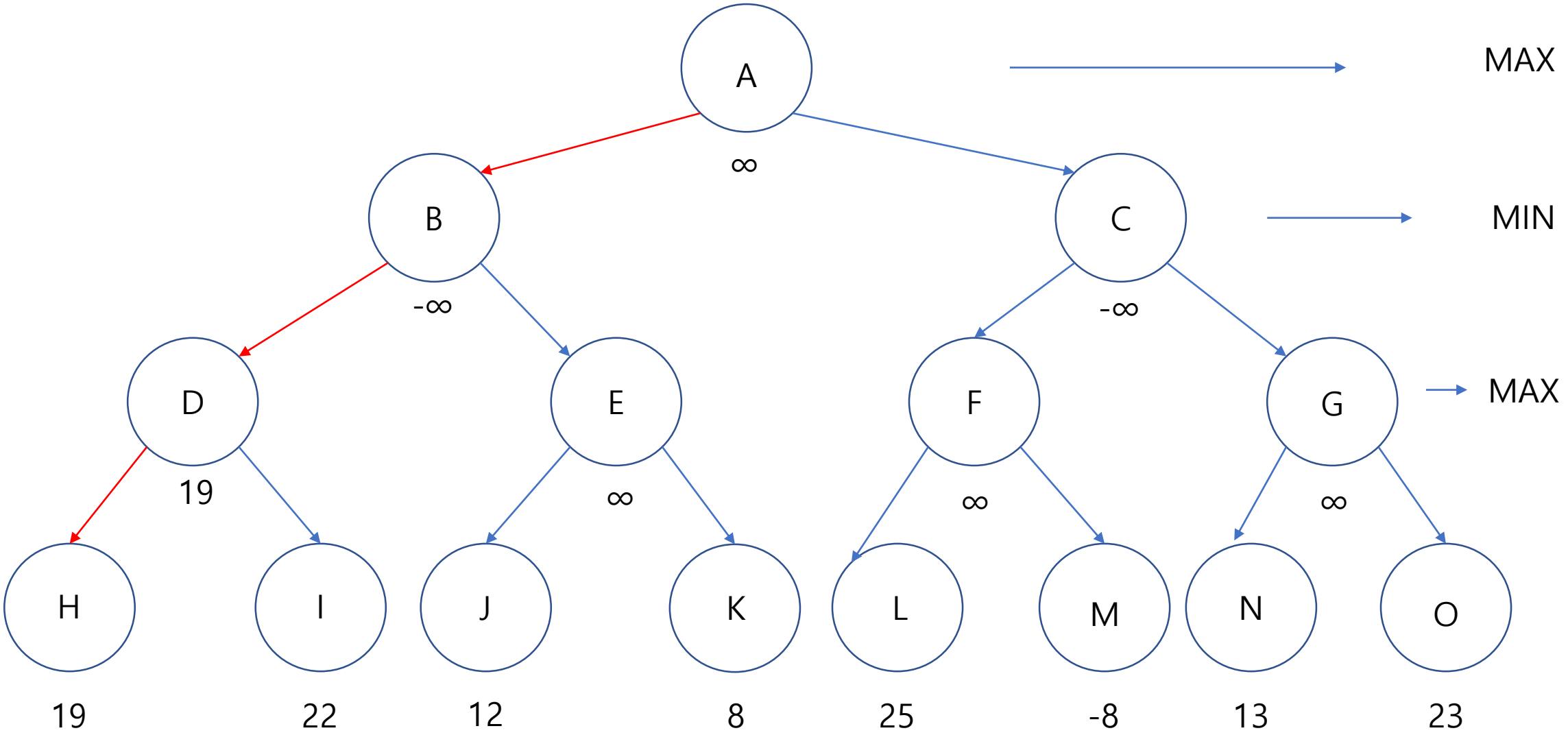
제출일	2023.03.26.	전 공	컴퓨터소프트웨어공학과
과 목	인공지능	학 번	20194009
담당 교수	김 명 숙 교수님	이 름	이 준 석

1. 다음과 같은 탐색 트리에 미니 맥스 알고리즘을 적용해보자. MAX경기자부터 시작한다고 가정한다.

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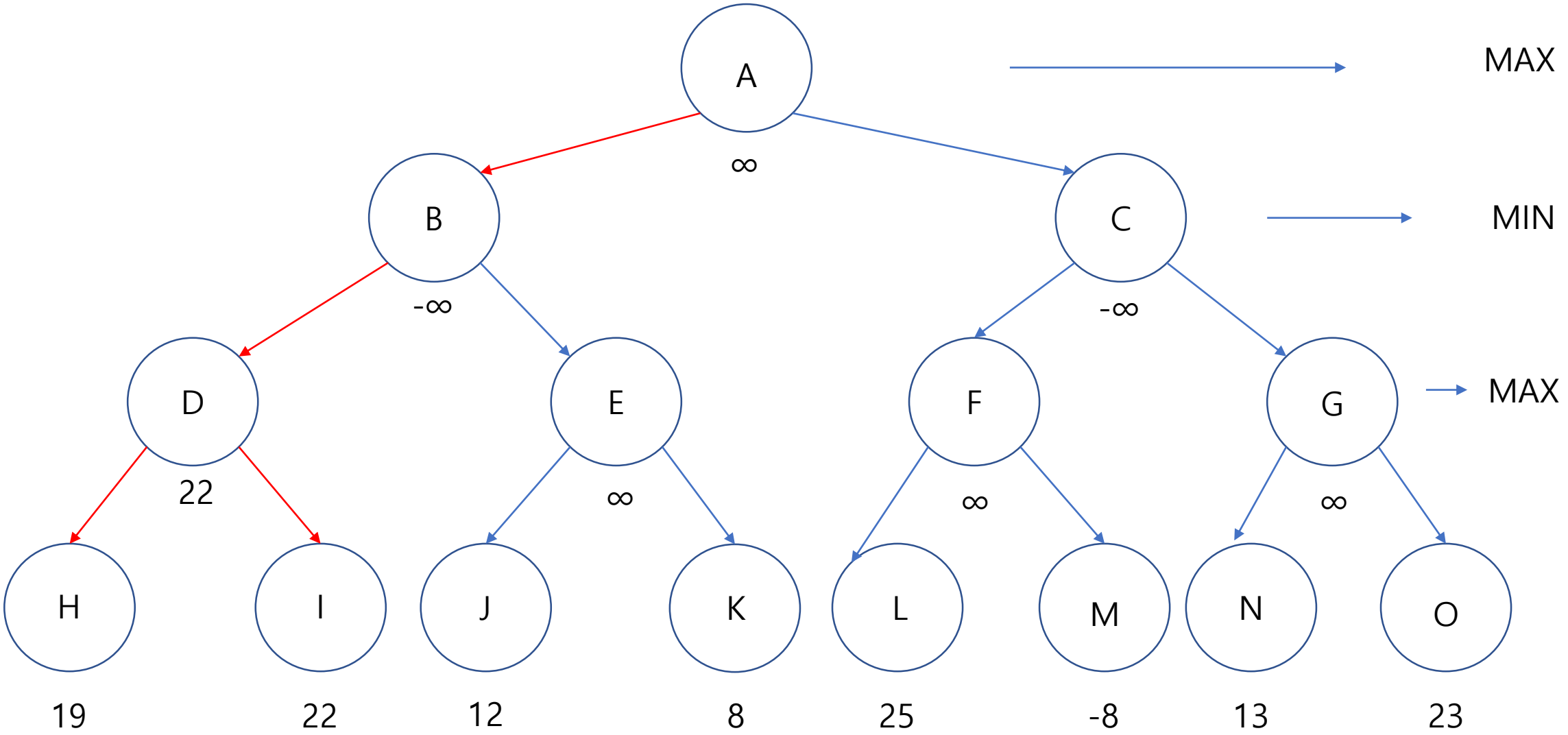
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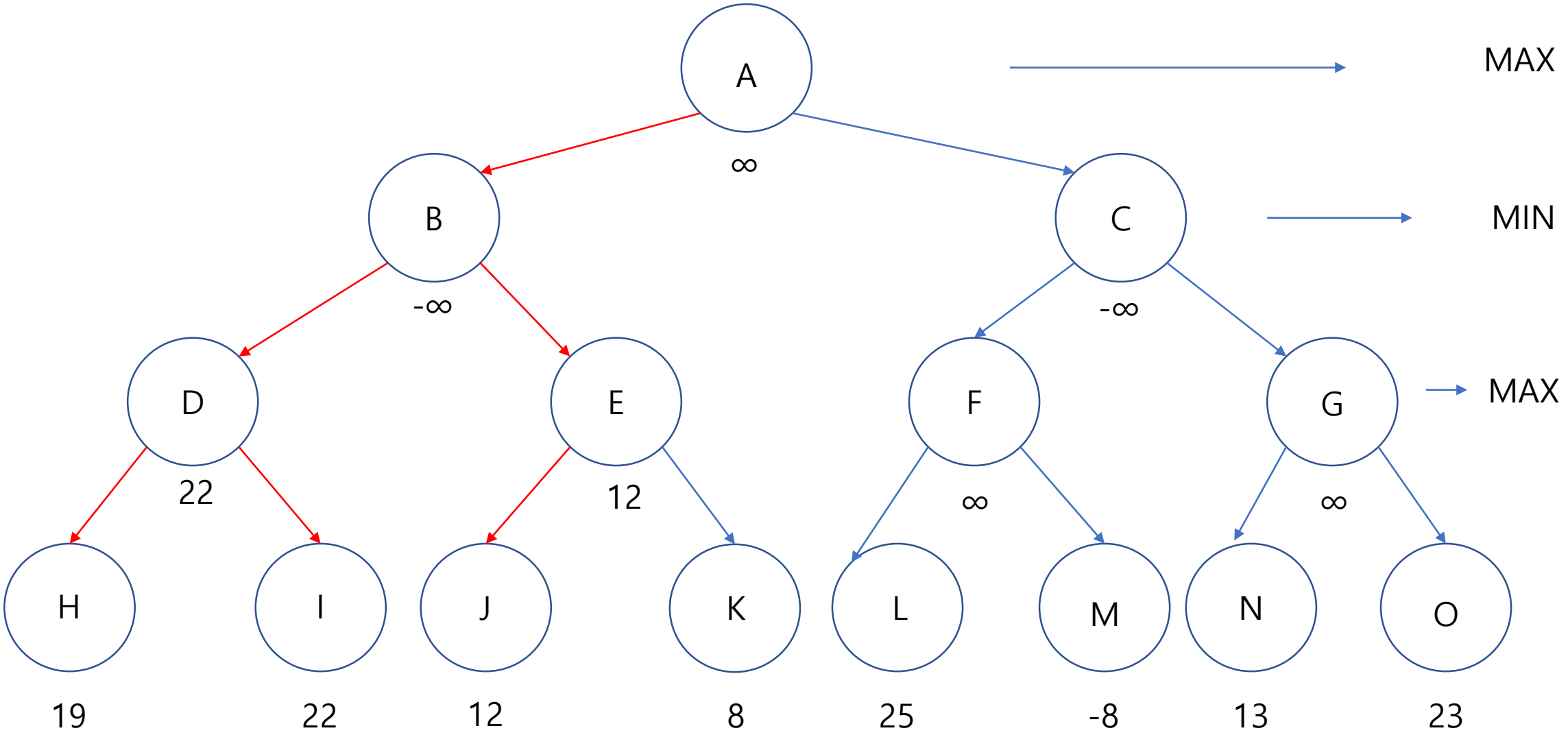
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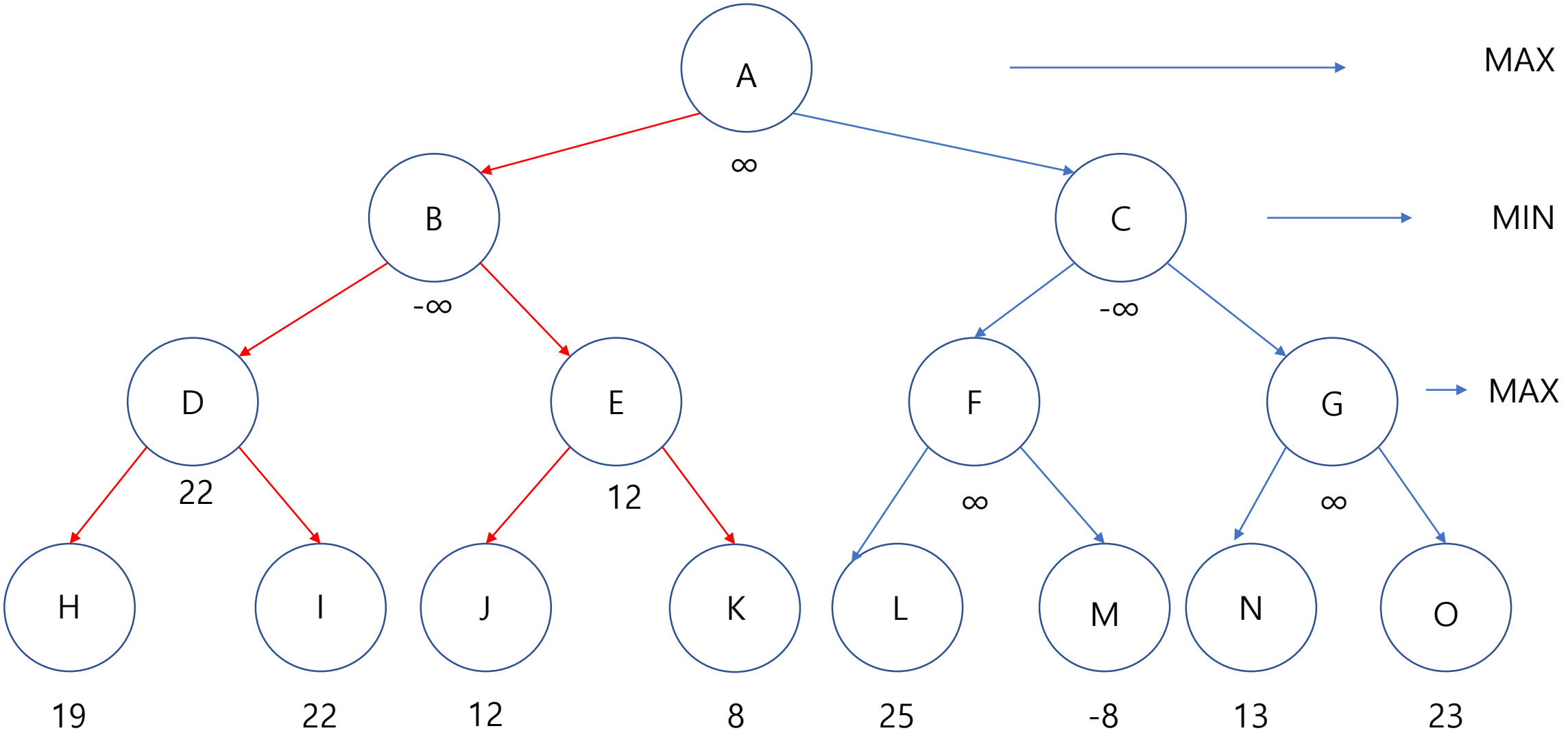
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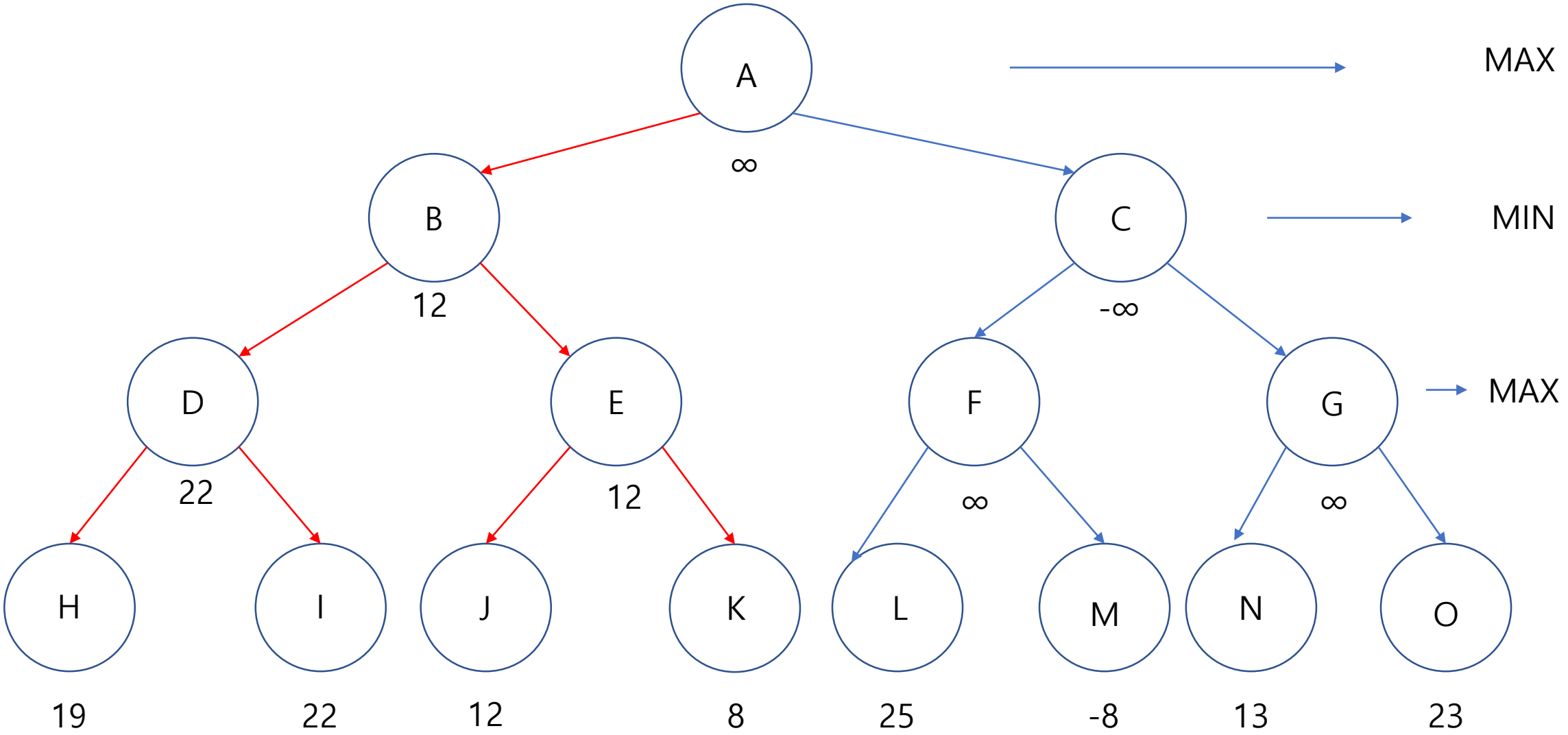
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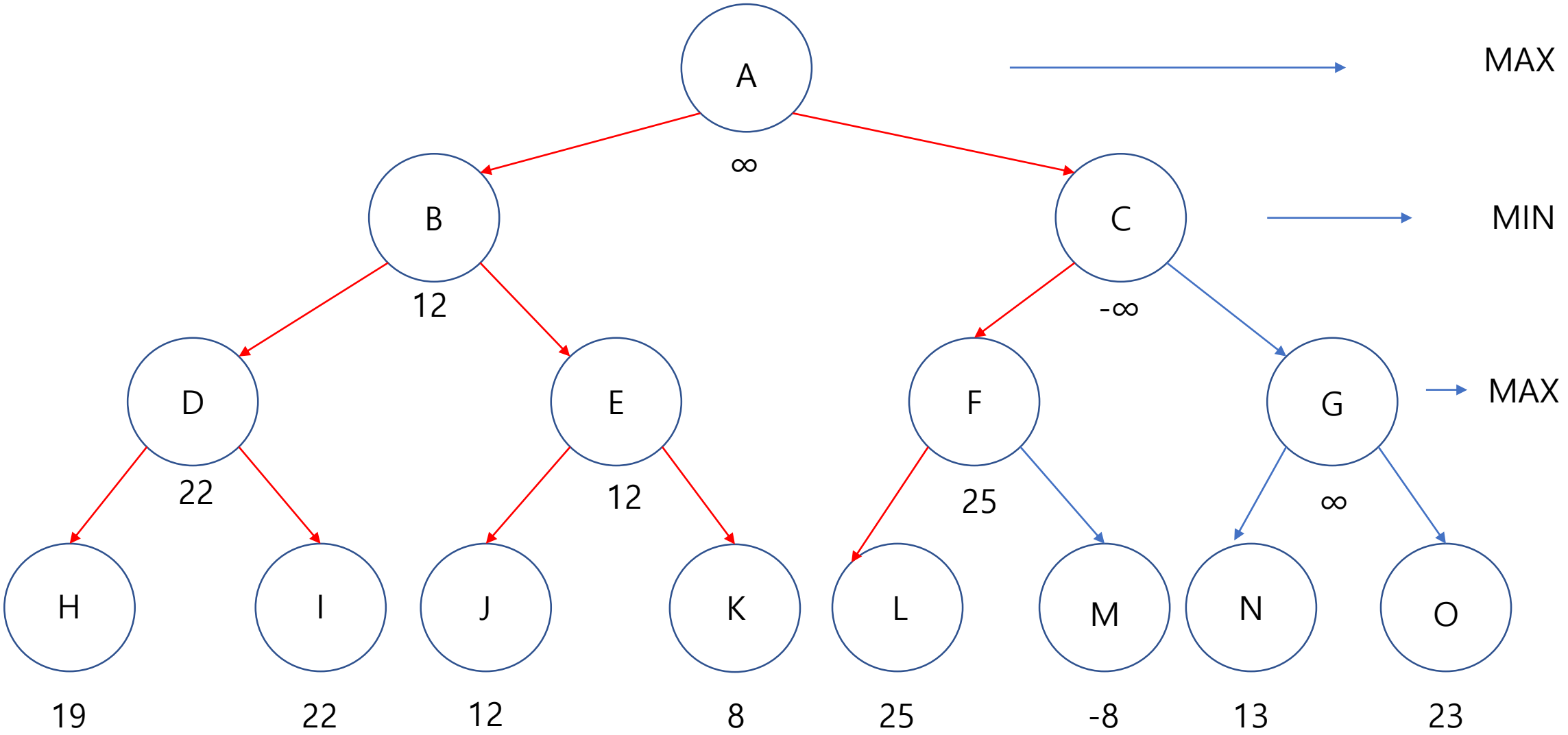
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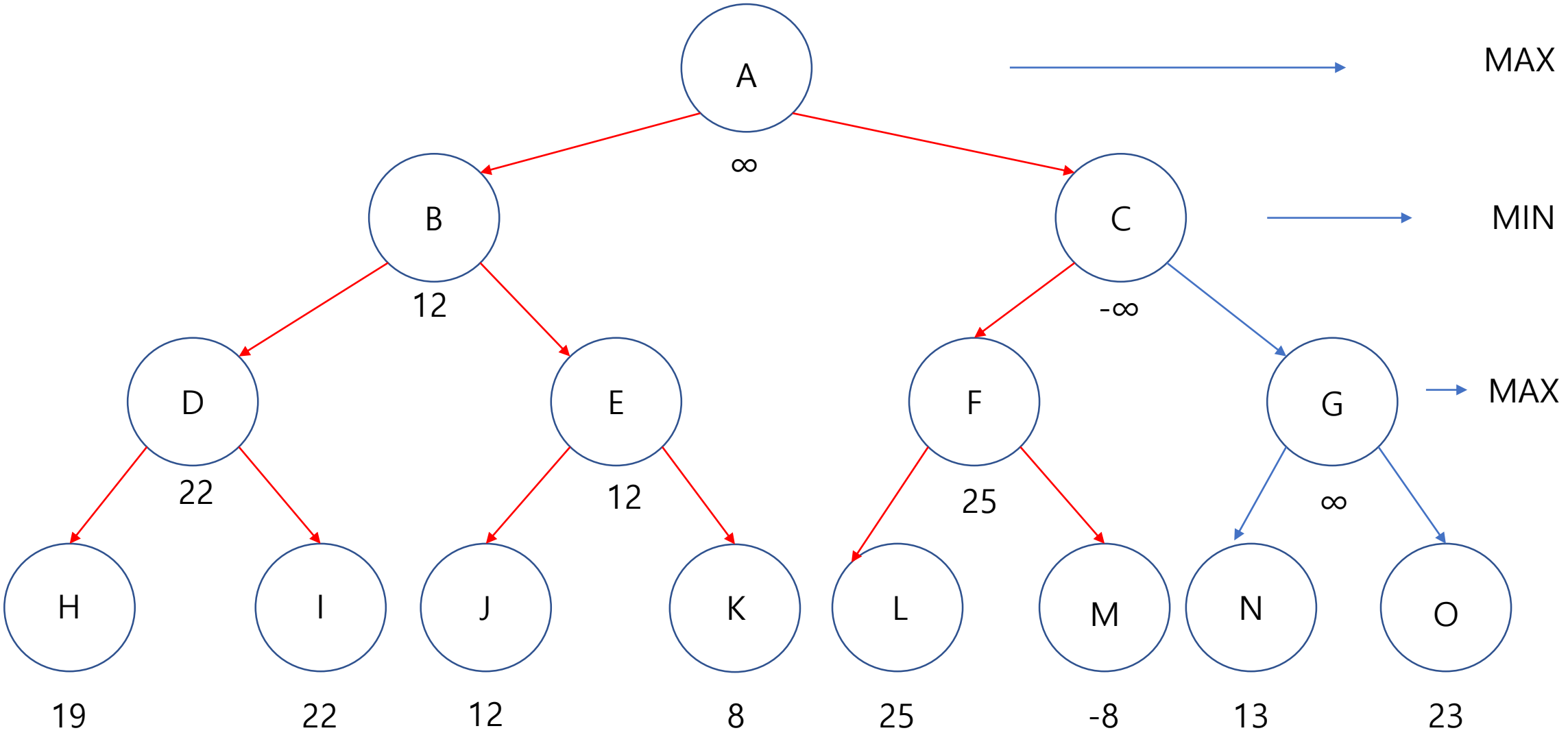
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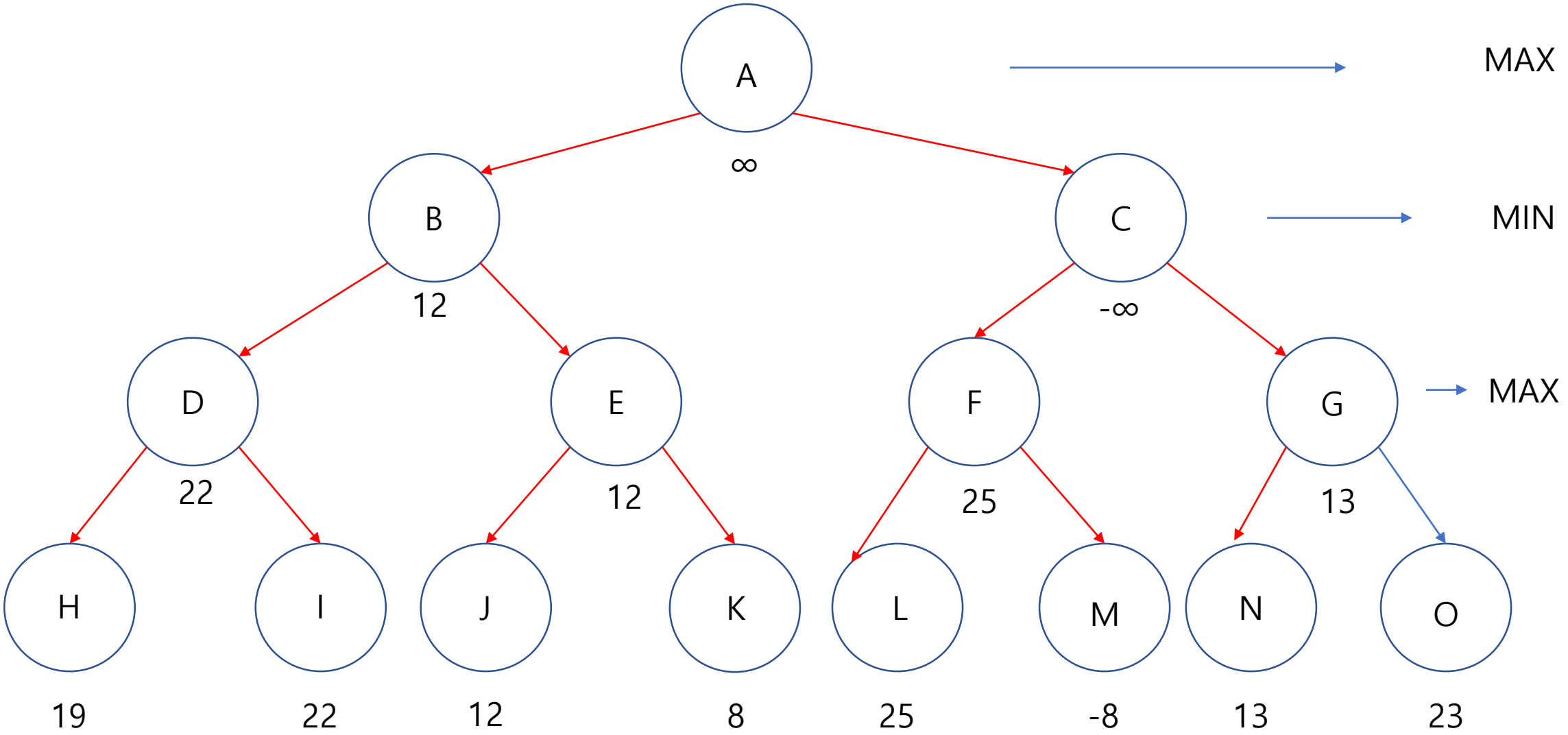
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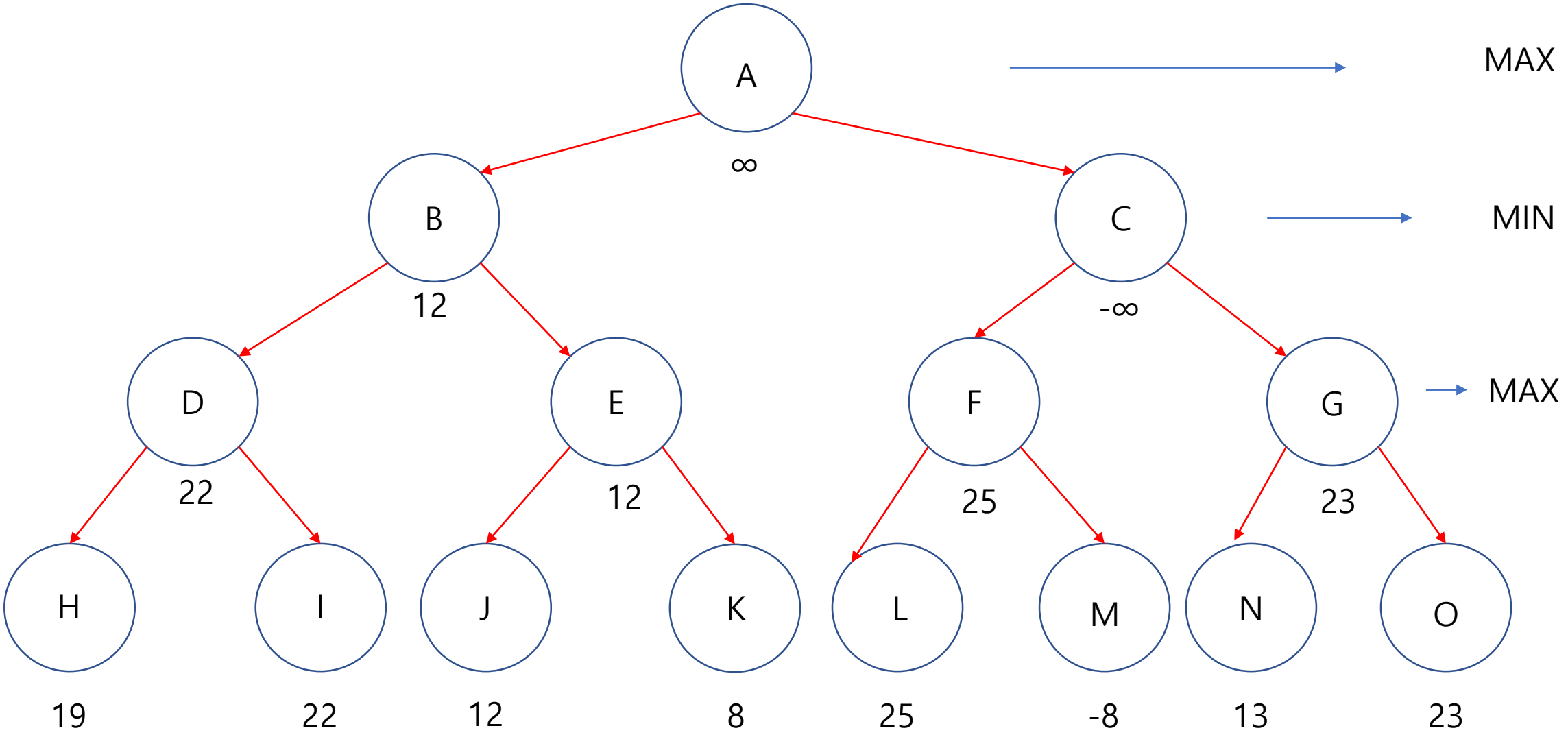
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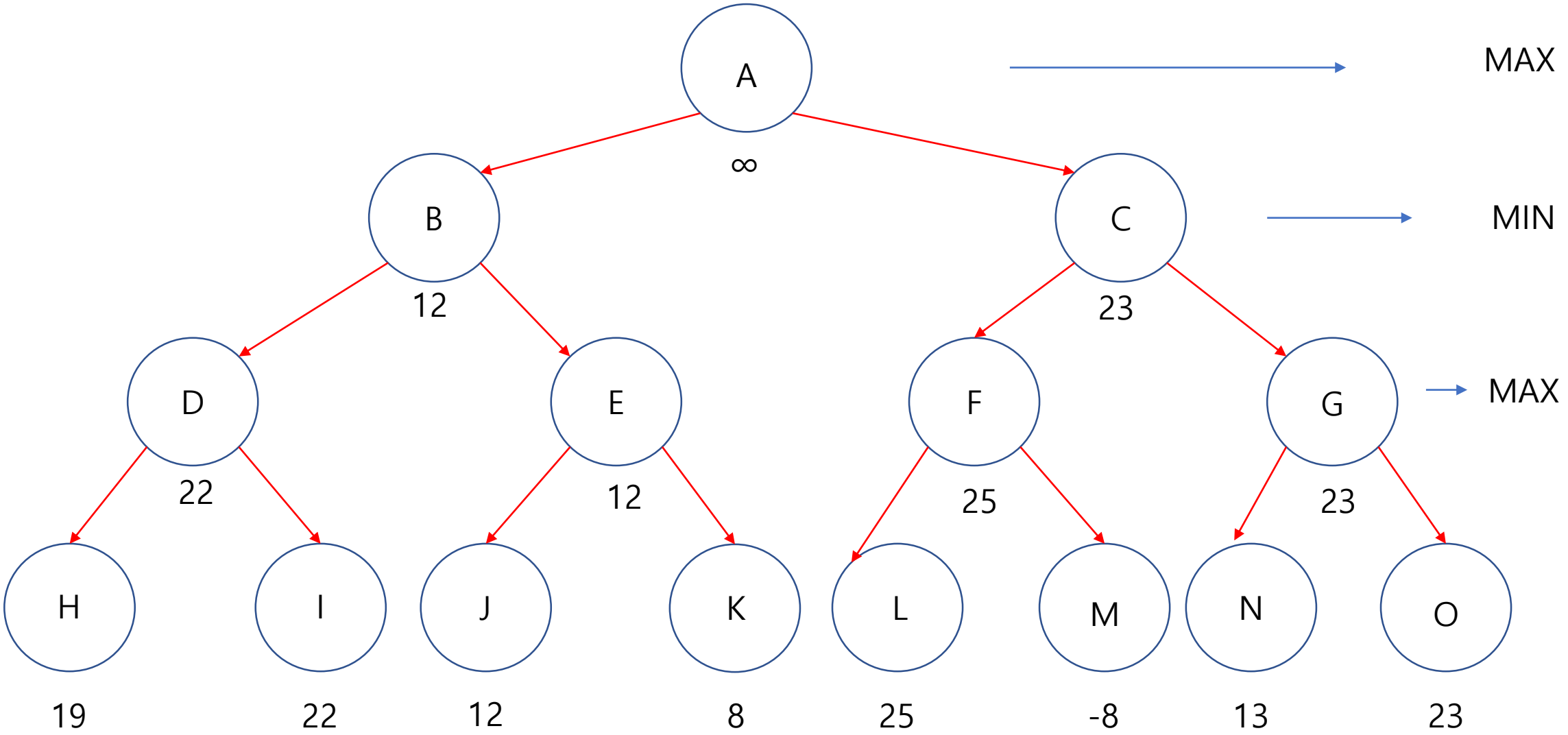
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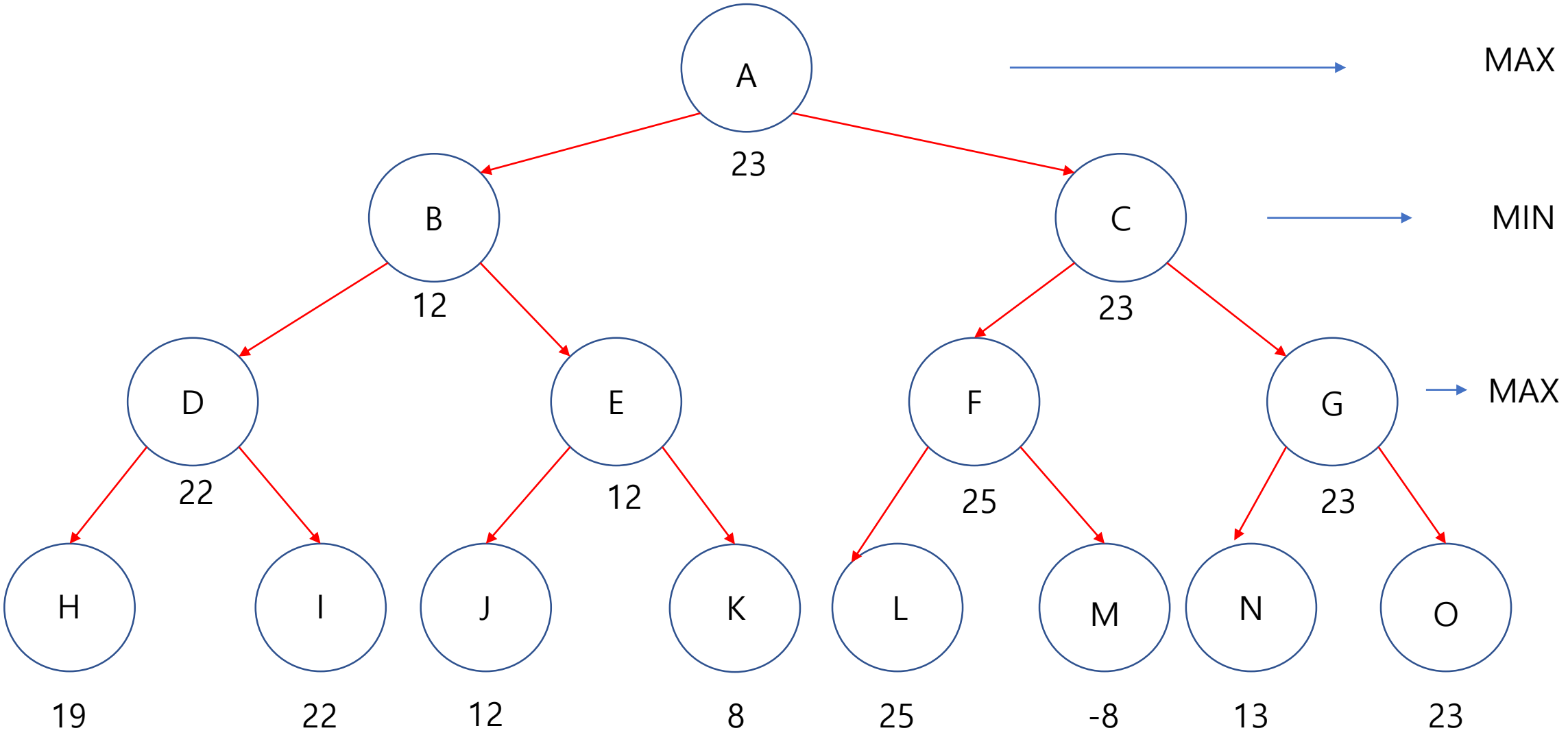
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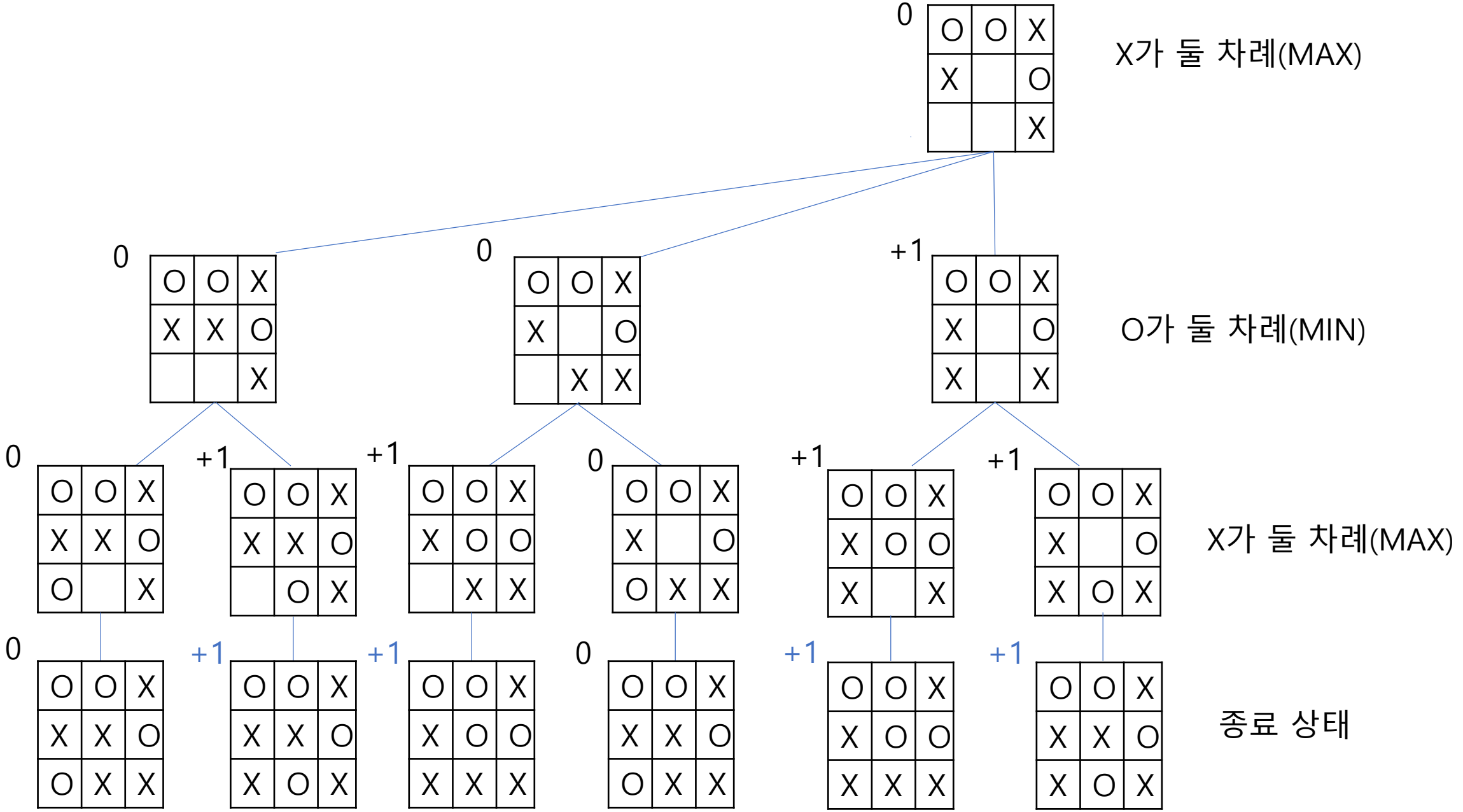
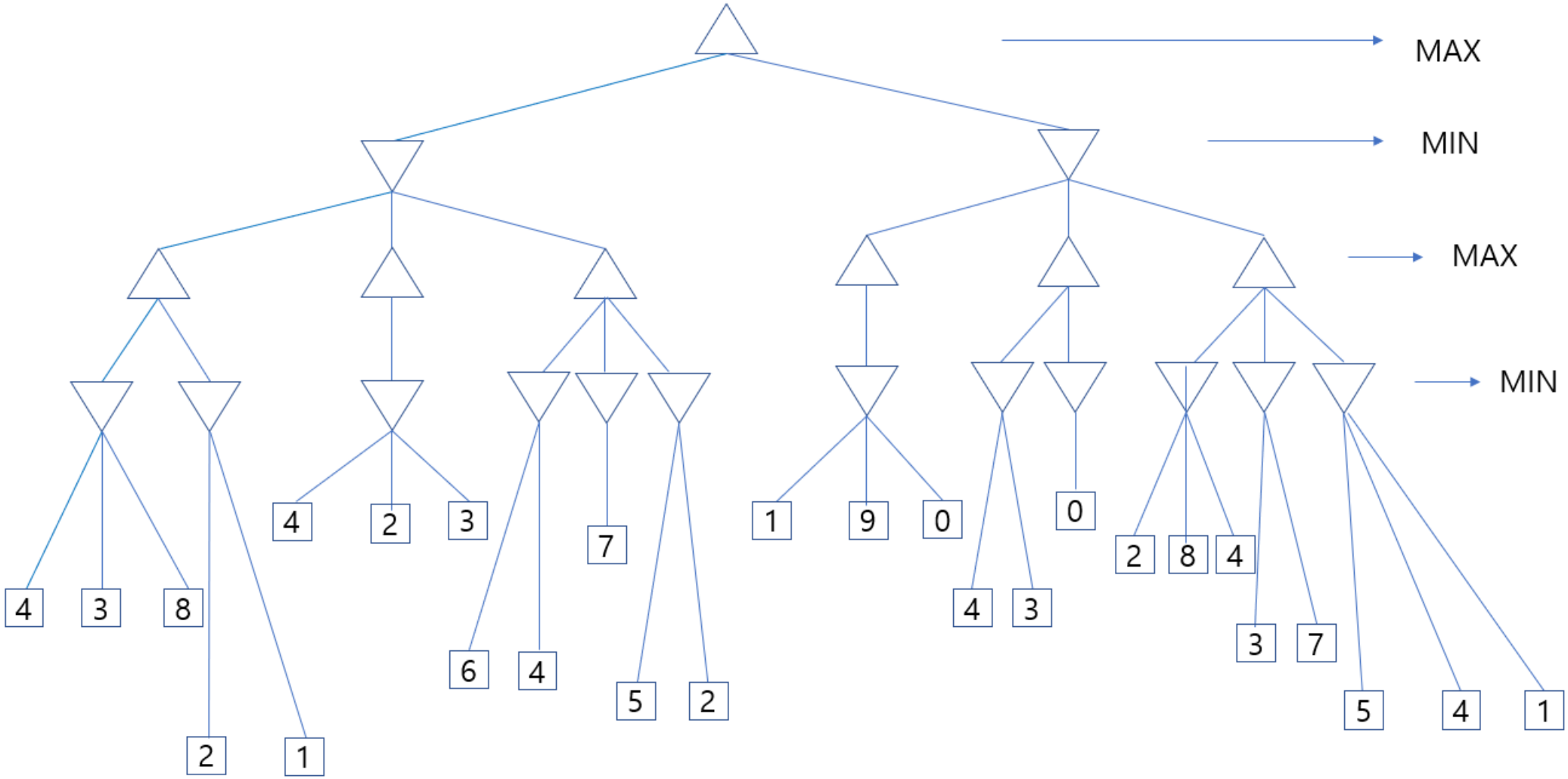
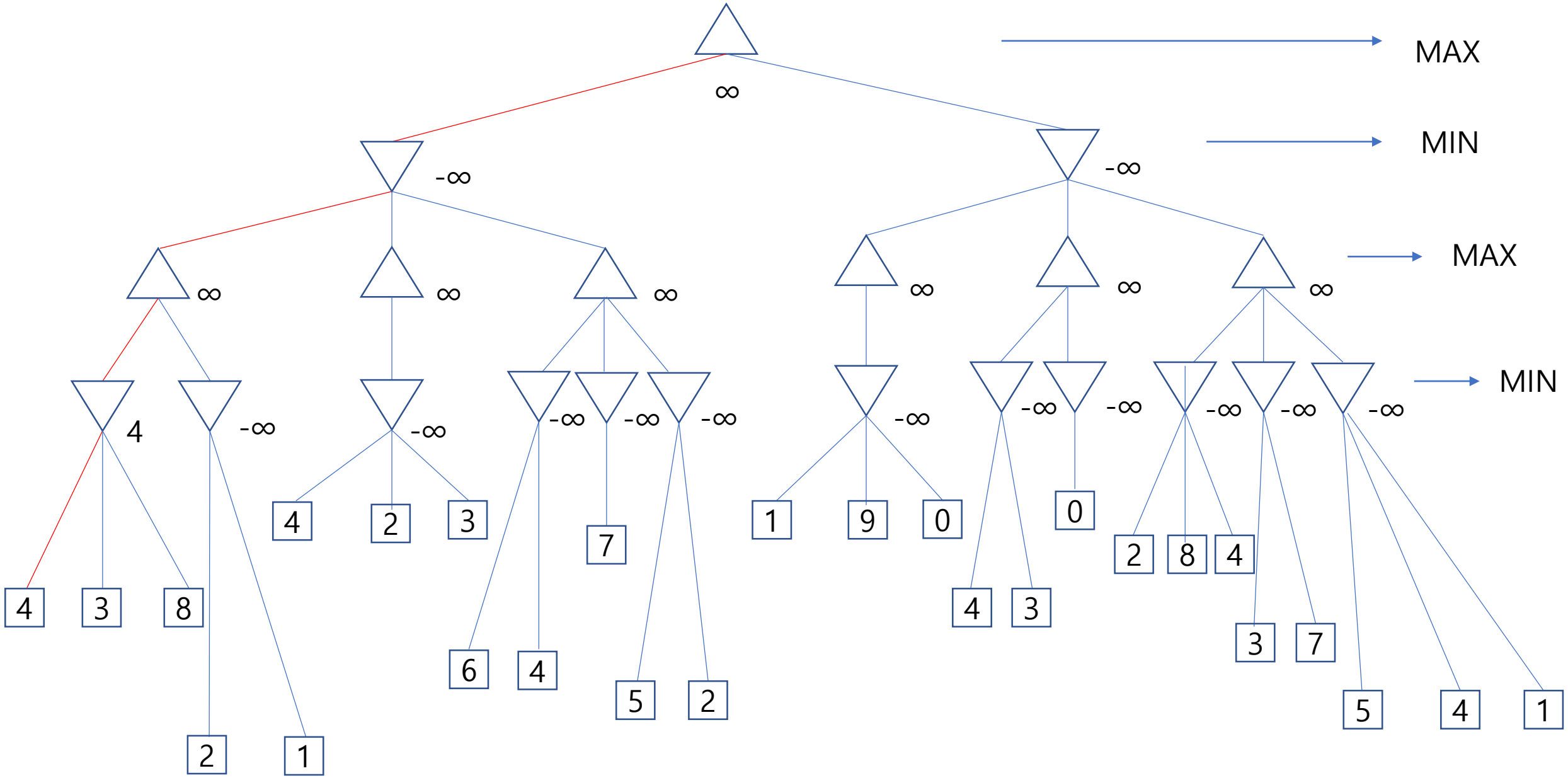
2. Tic-Tac-Toe게임이 다음과 같은 상태에서 시작한다고 하자. 미니맥스 알고리즘을 적용하여 다음 수를 결정해 보자.

O	O	X
X		O
		X


0
O O X
X O
X
X가 둘 차례(MAX)
0
O O X
X X O
0
O O X
X O
X X
+1
O O X
X O
X
O가 둘 차례(MIN)
0
O O X
X X O
O
+1
O O X
X X O
O X
+1
O O X
X O O
+1
O O X
X O O
X X
0
O O X
X O
O X X
+1
O O X
X O O
X
+1
O O X
X O
X O X
0
O O X
X X O
O X X
+1
O O X
X X O
X O X
+1
O O X
X O O
X X X
0
O O X
X X O
O X X
+1
O O X
X O O
X X X
+1
O O X
X X O
X O X
X가 둘 차례(MAX)
종료 상태

3. 다음과 같은 탐색 트리에 미니 맥스 알고리즘을 적용해보자. MAX경기자부터 시작한다고 가정한다.

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-∞
-∞
-∞
-∞
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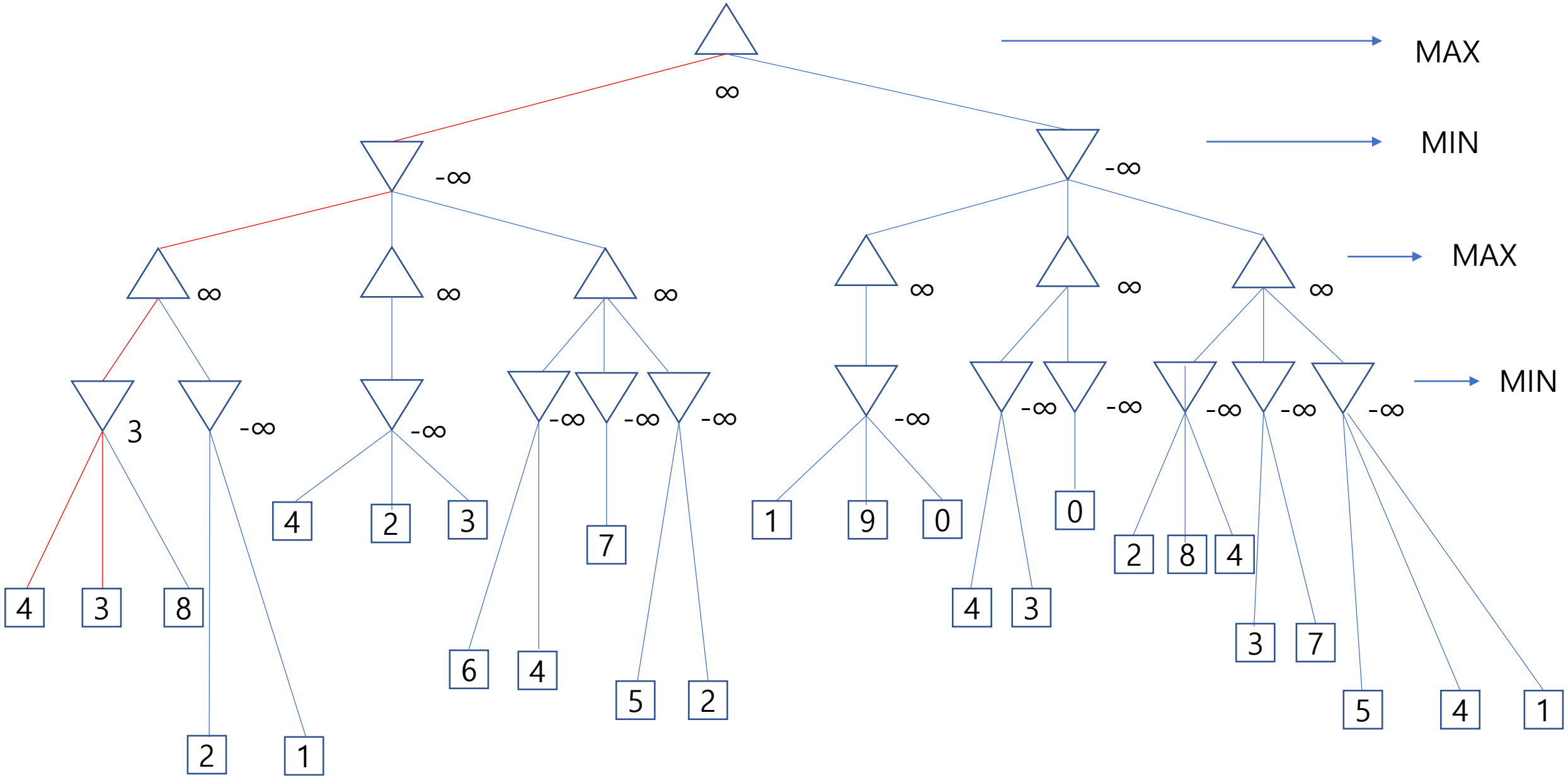
4
1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4
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8
2
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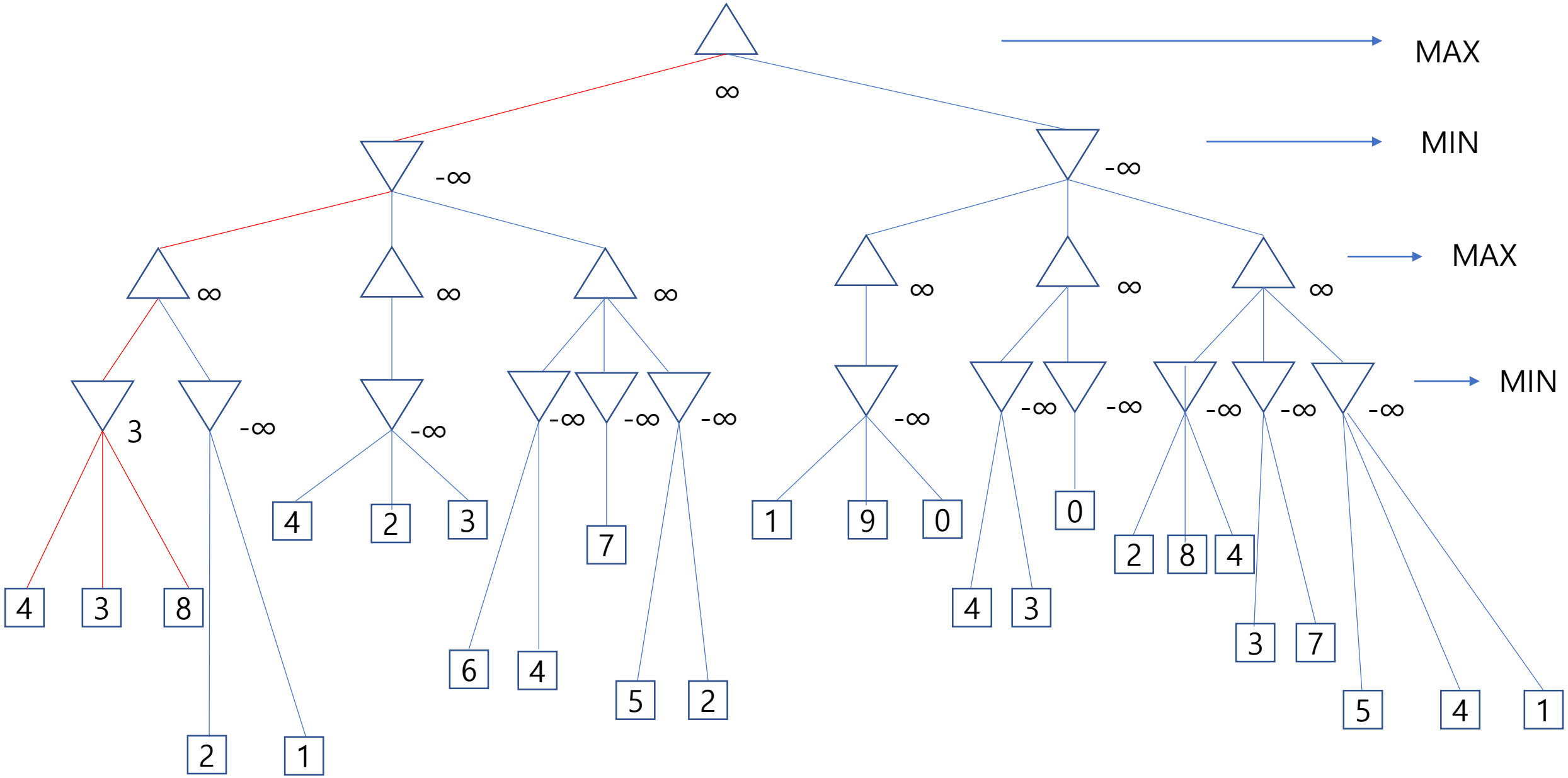
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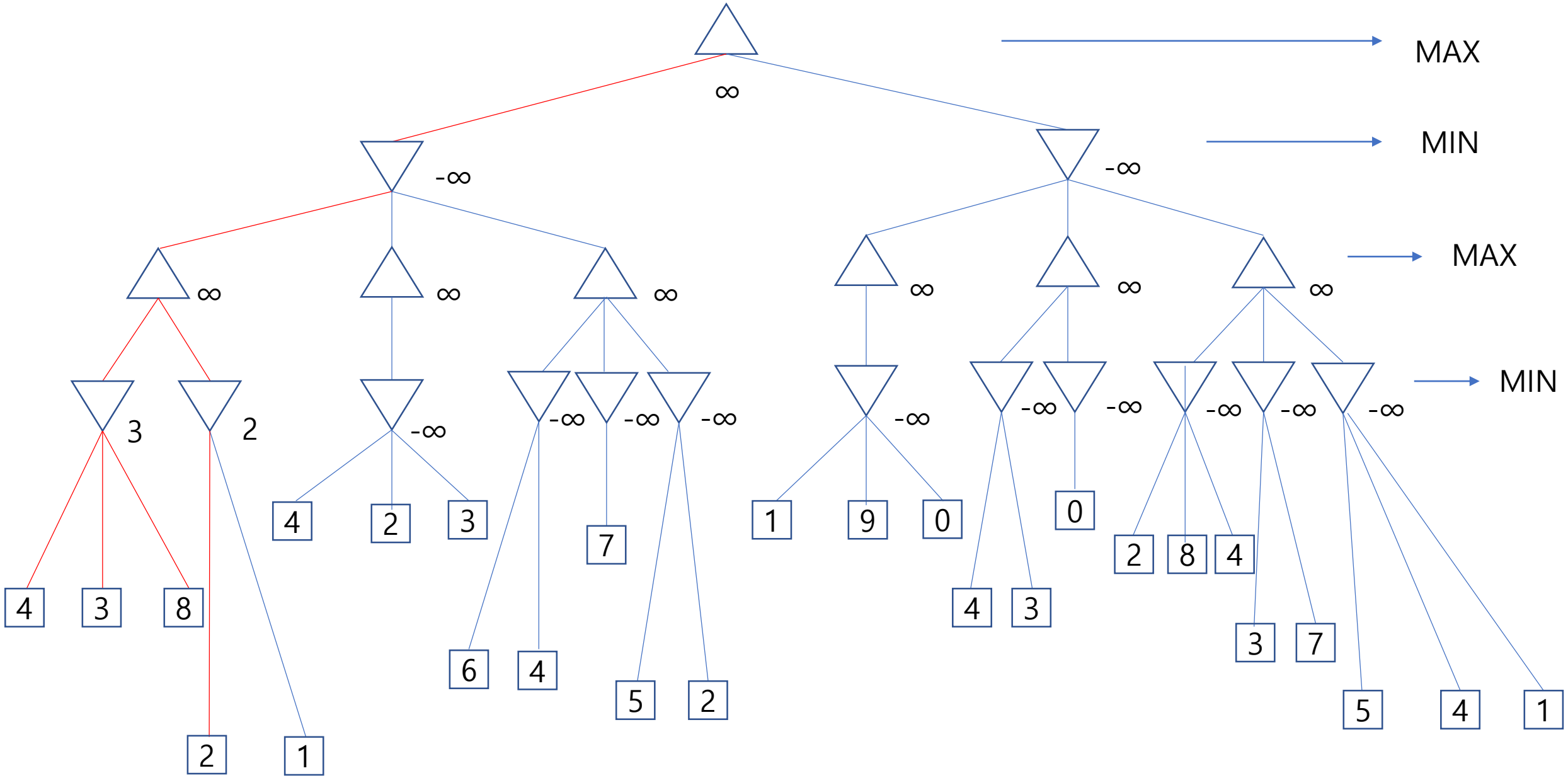
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8
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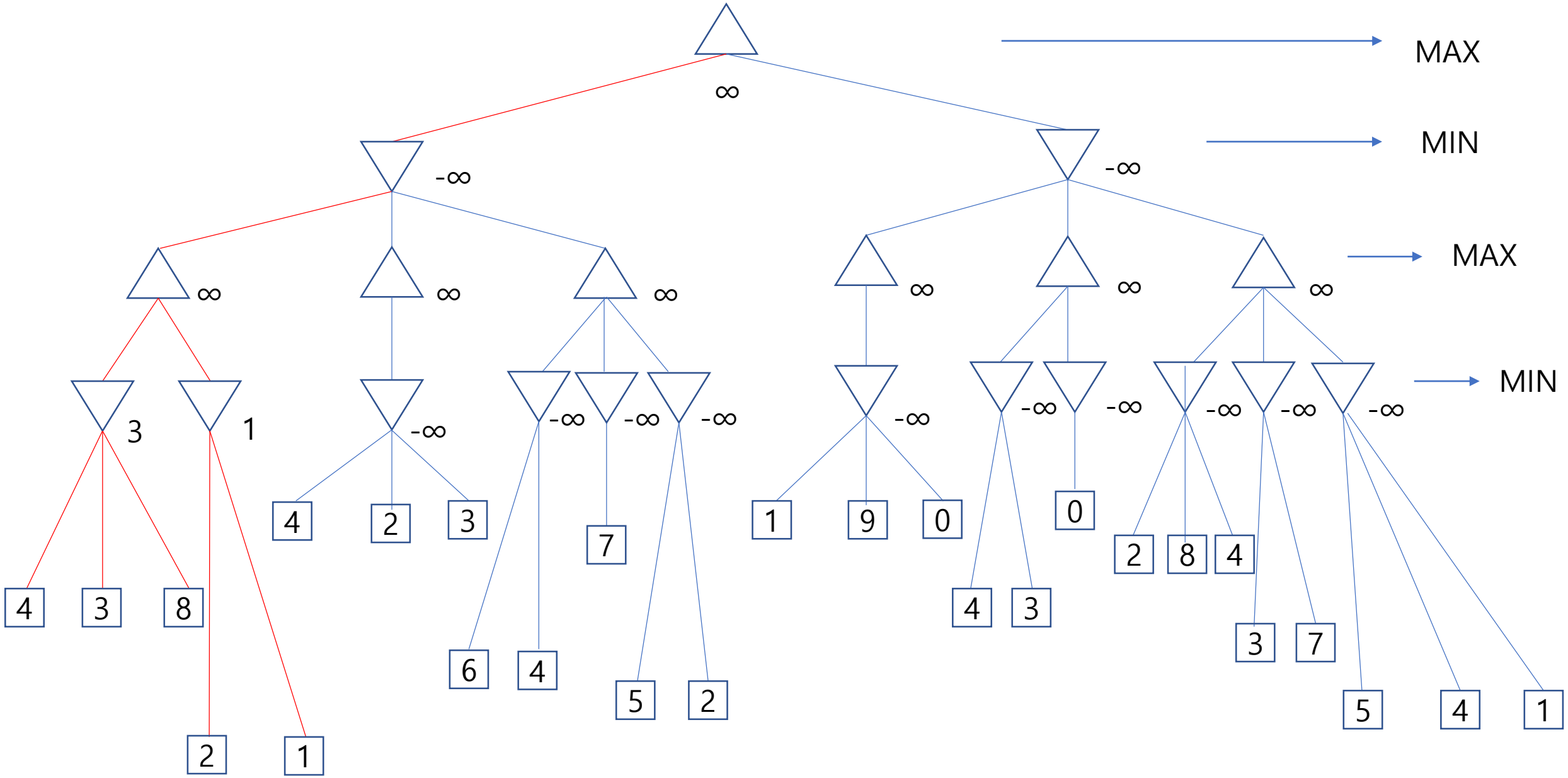
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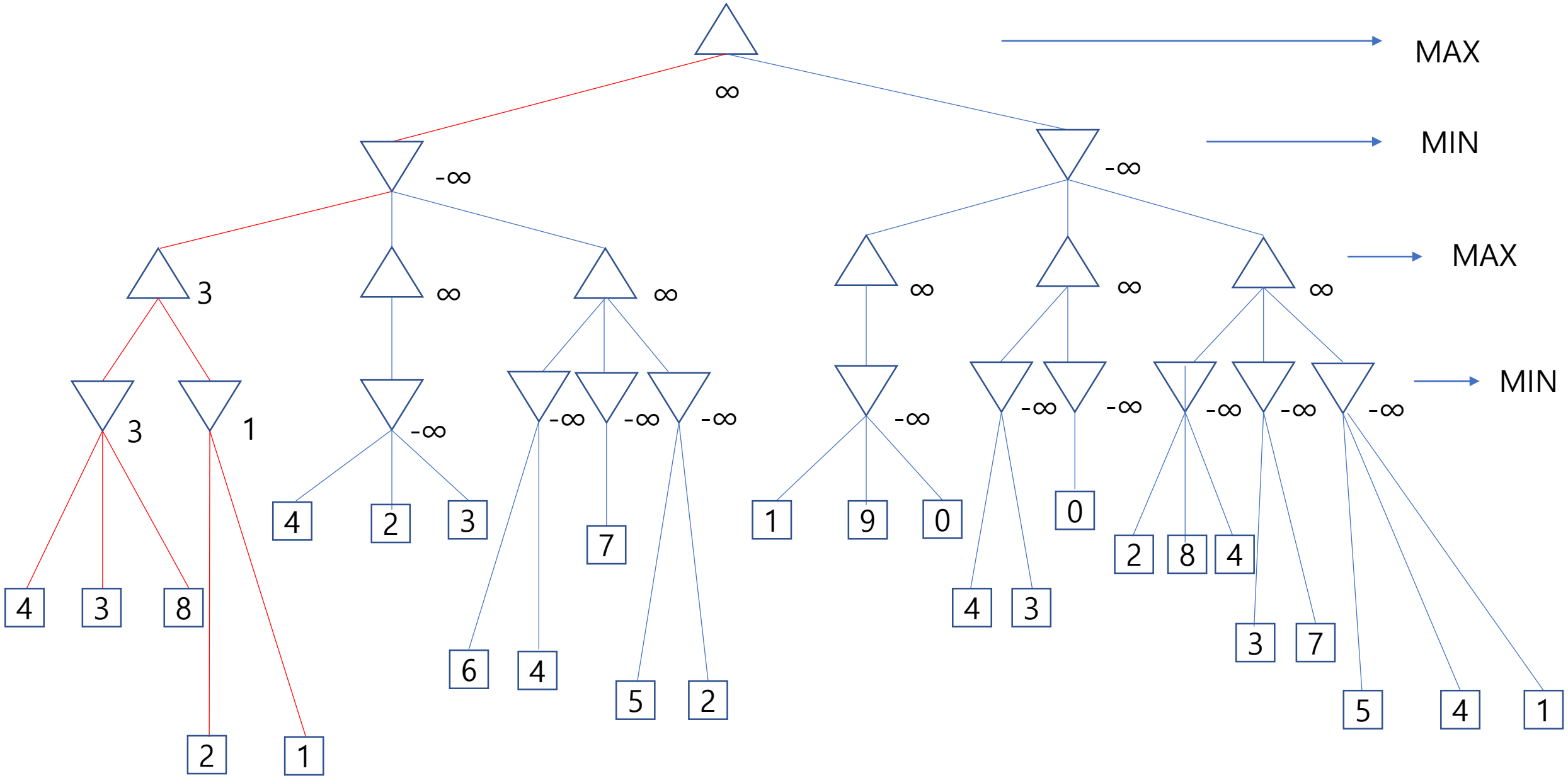
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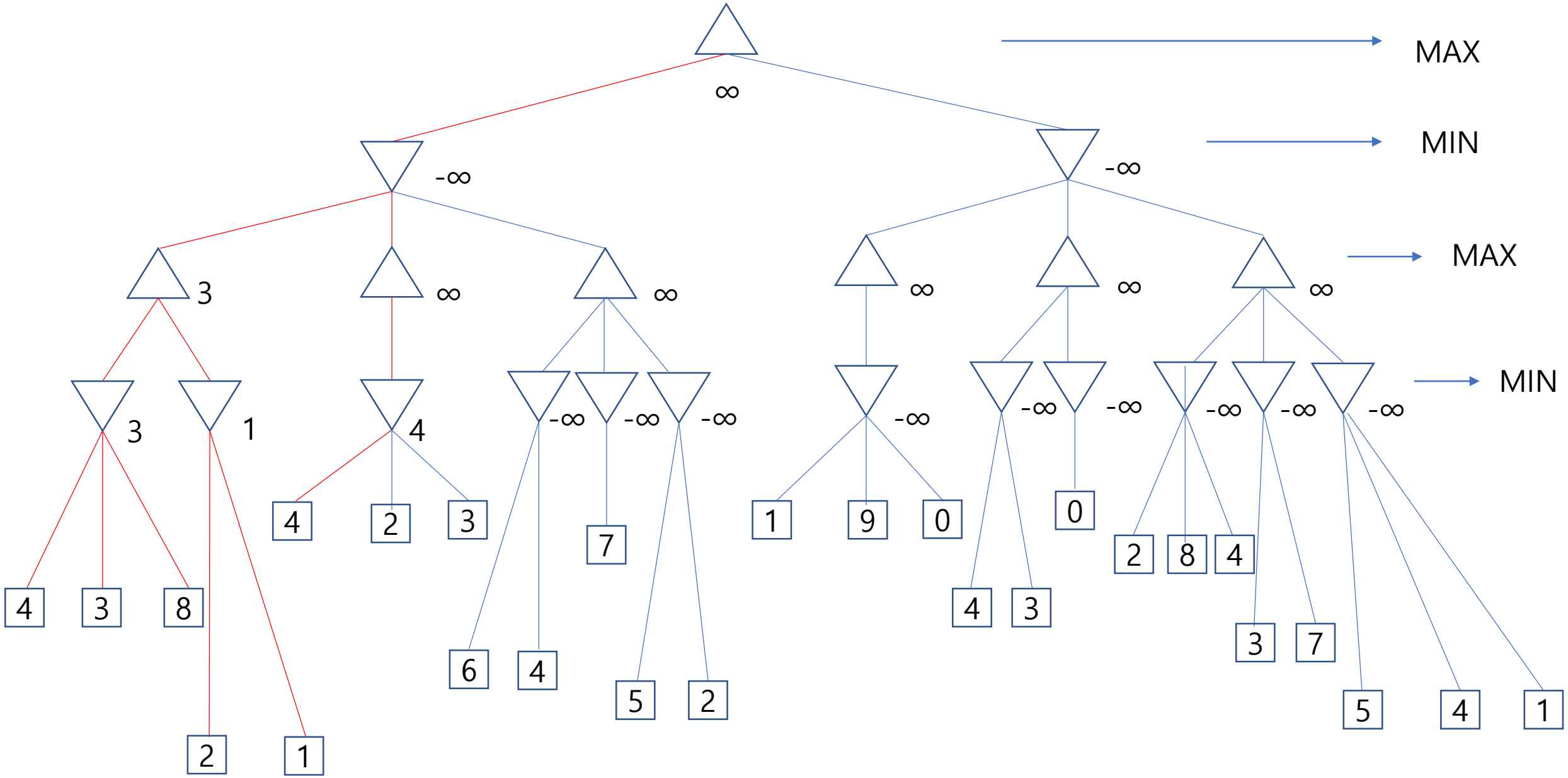
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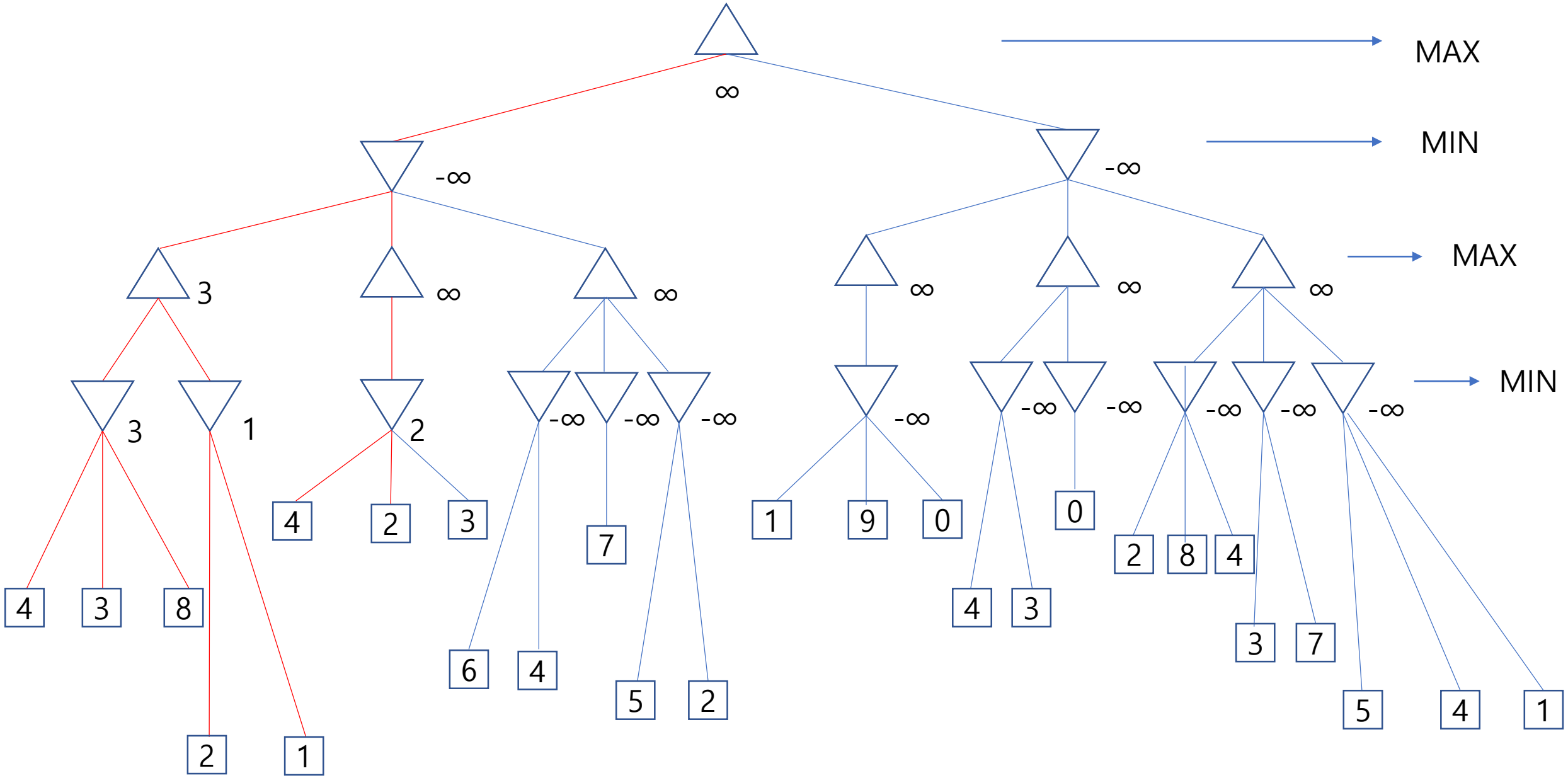
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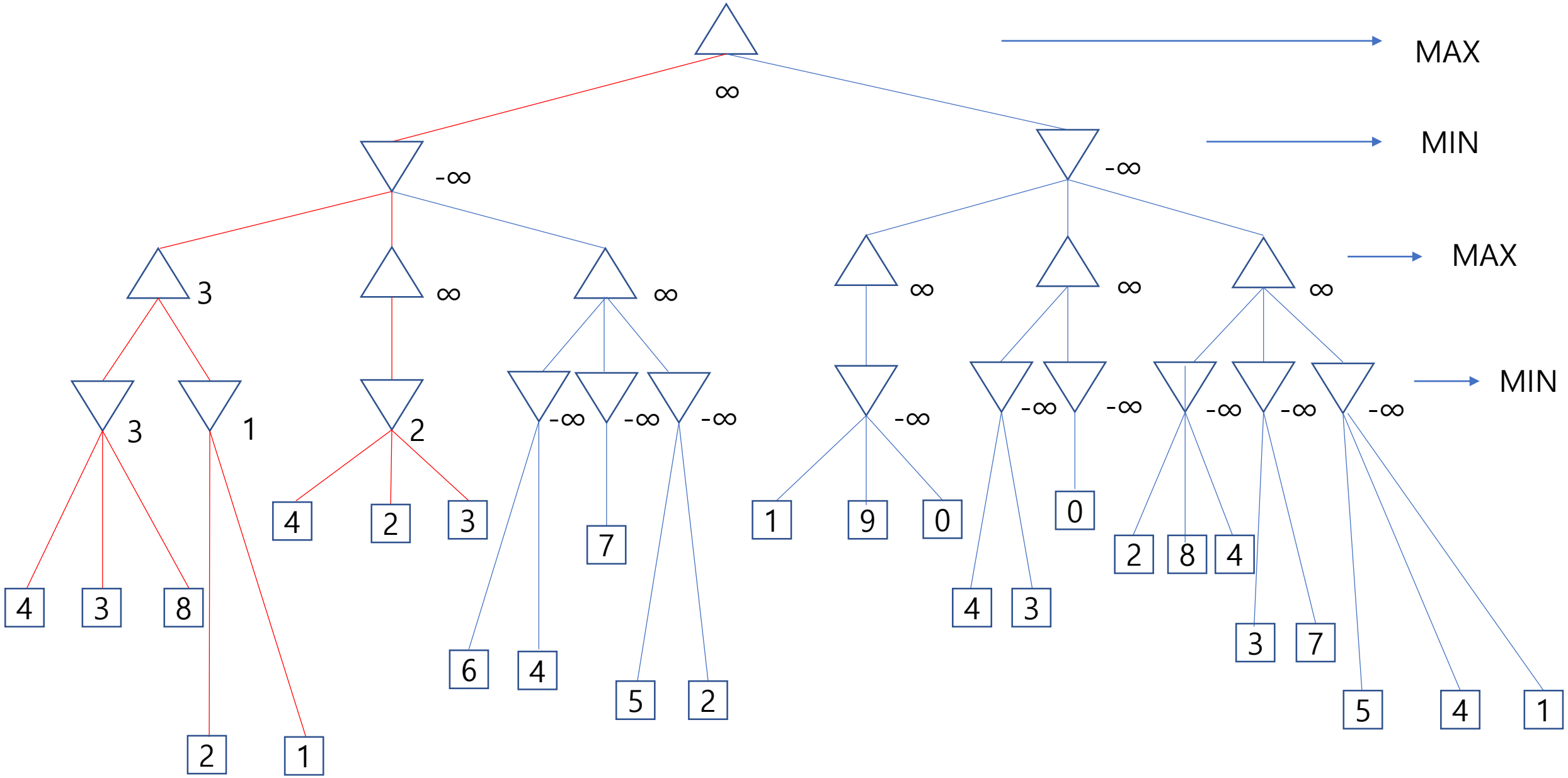
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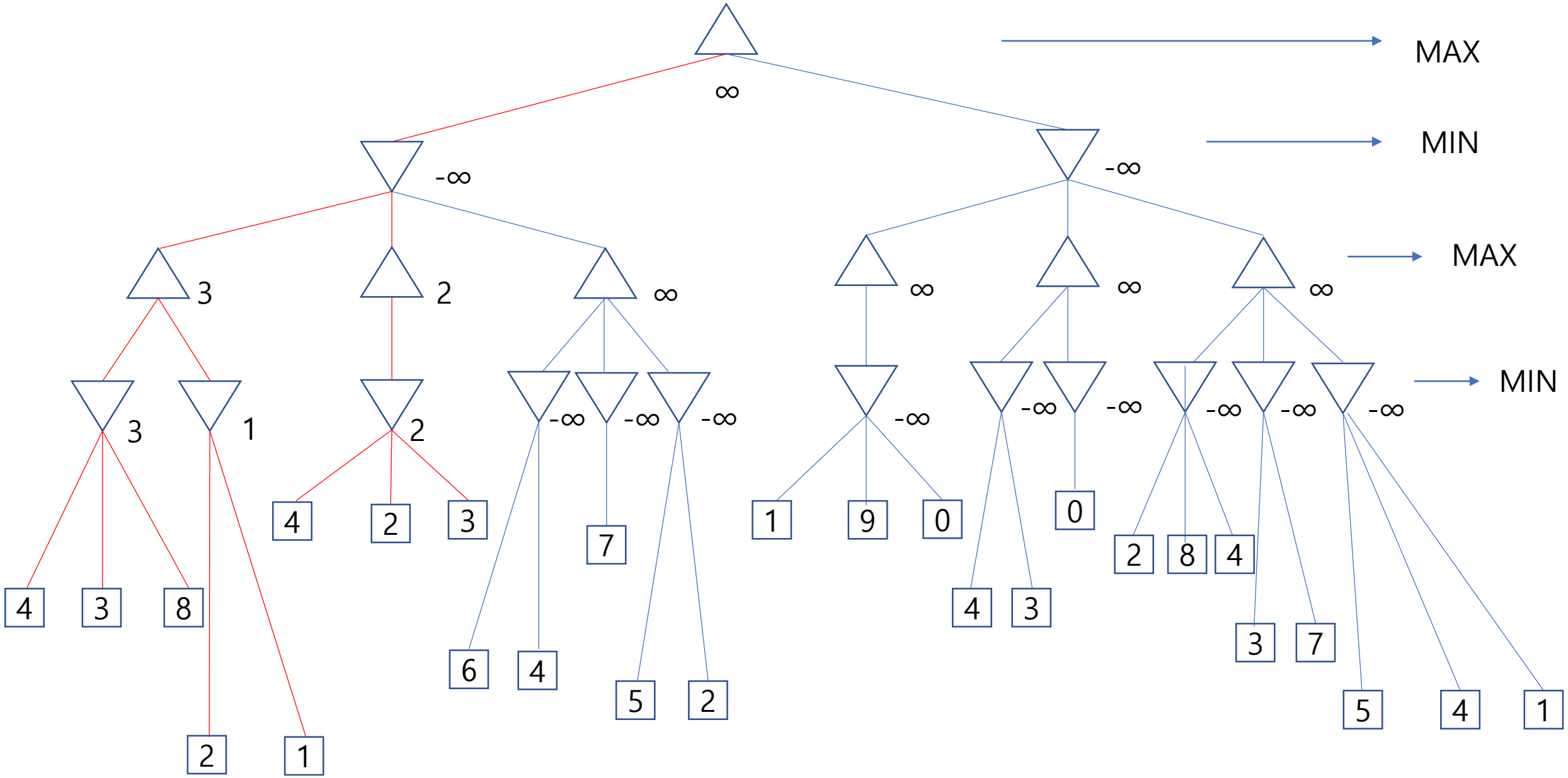
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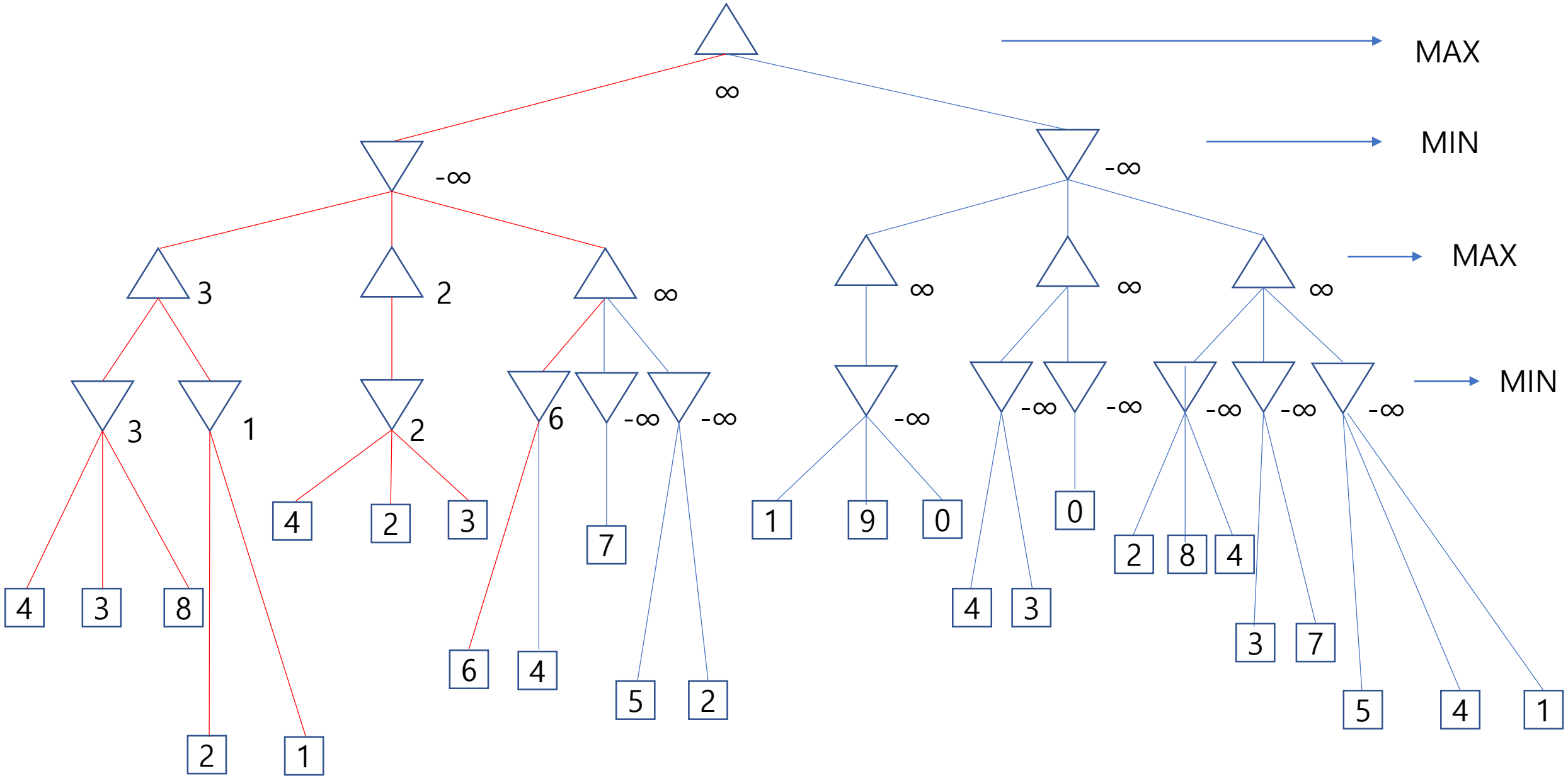
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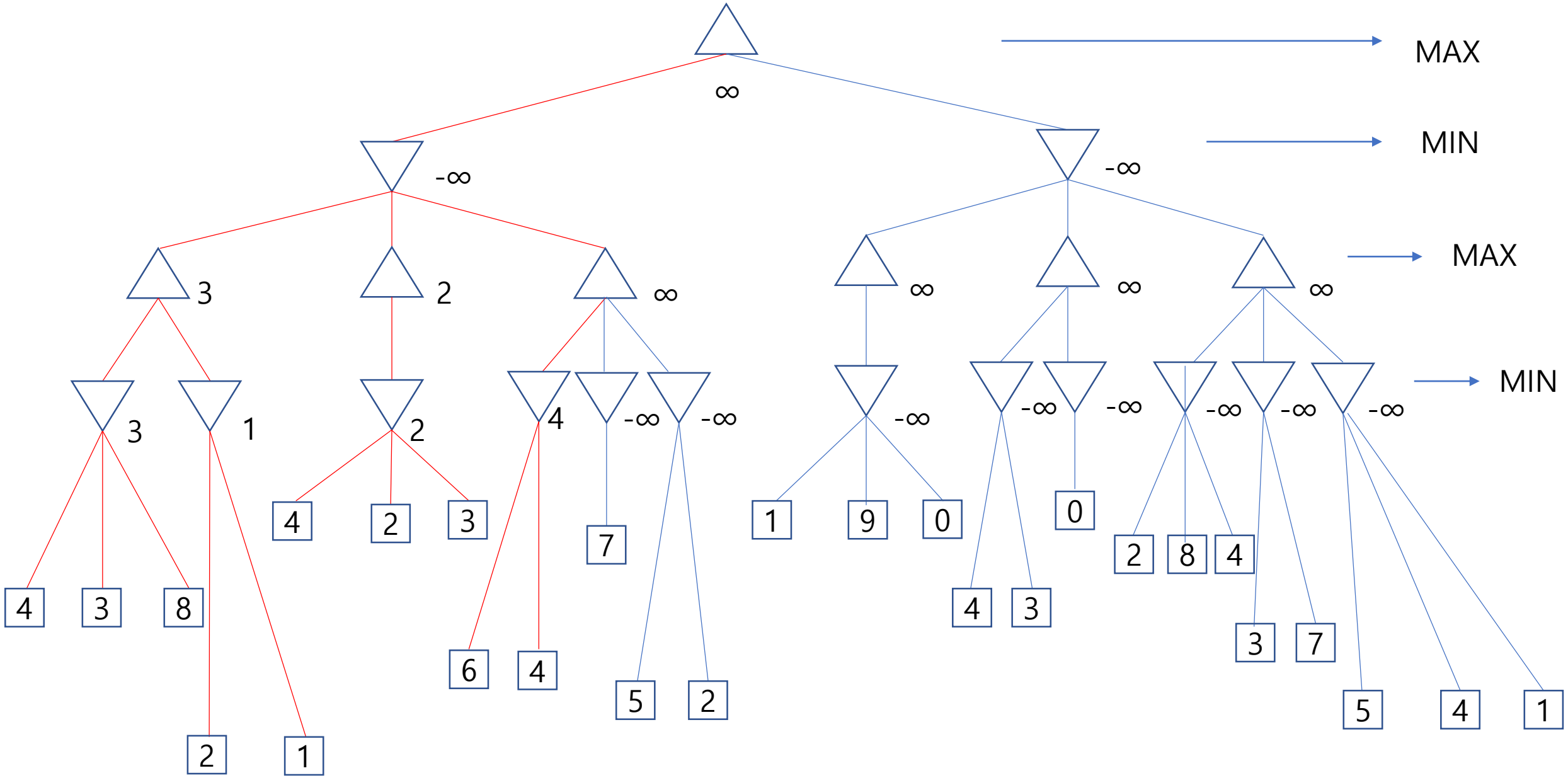
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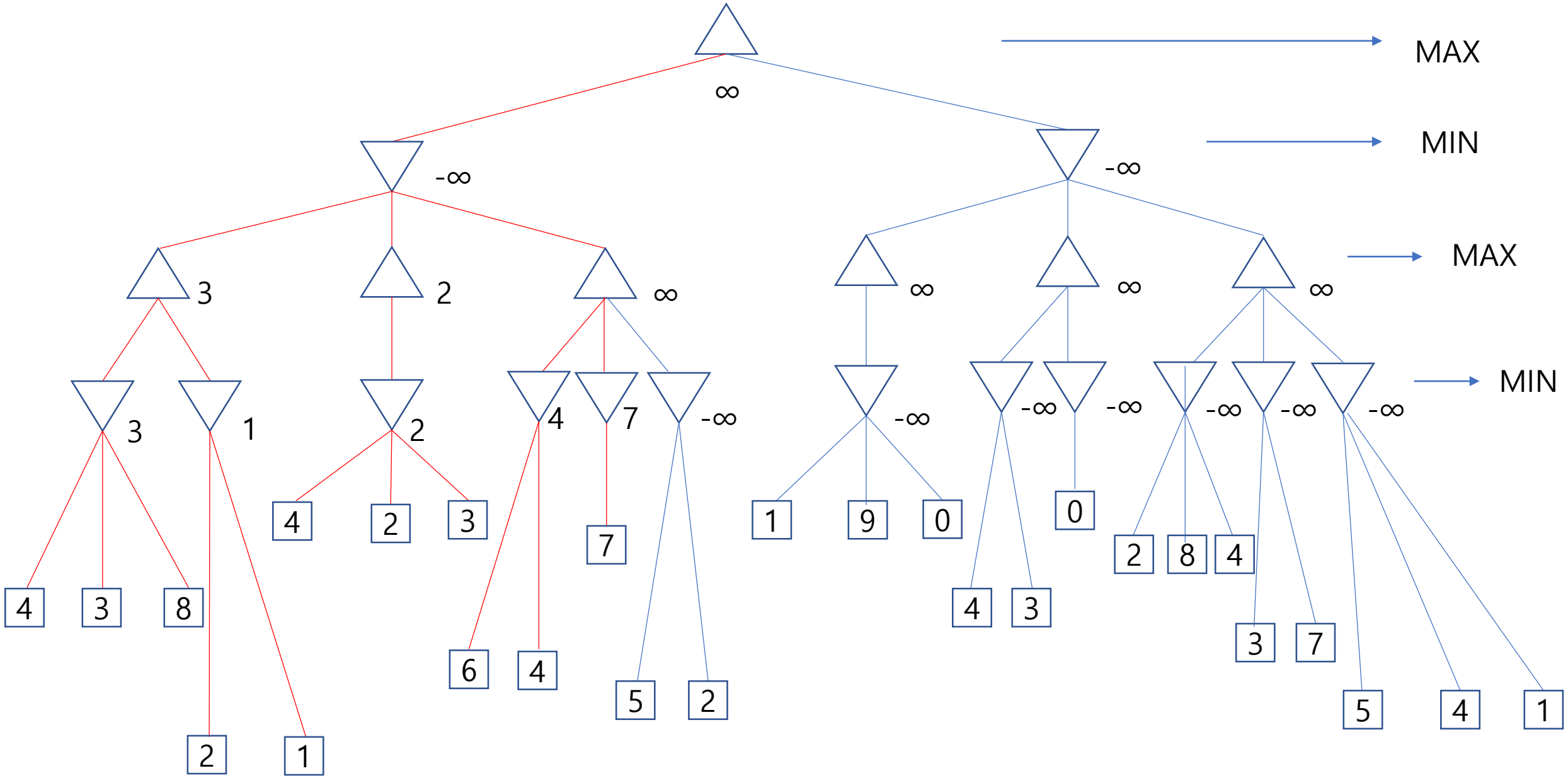
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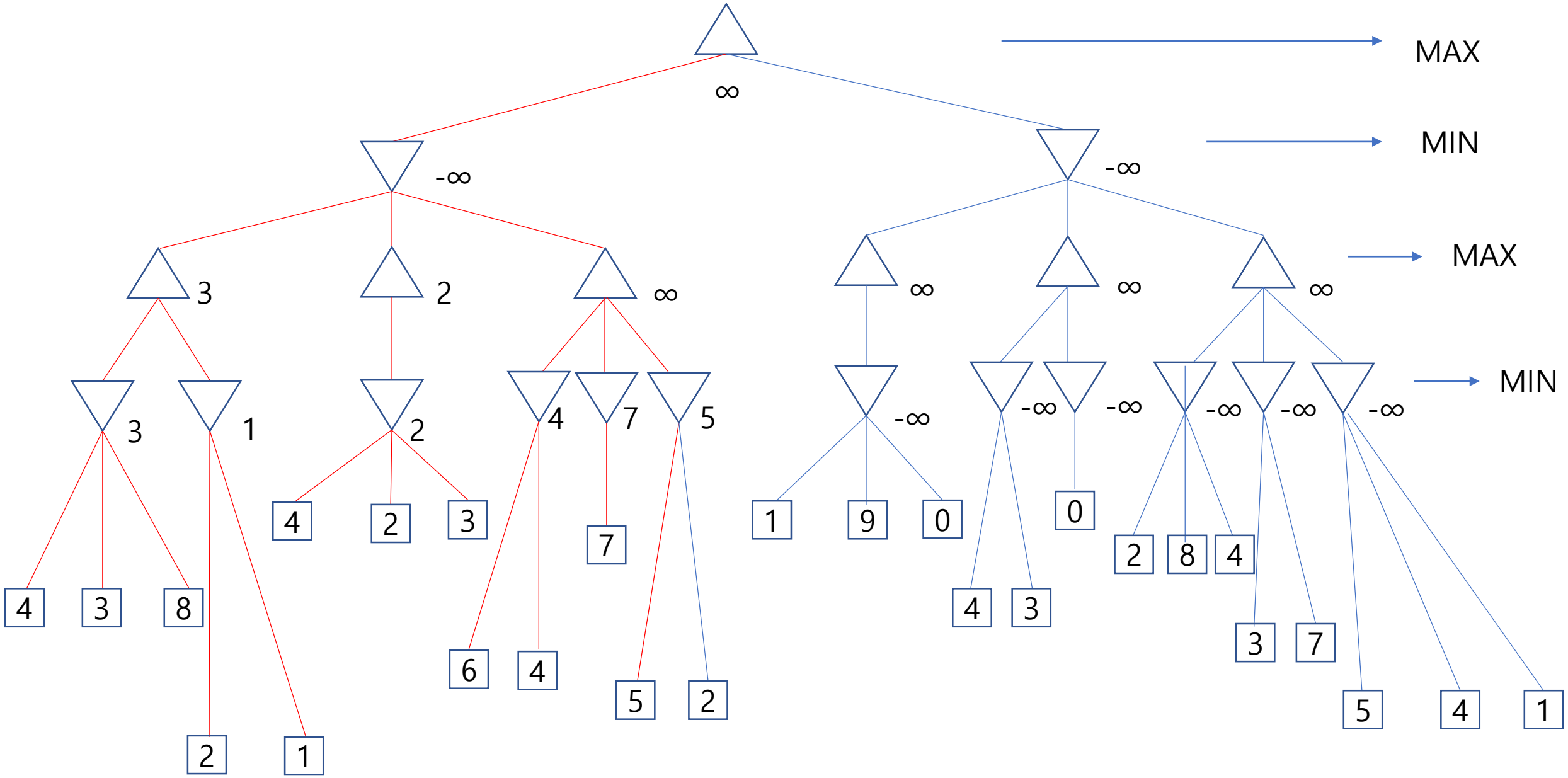
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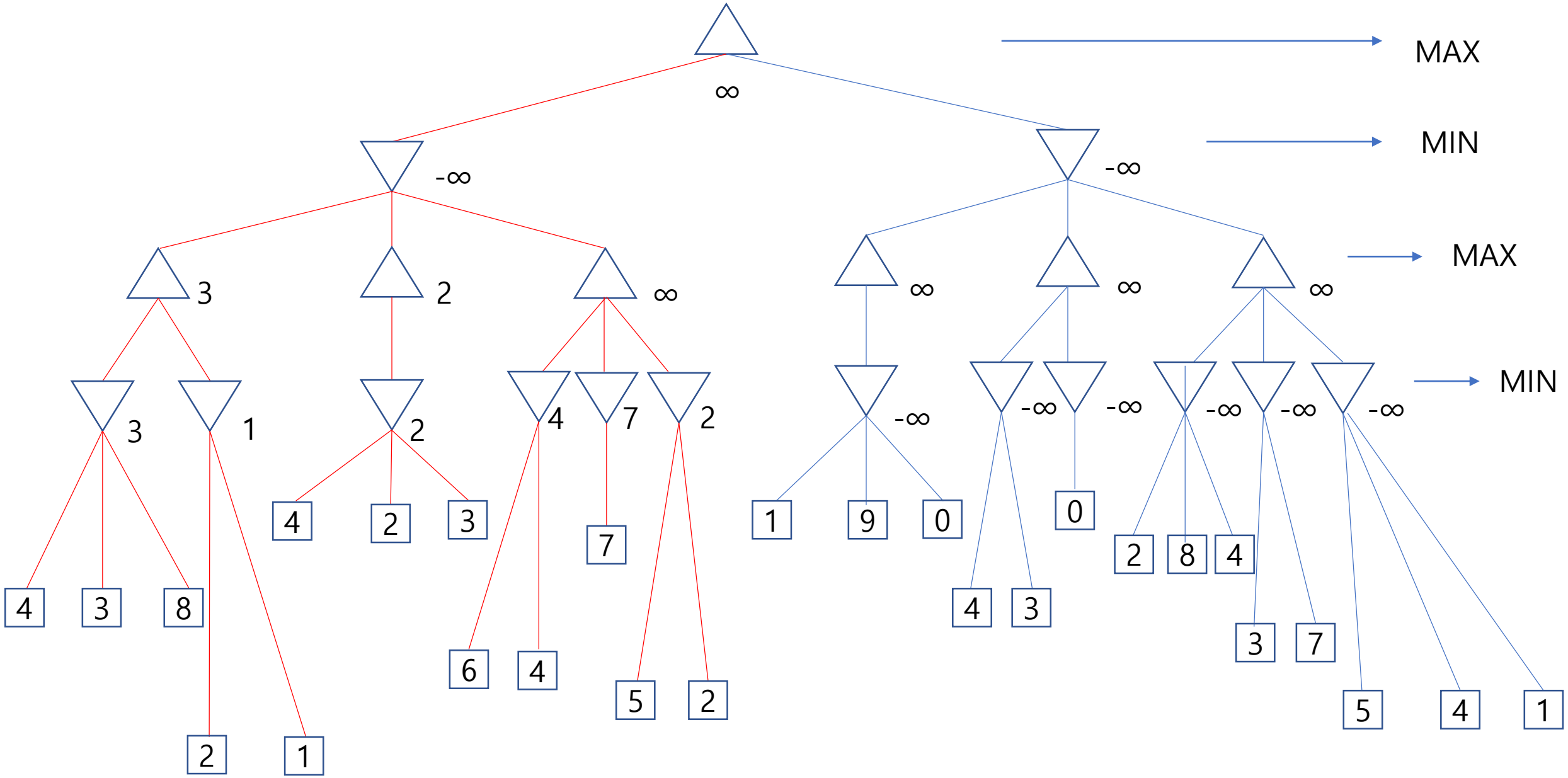
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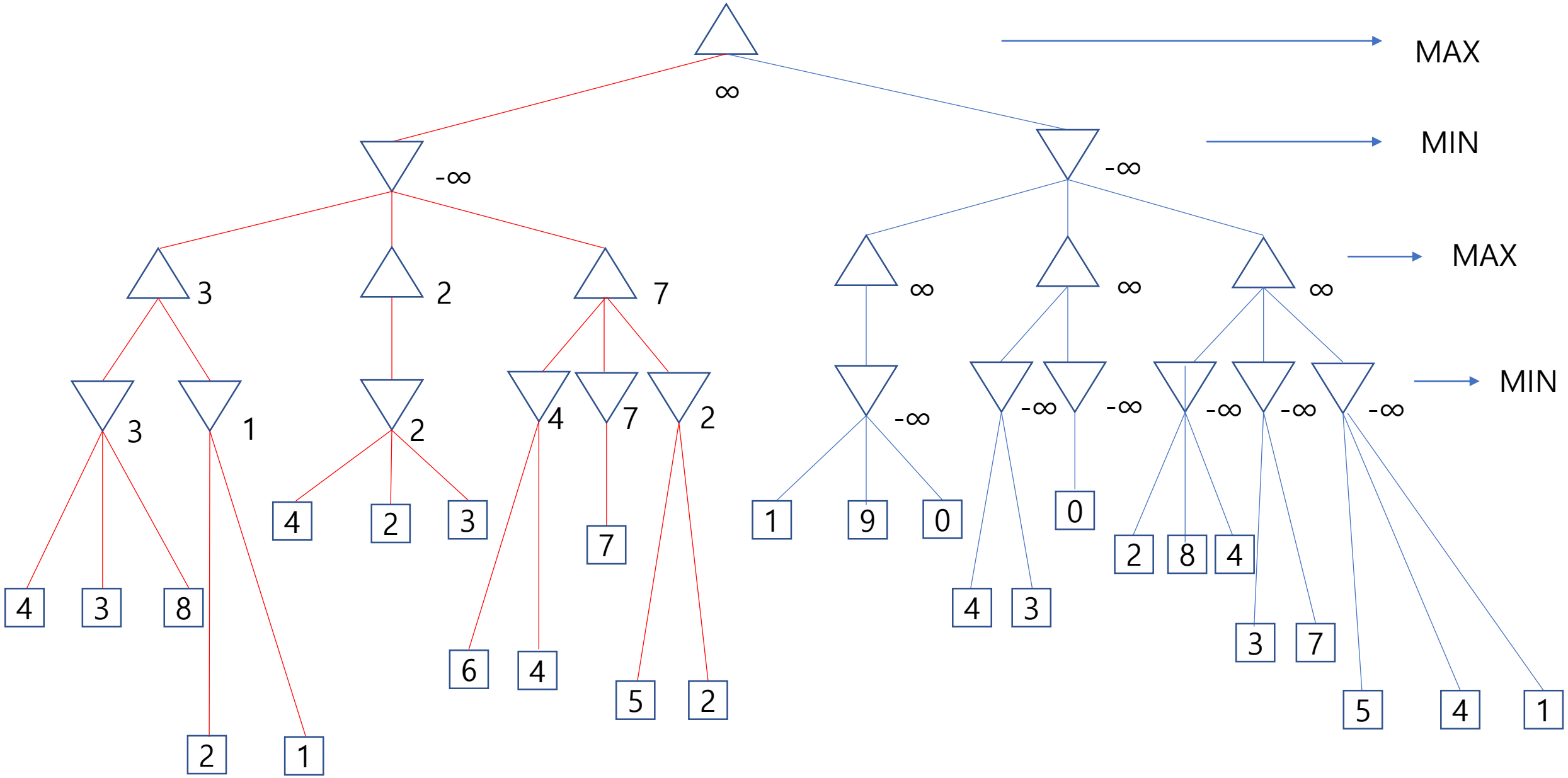
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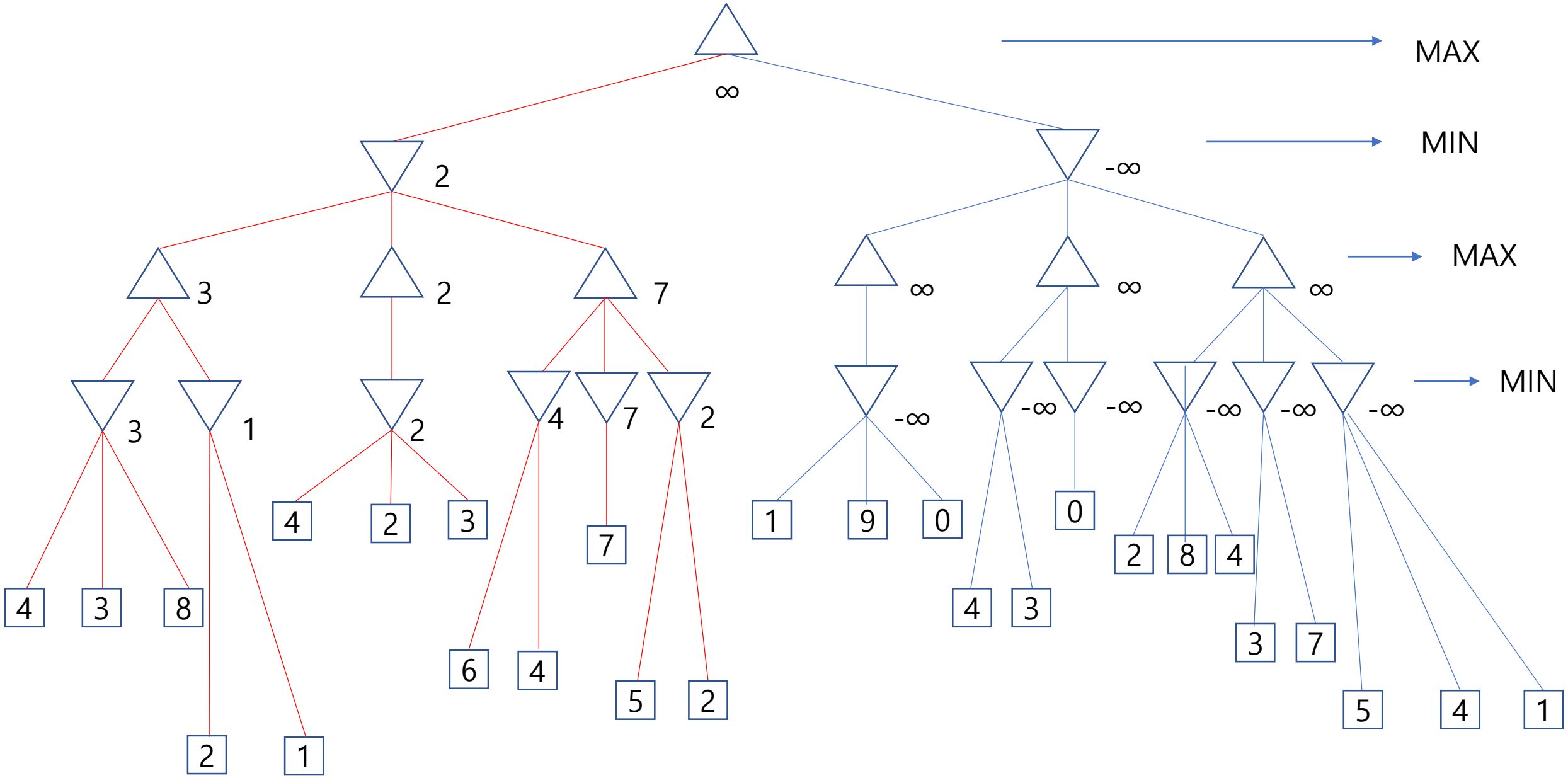
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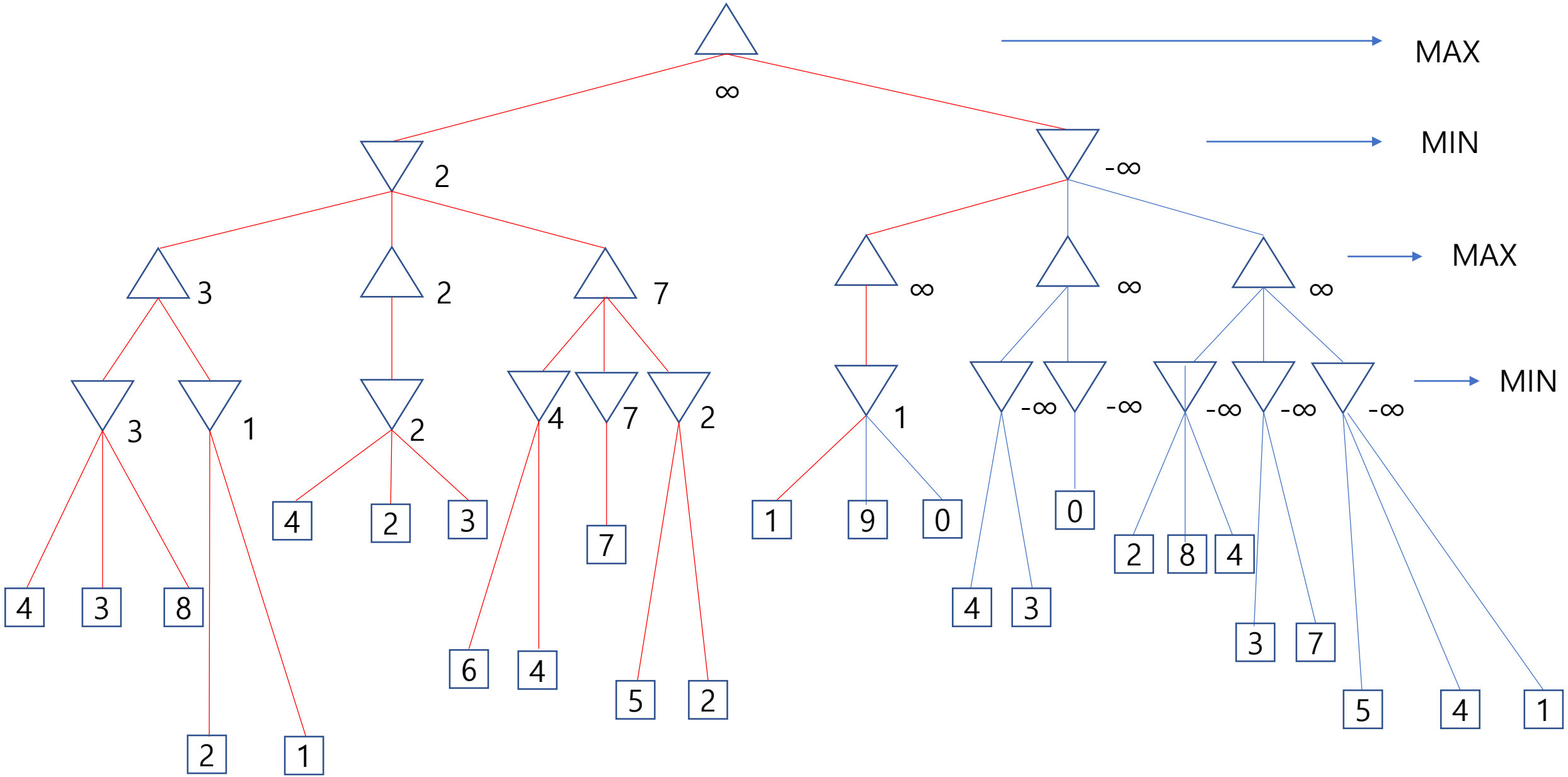
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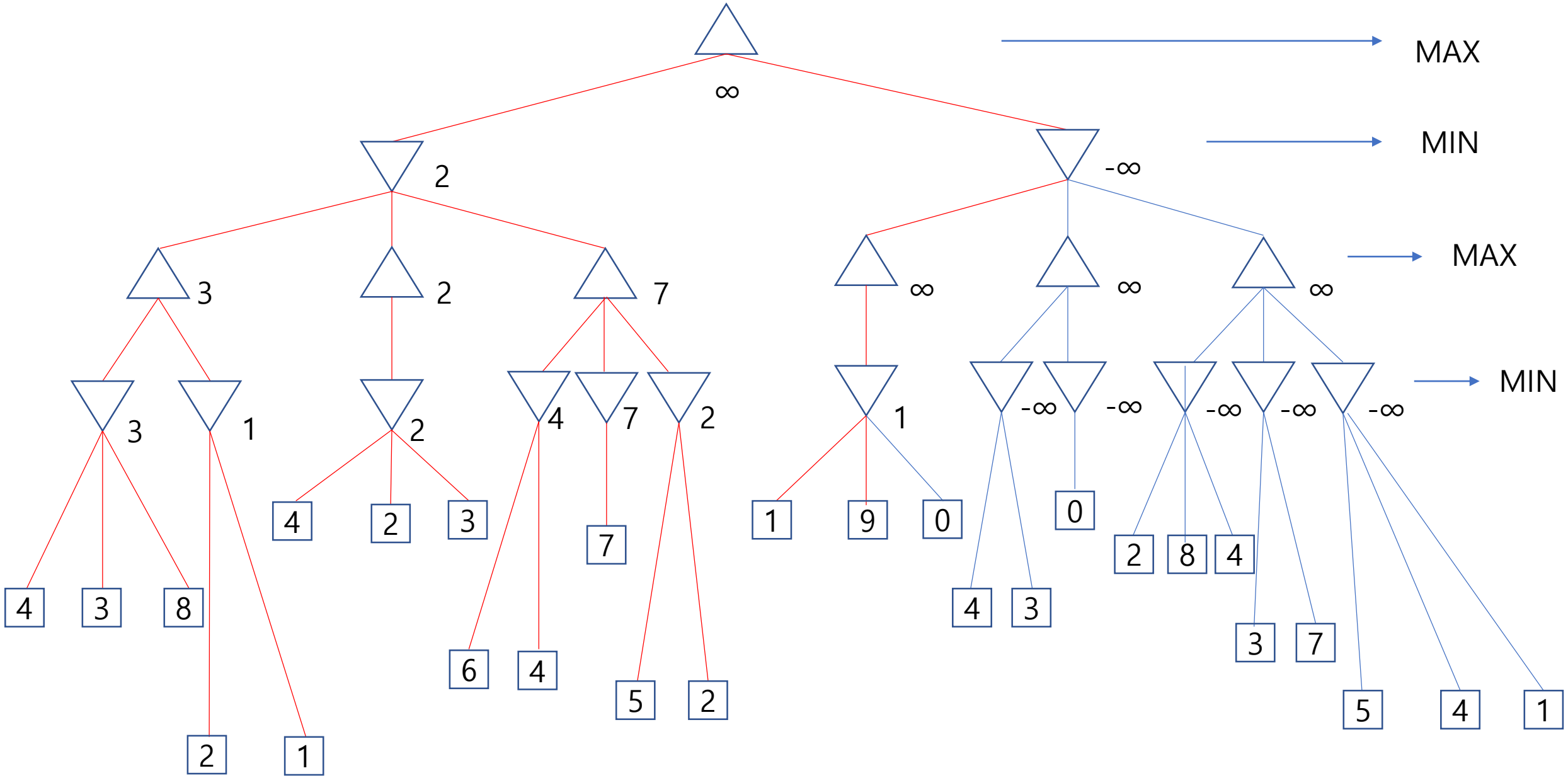
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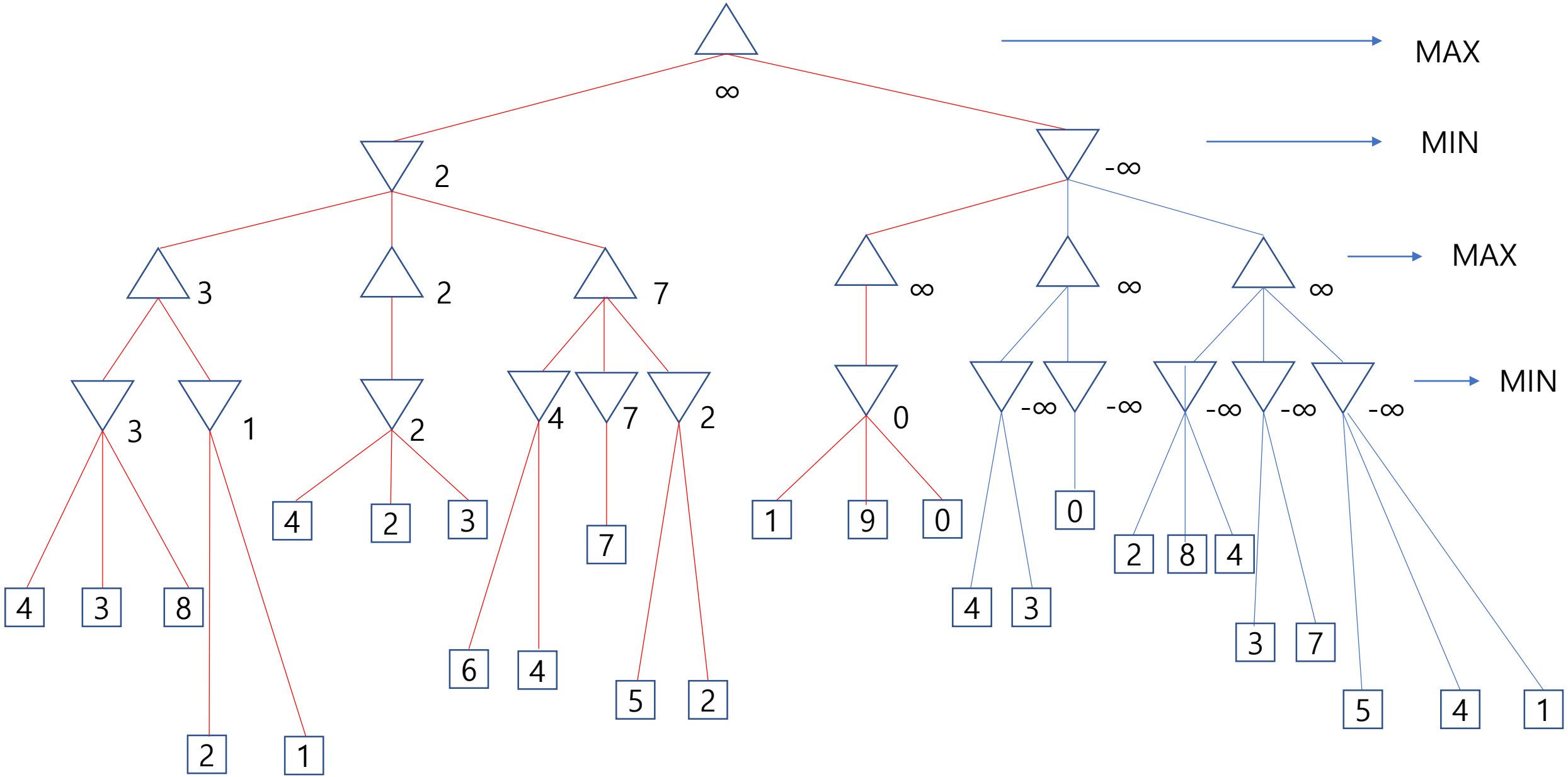
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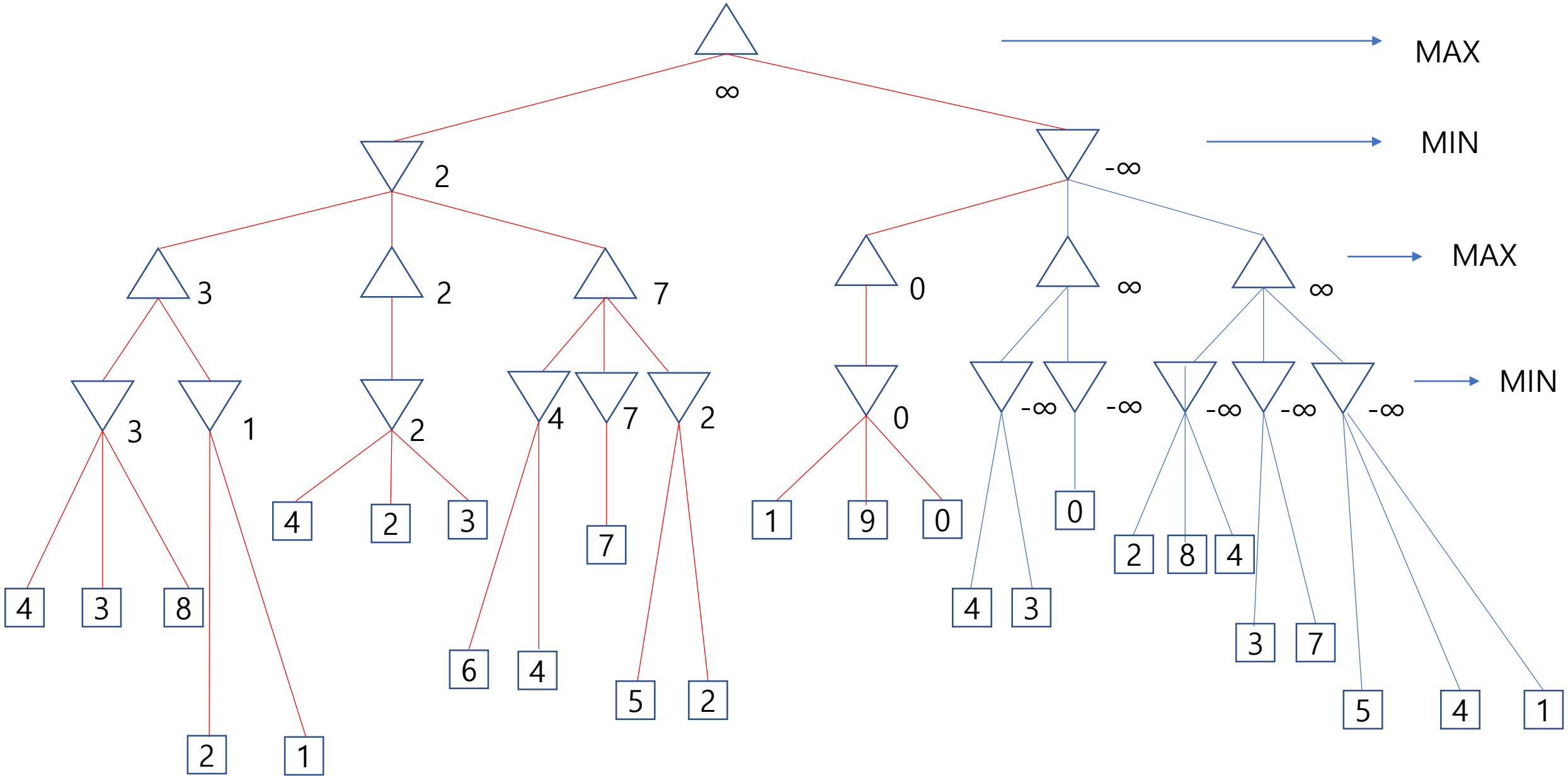
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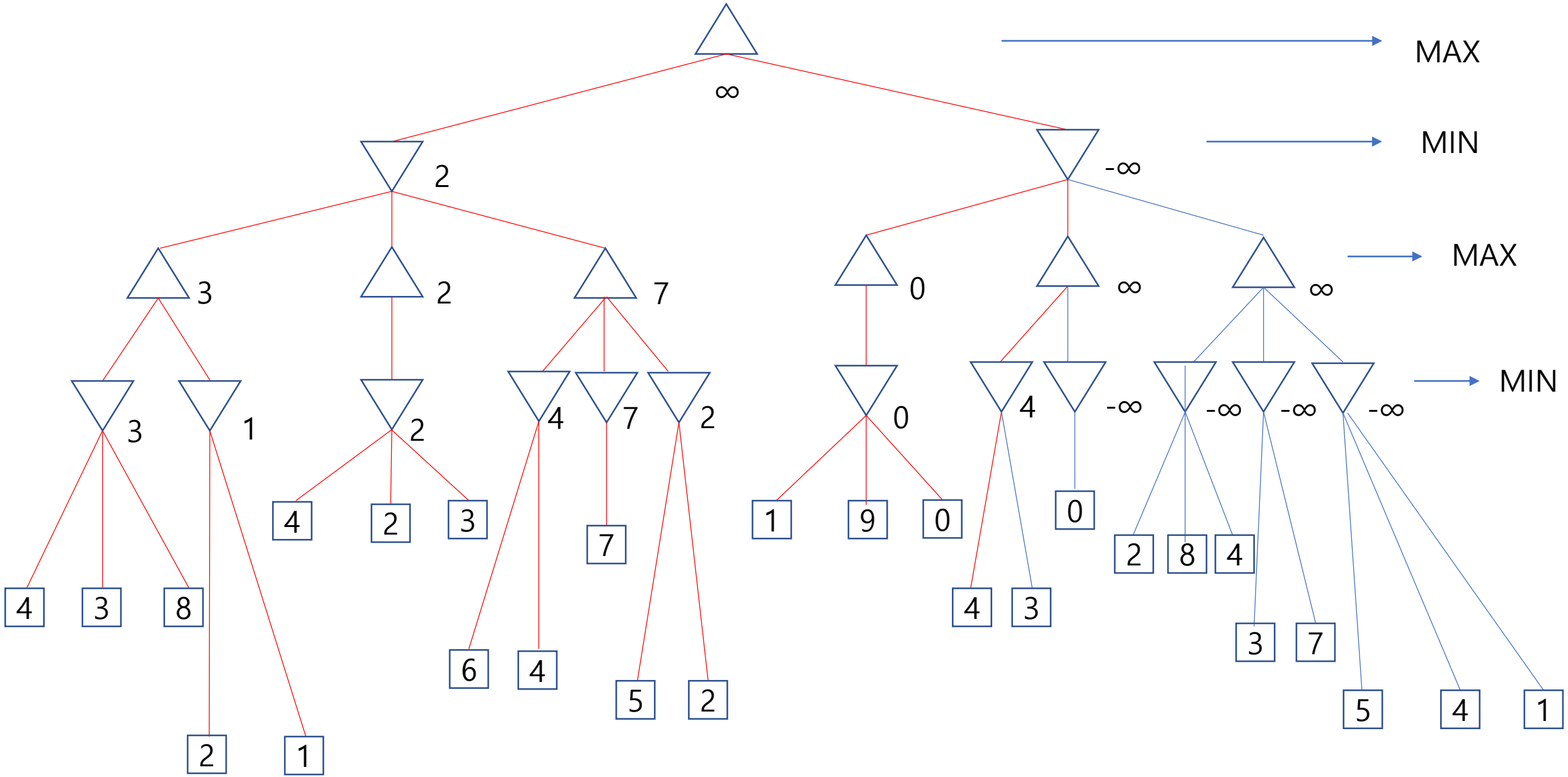
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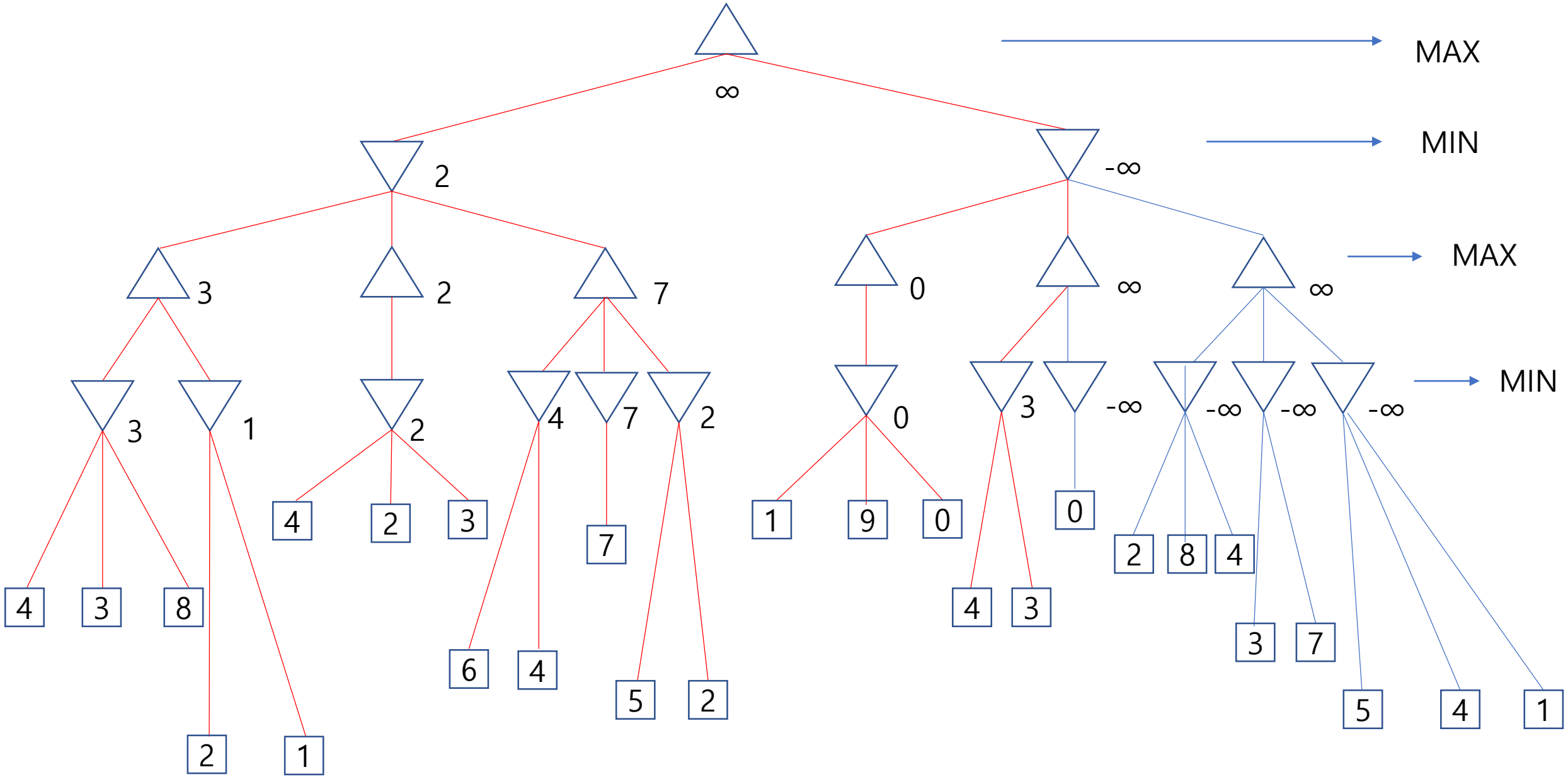
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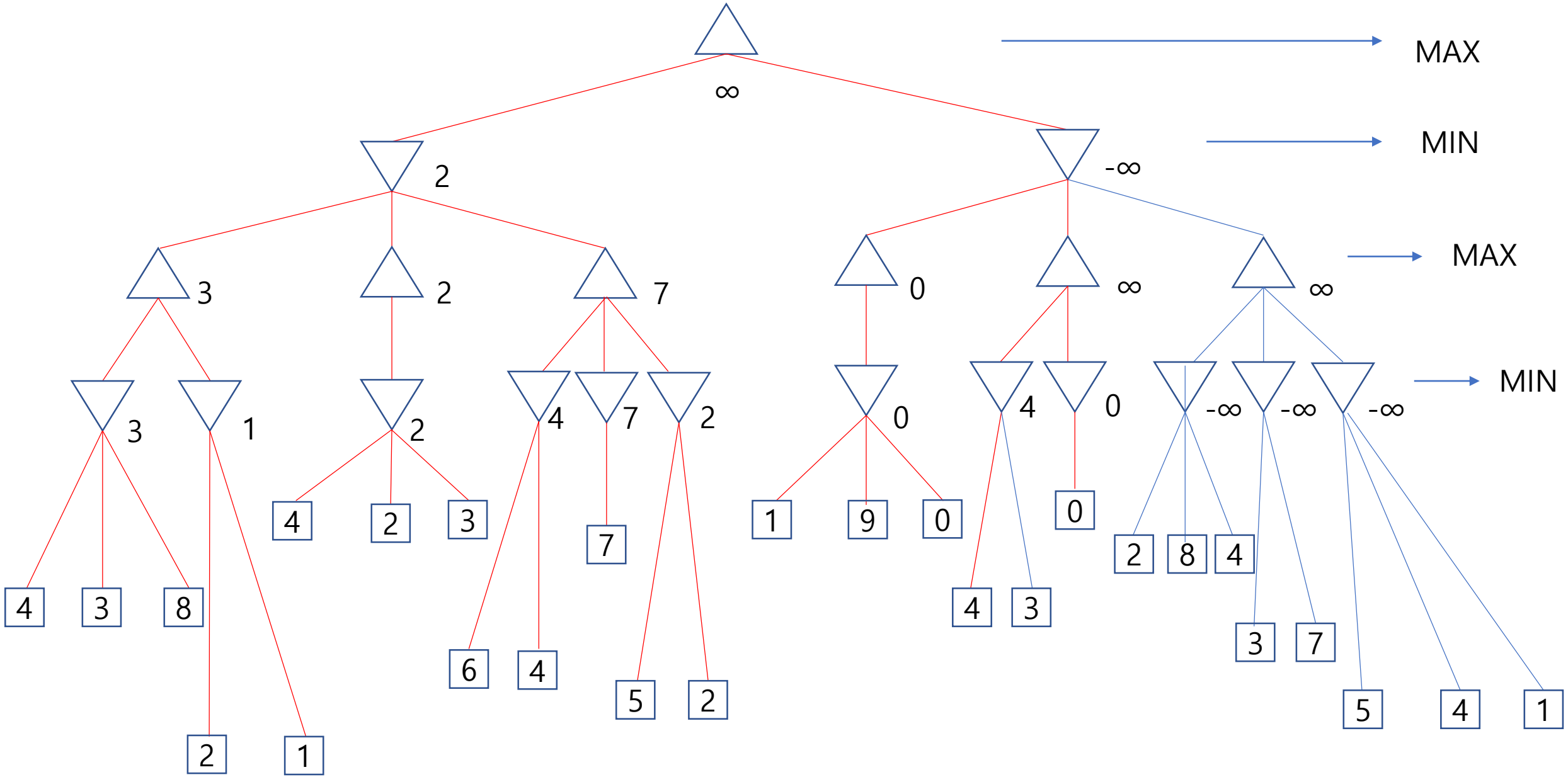
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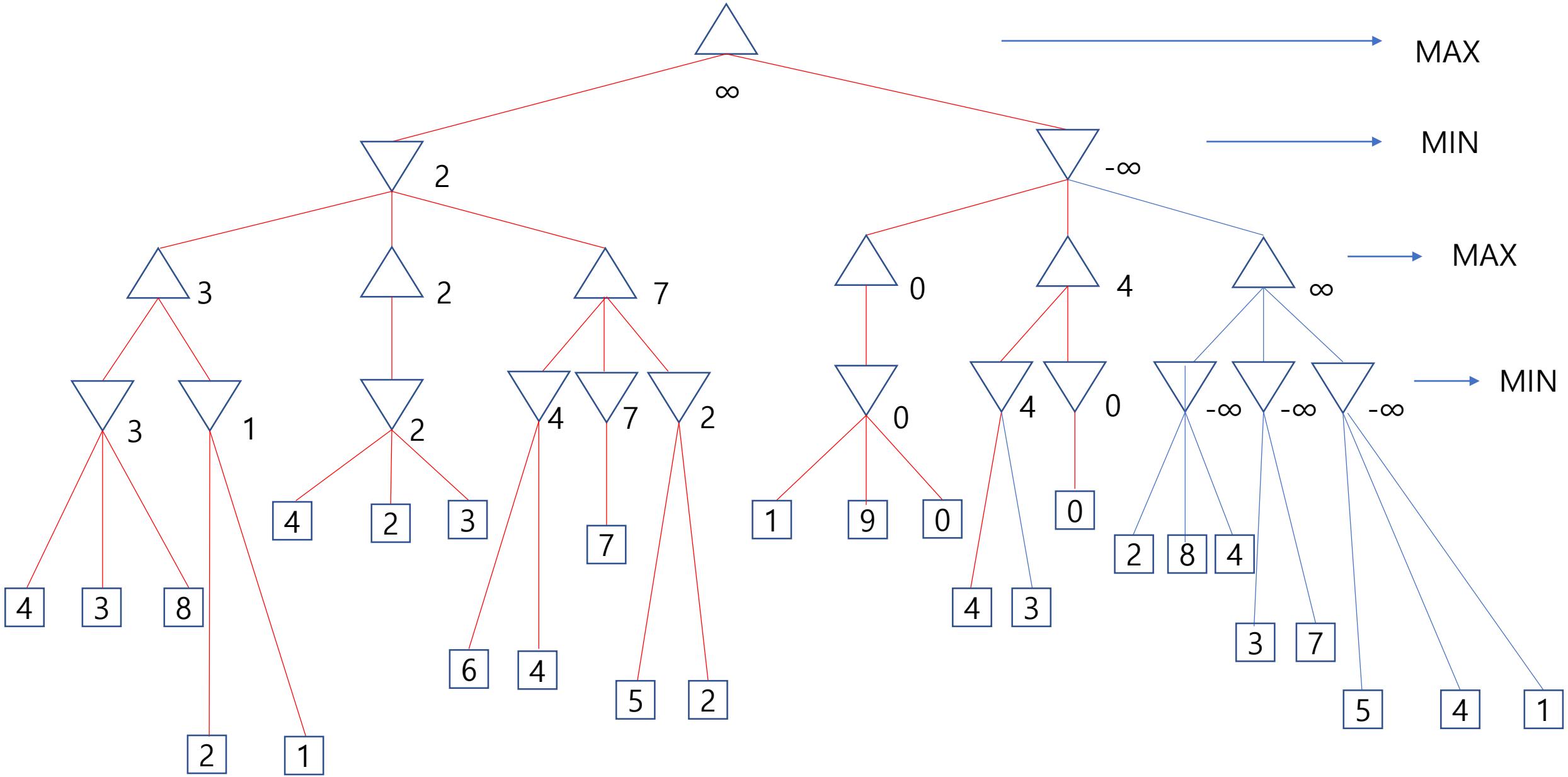
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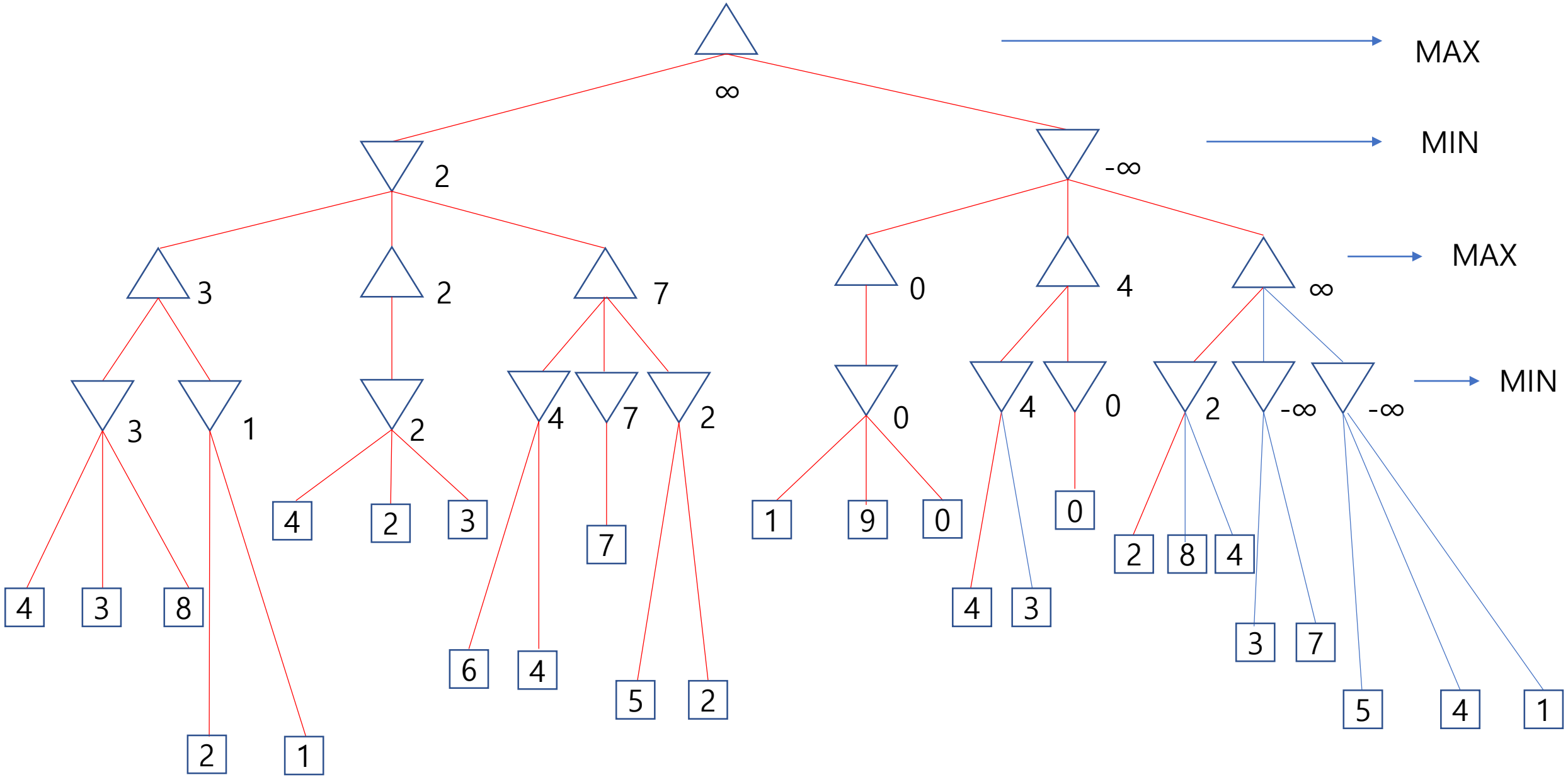
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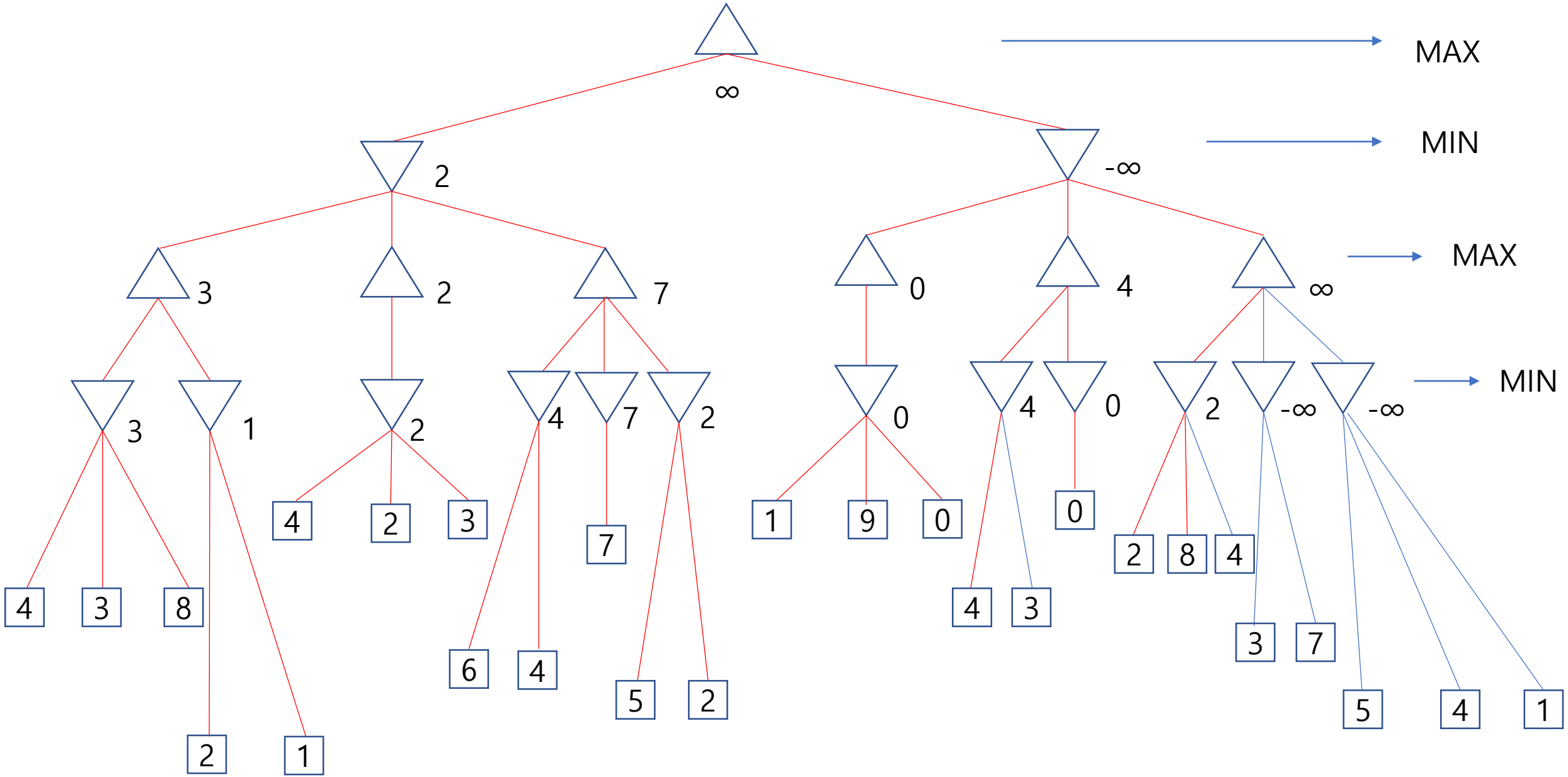
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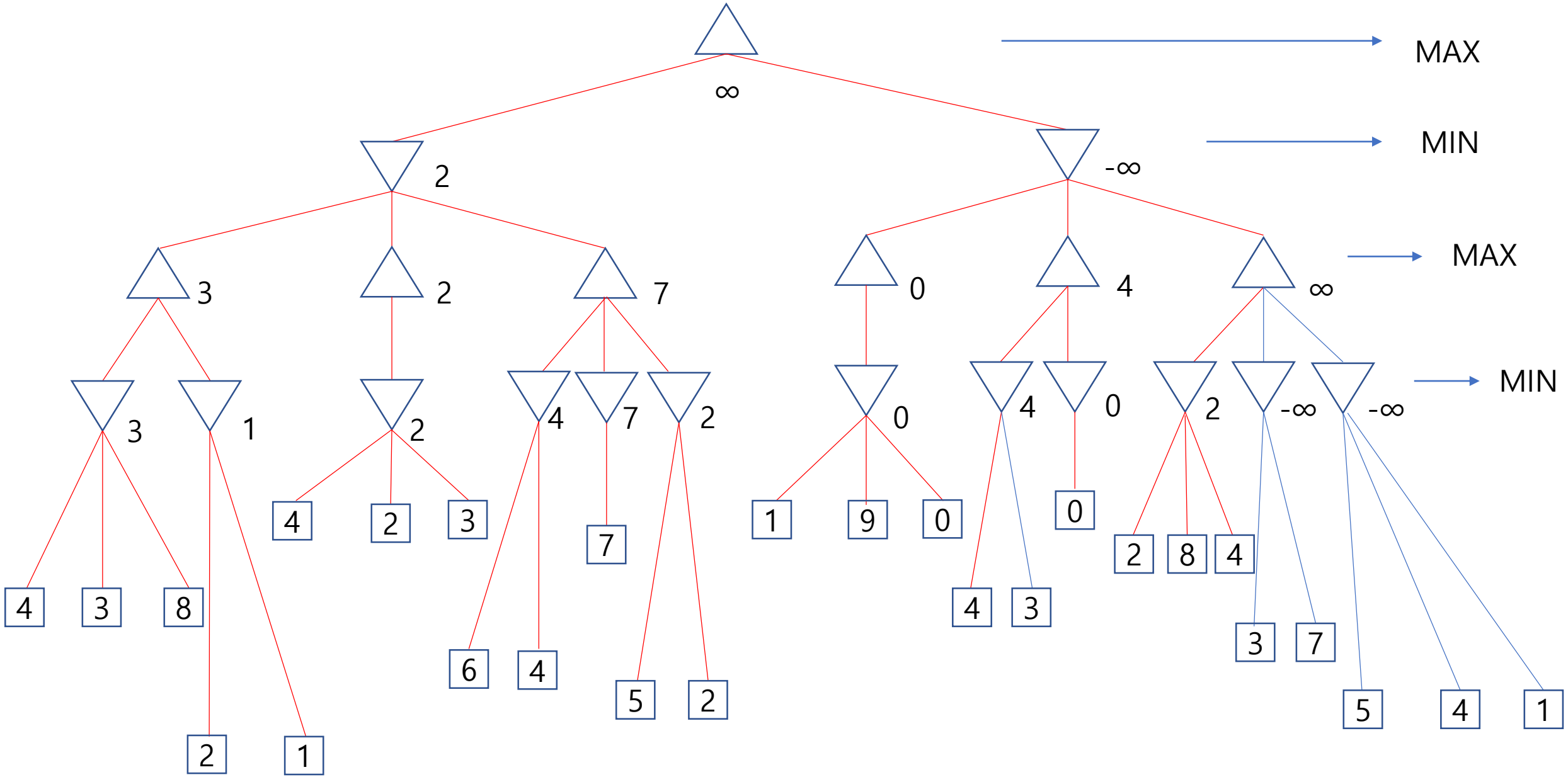
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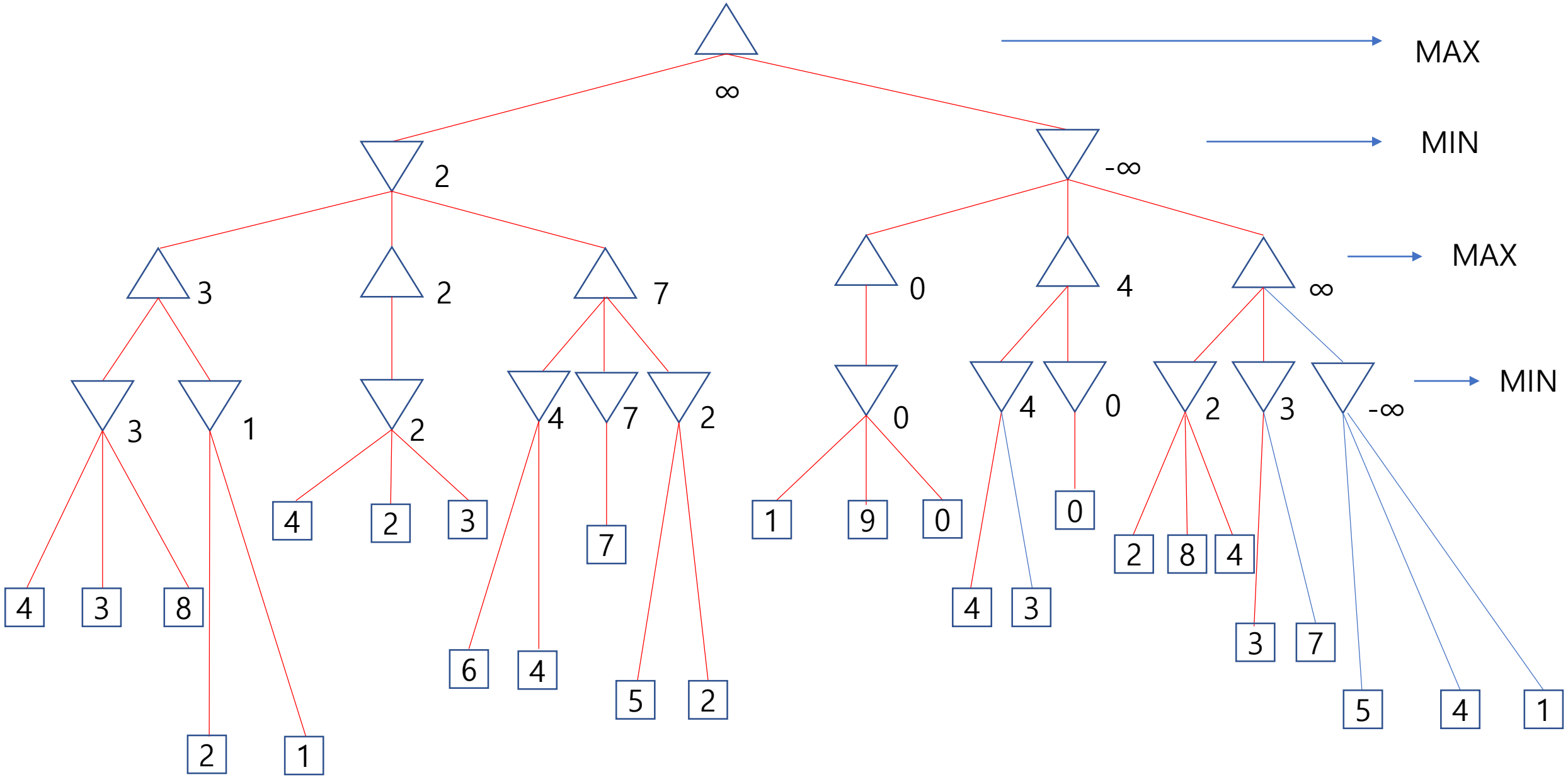
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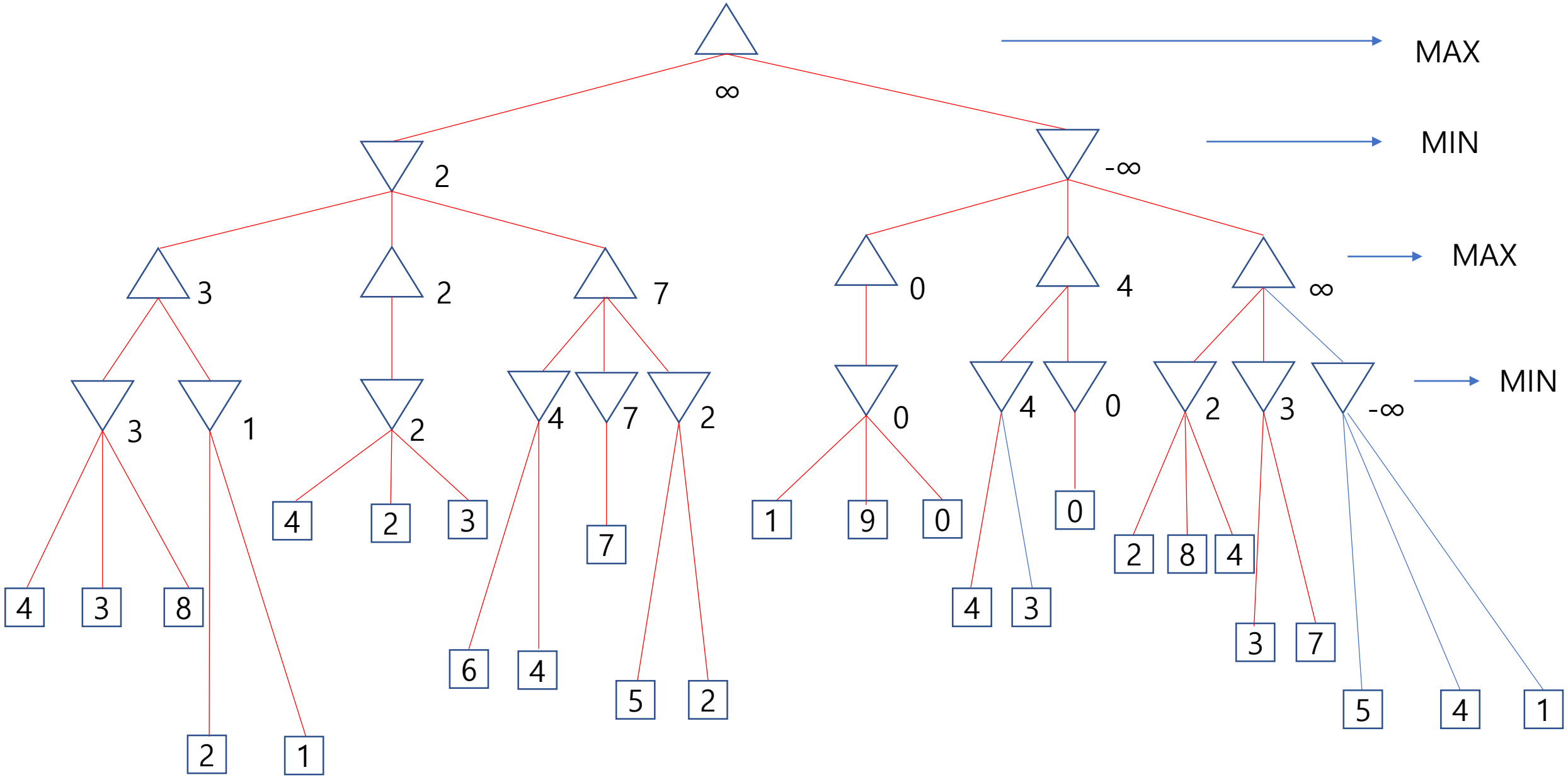
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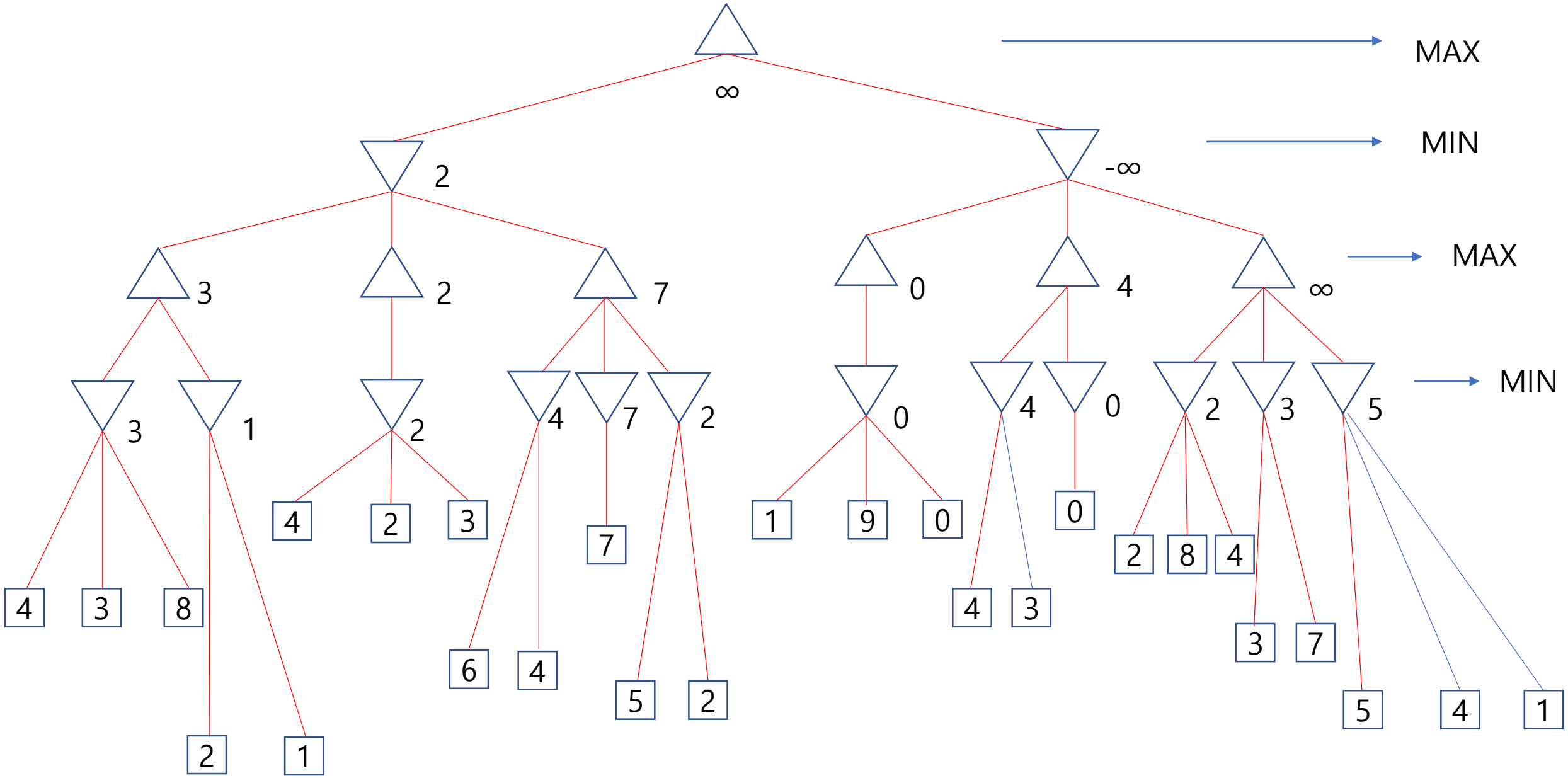
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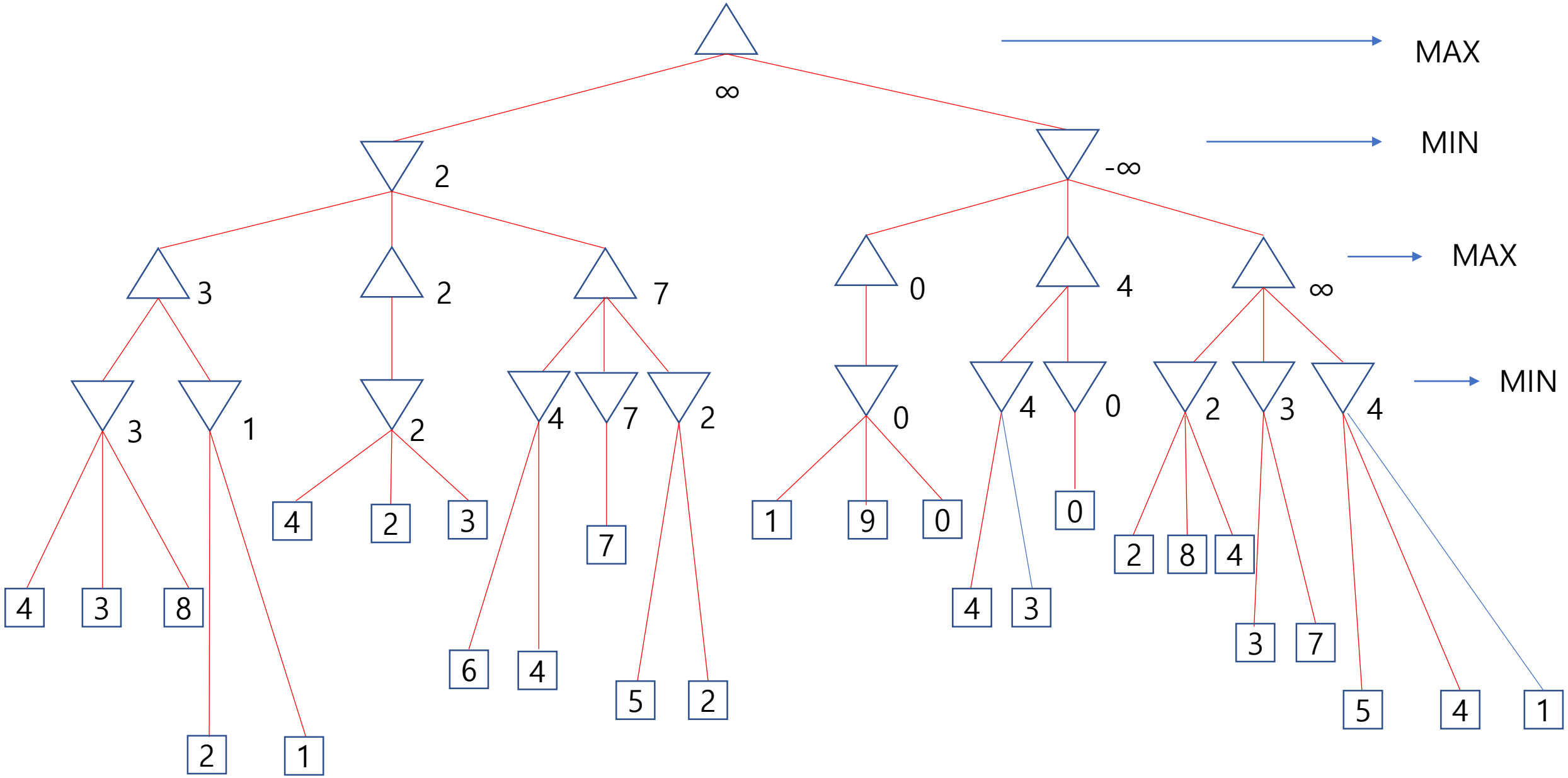
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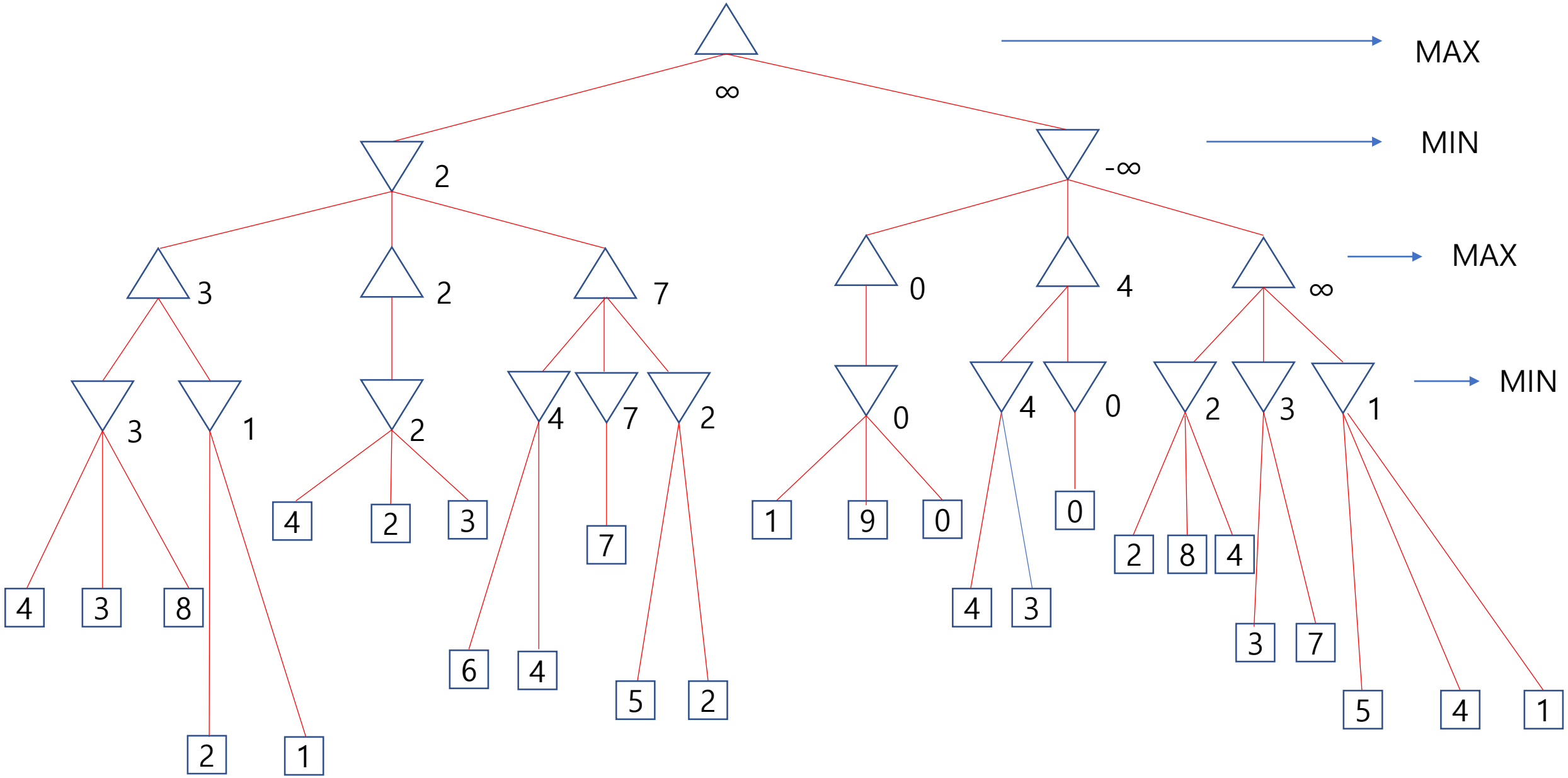
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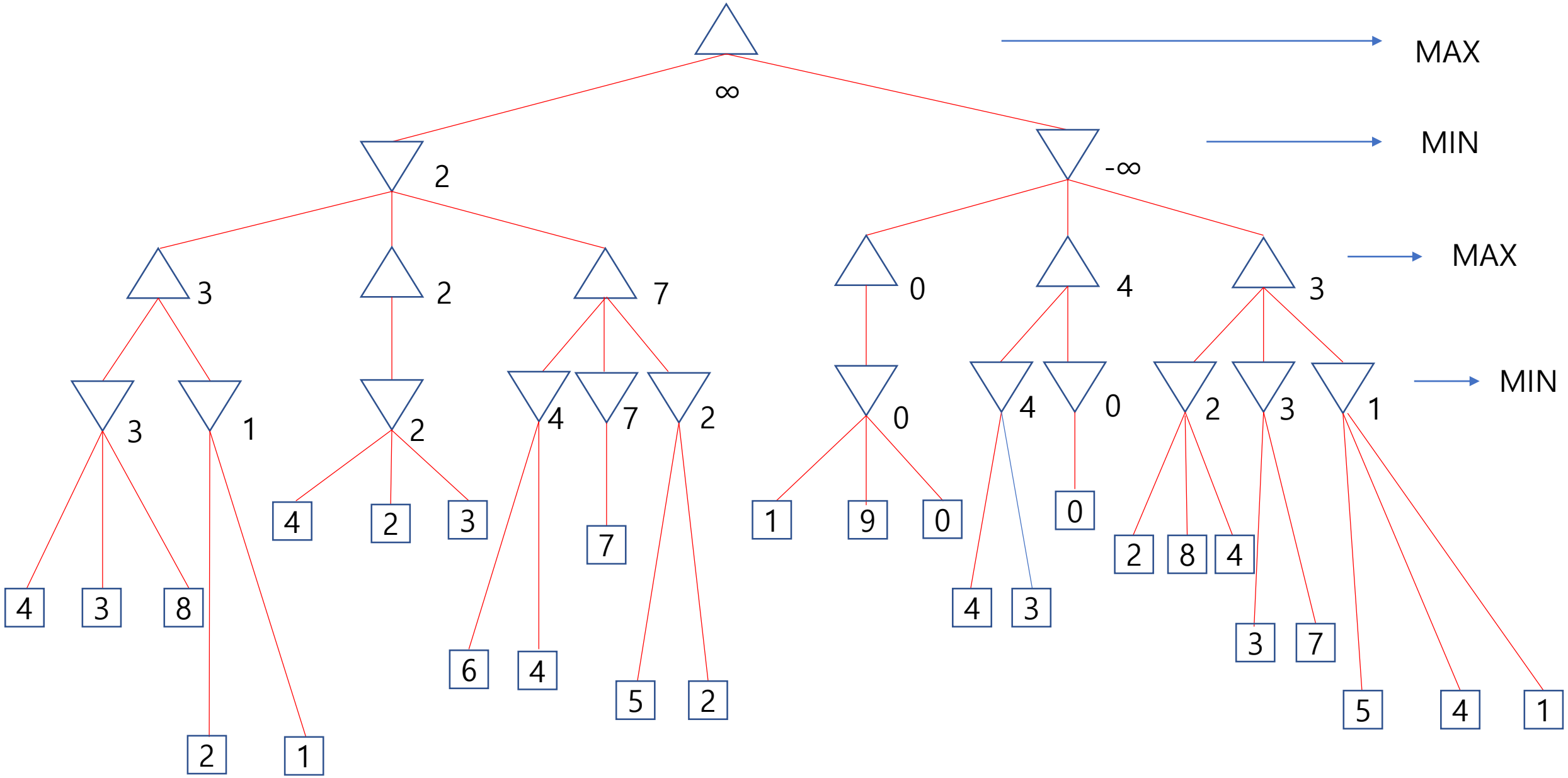
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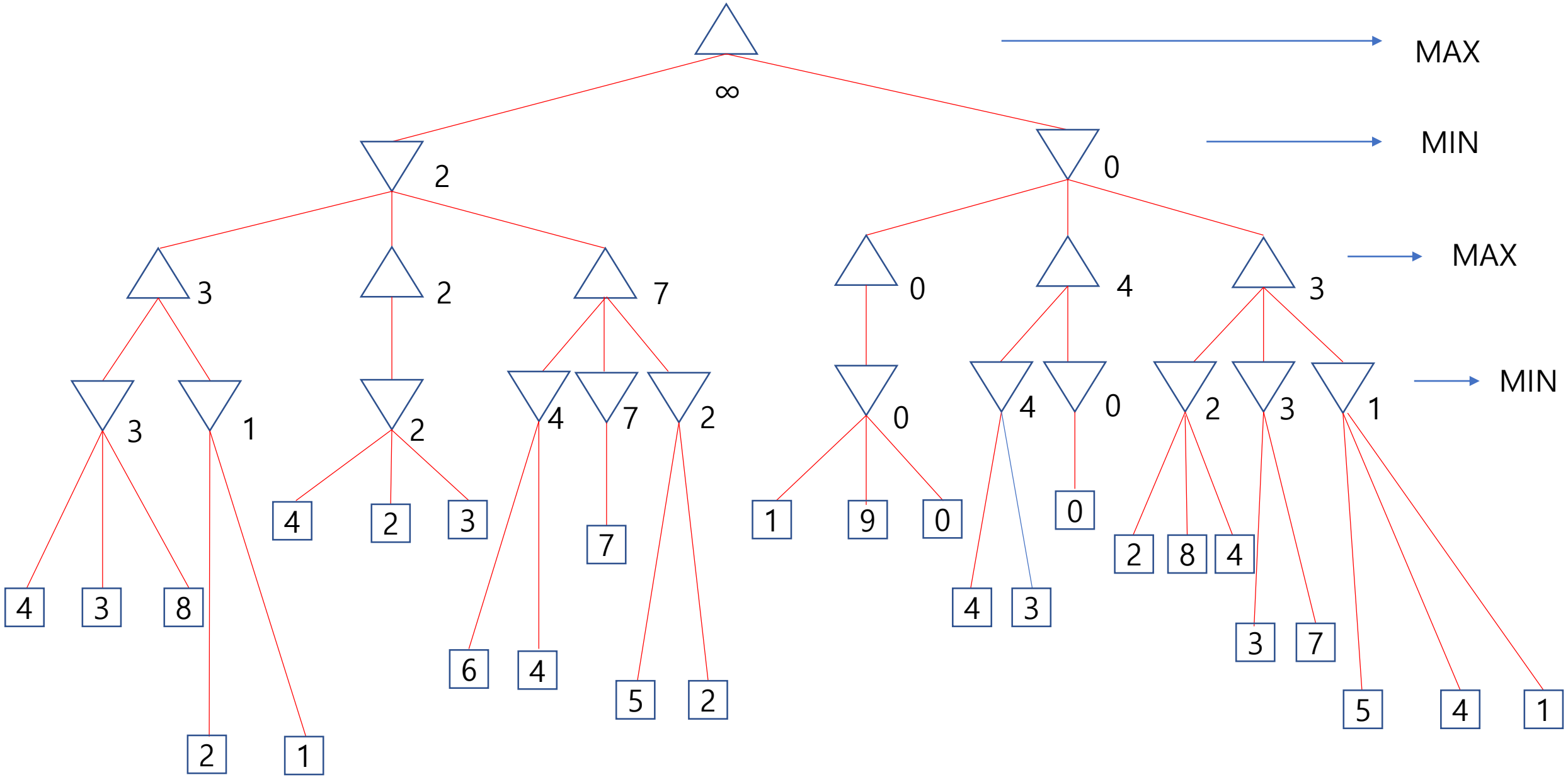
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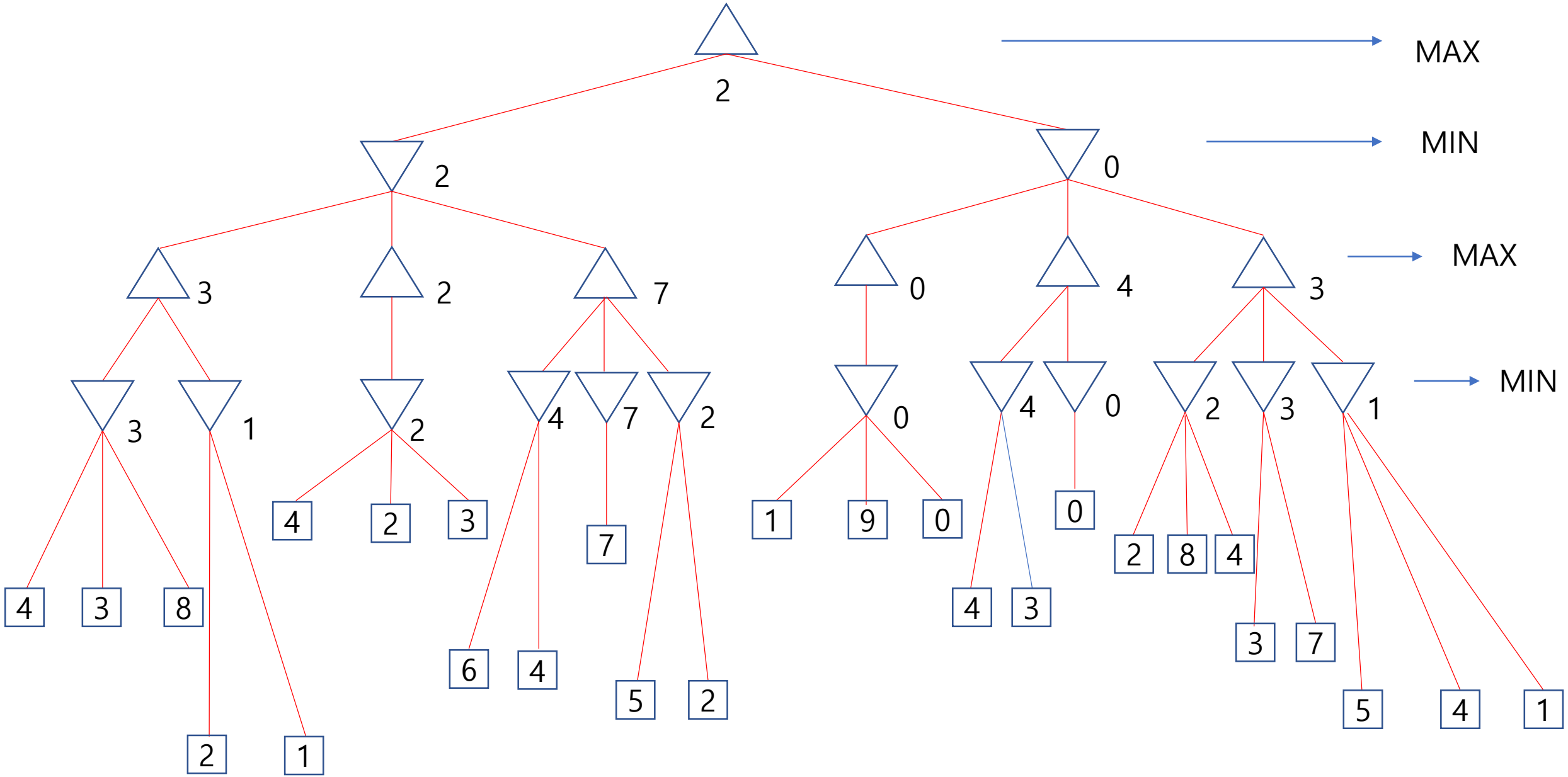
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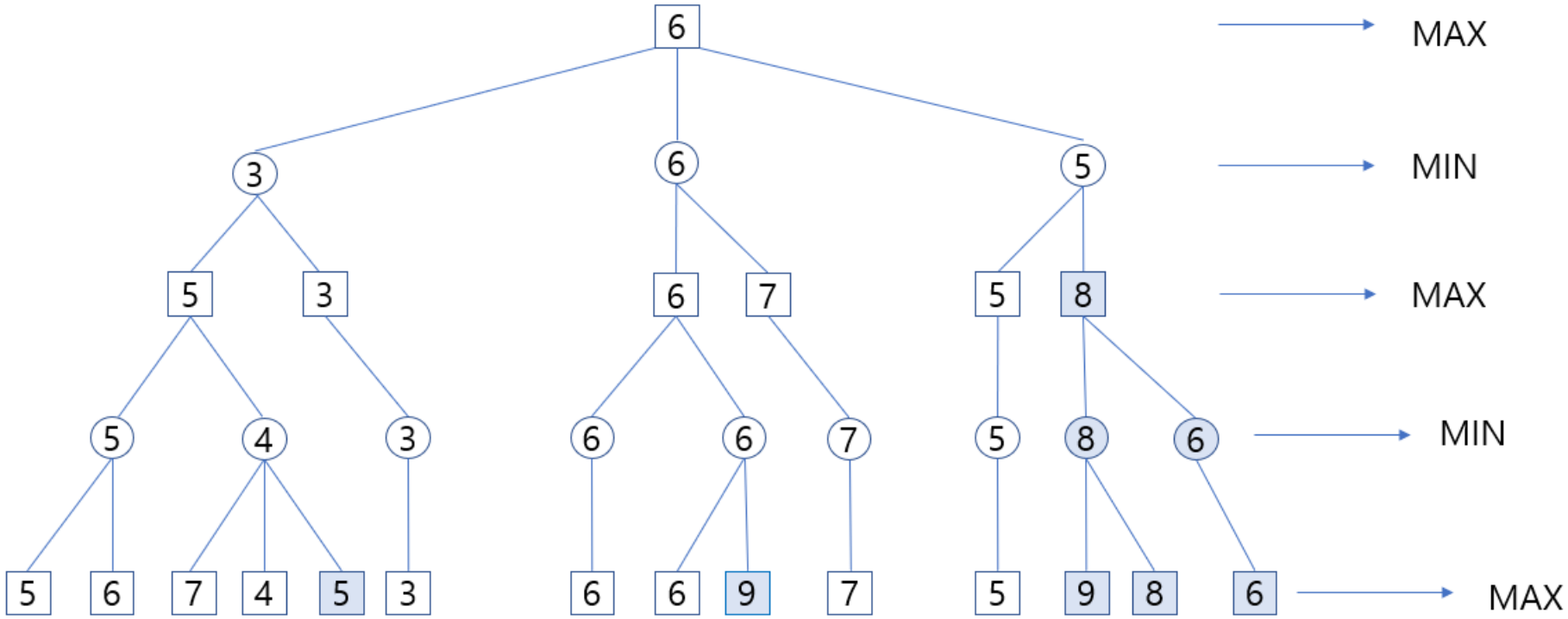

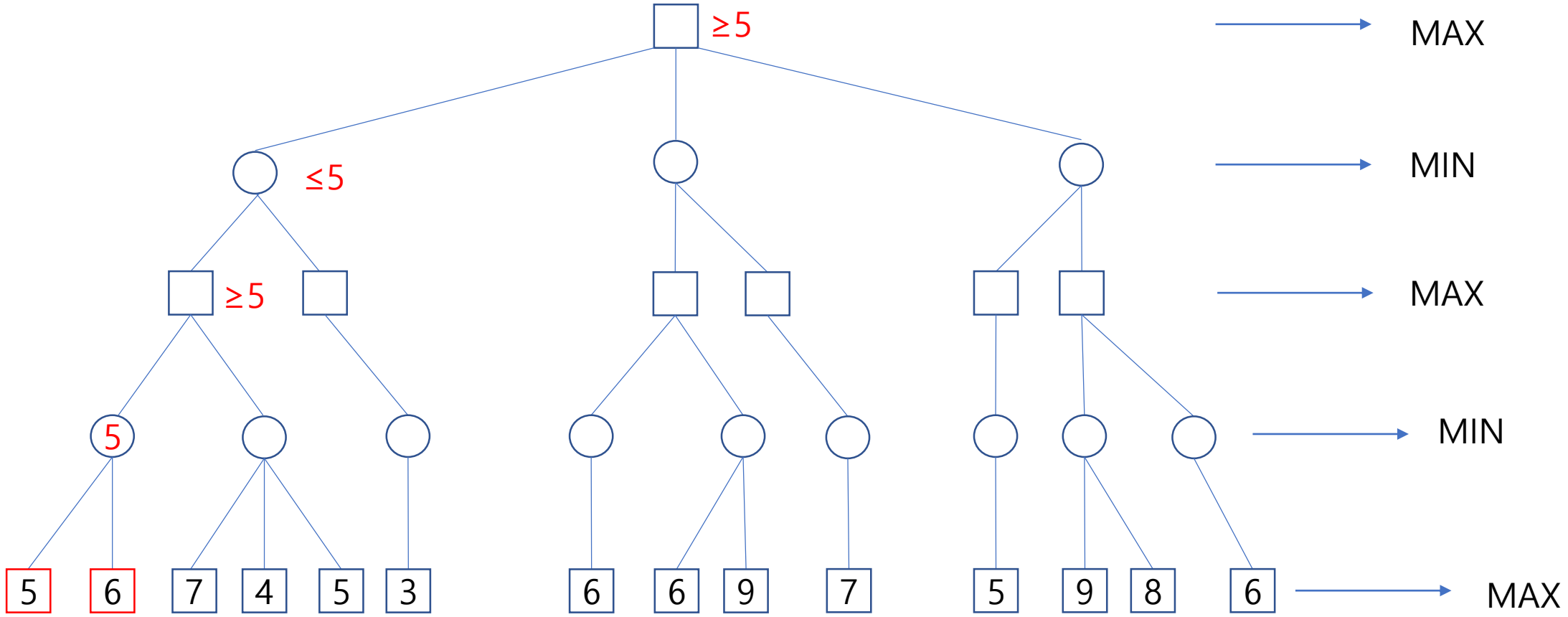
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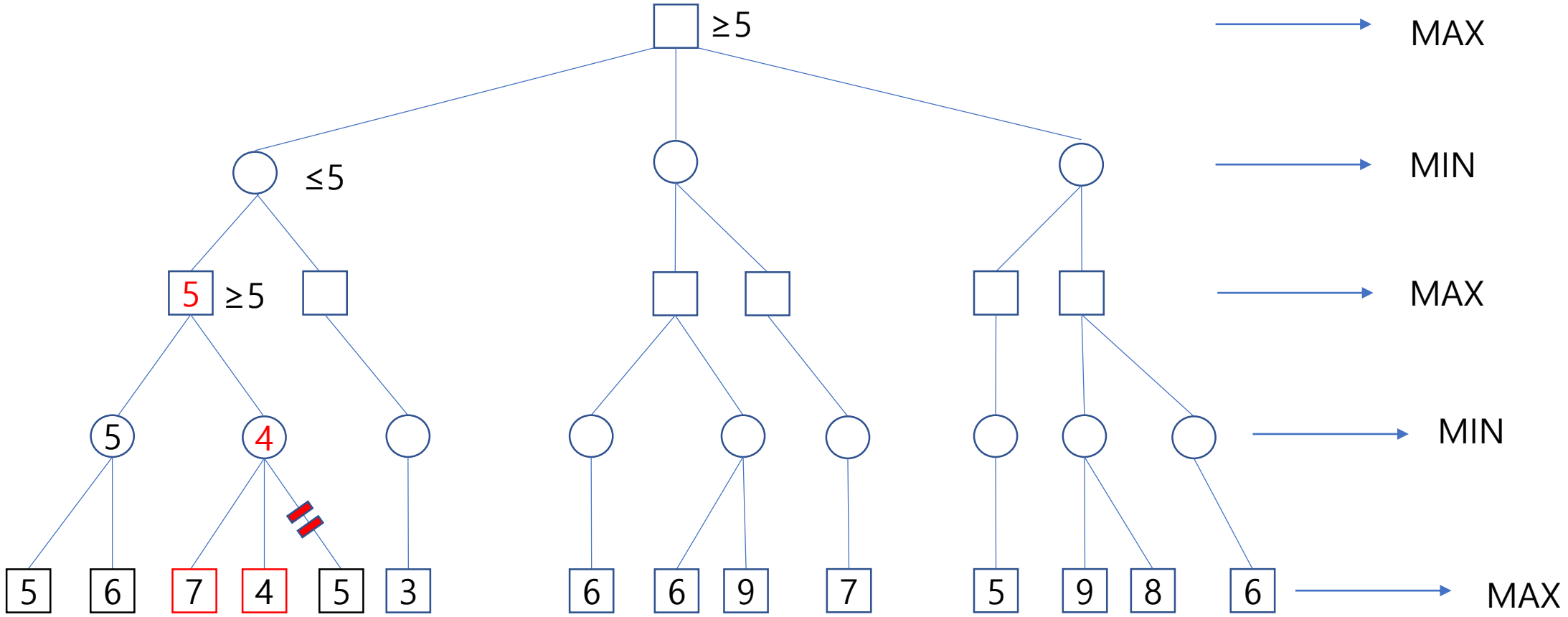
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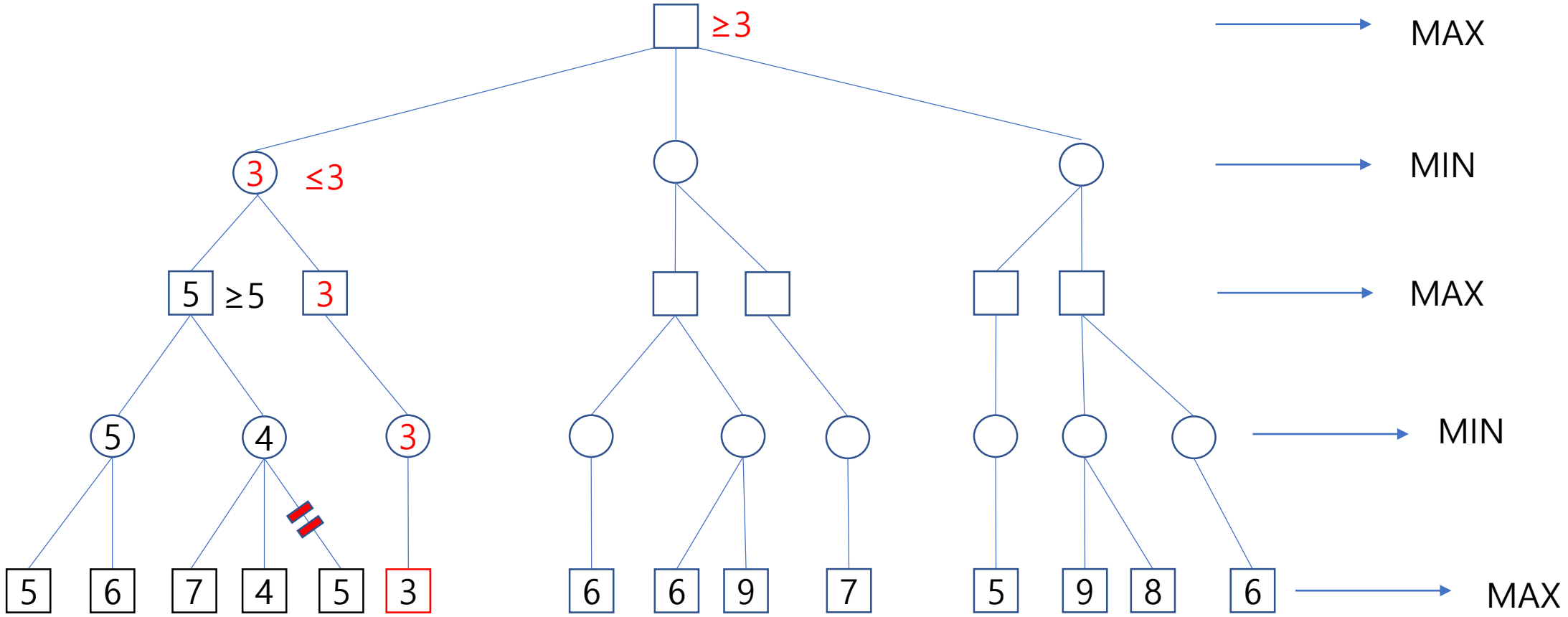
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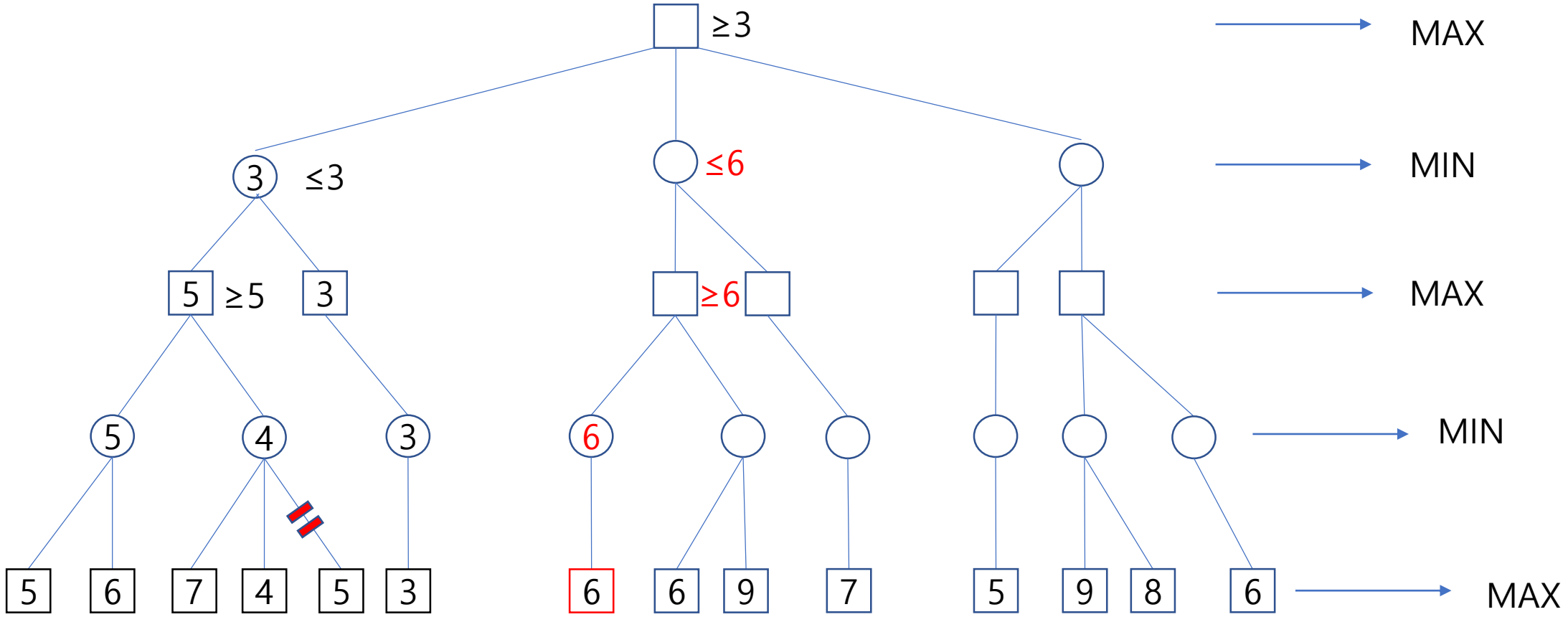
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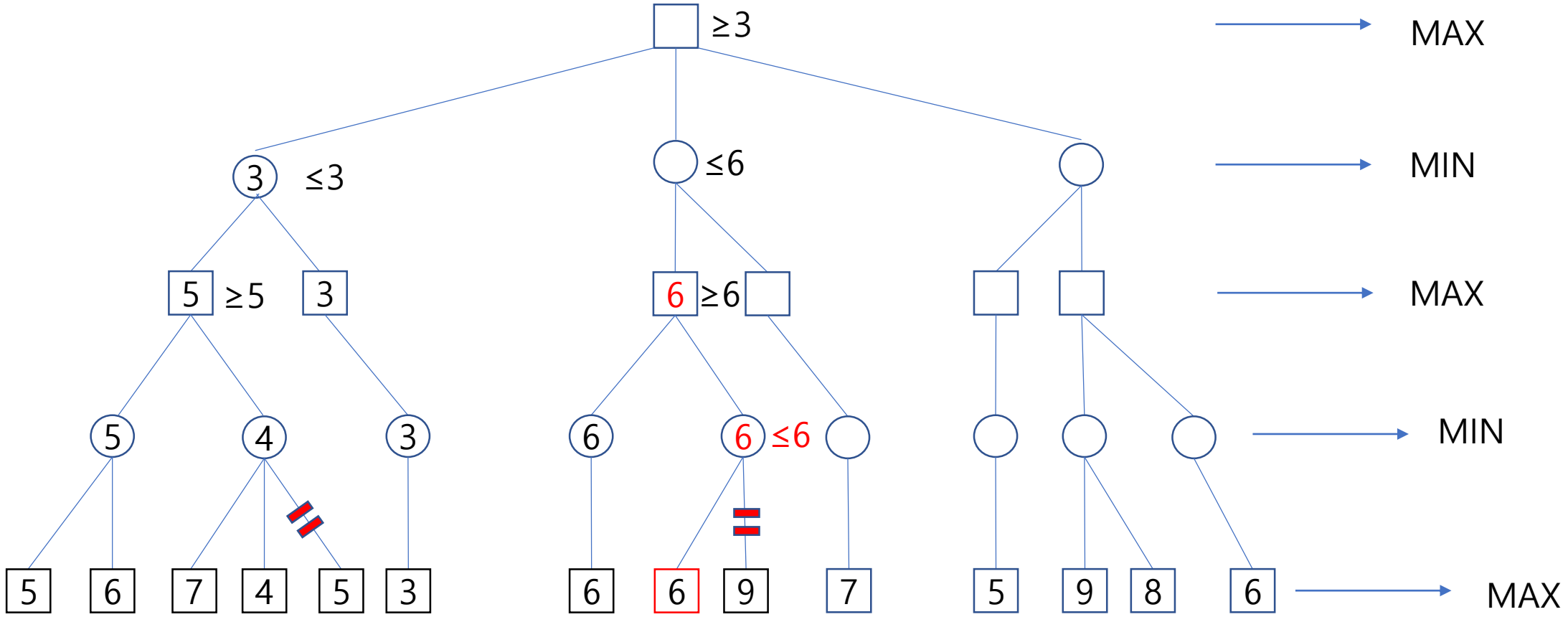
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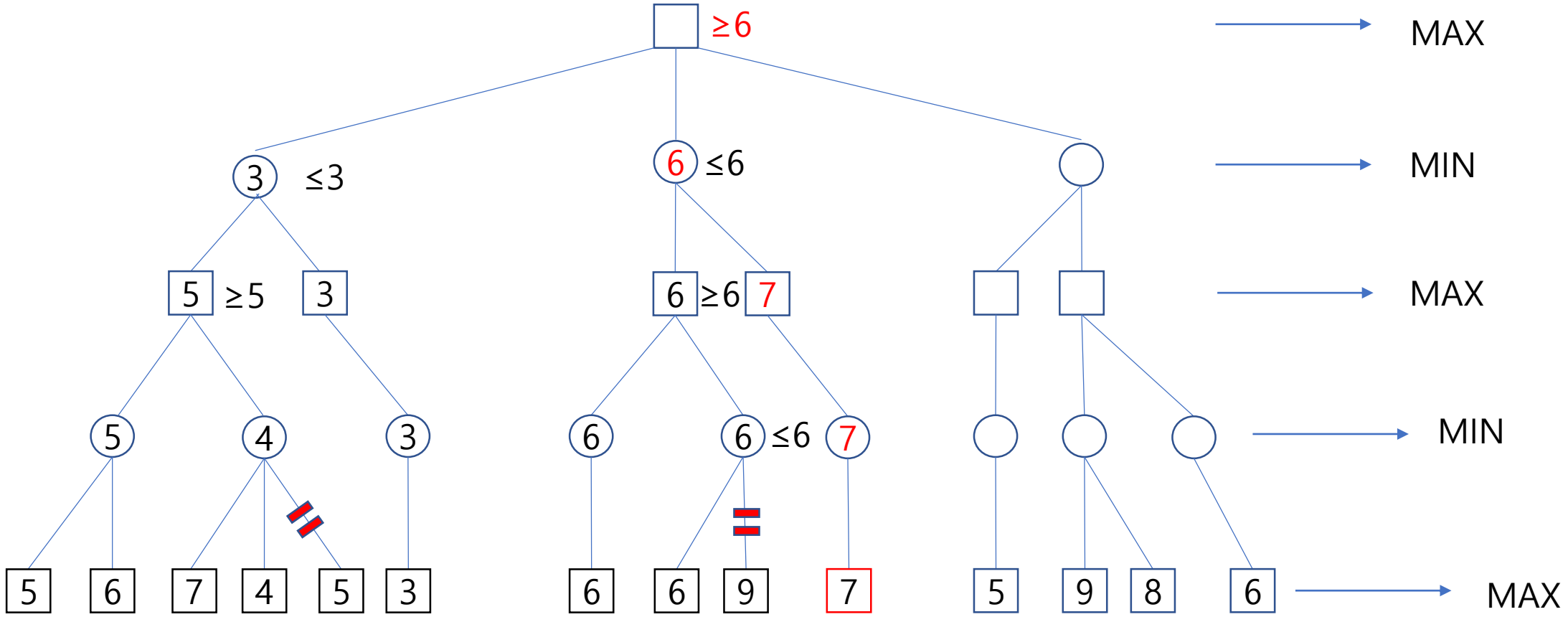
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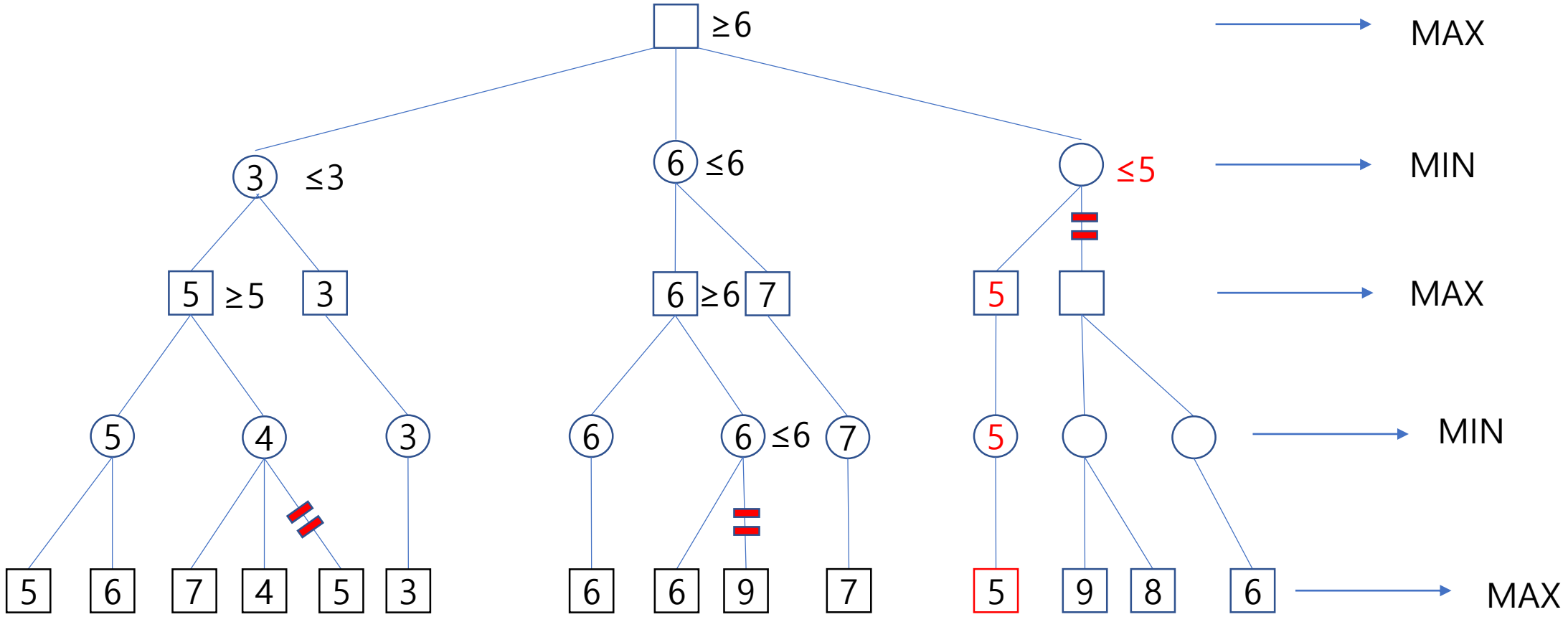
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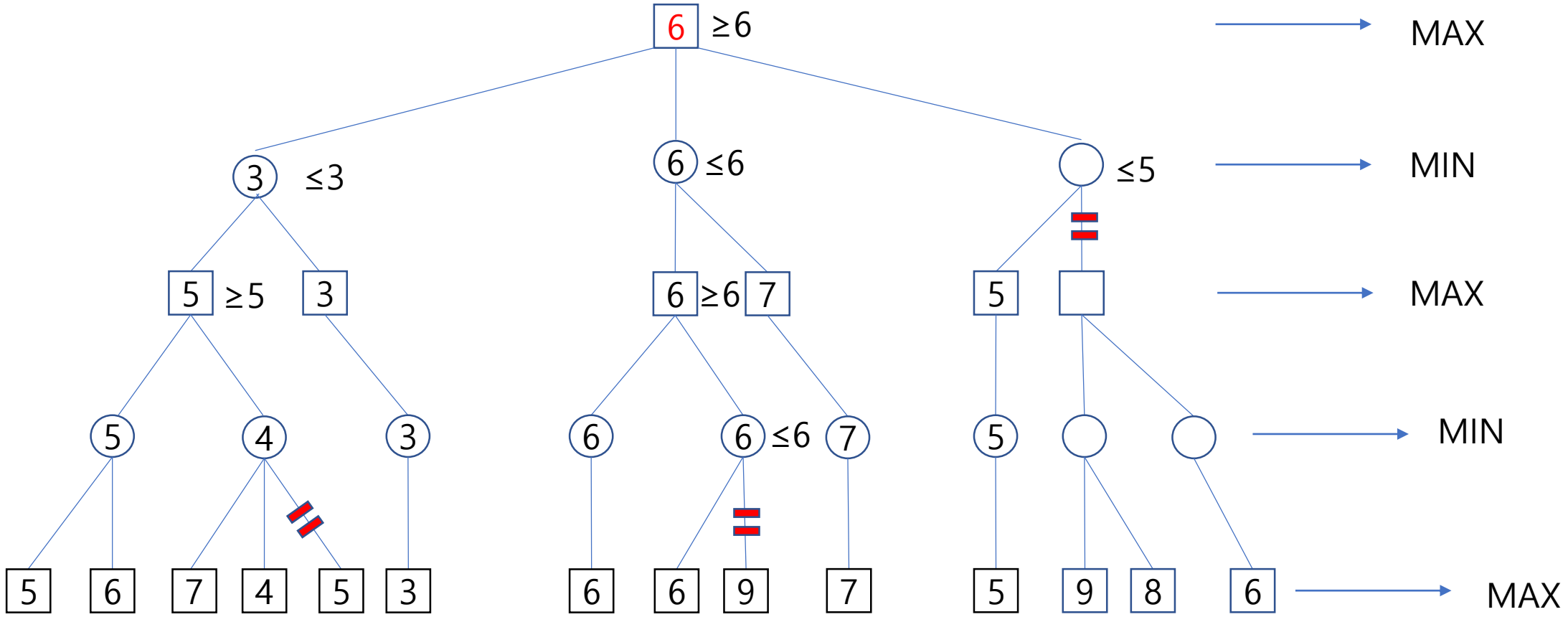
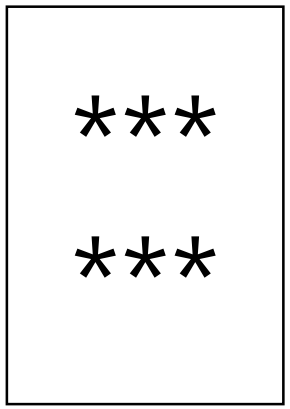
6
MAX

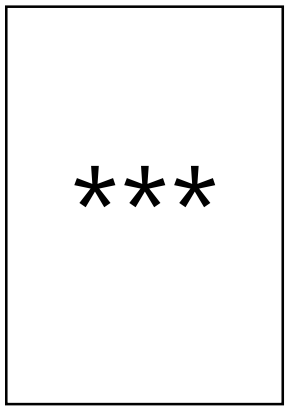


위의 결과와 같이 “ // “ 표시가 있는 부분에서 알파 베타 가지치기가 이루어진다.
따라서 총 3번의 알파 베타 가지치기가 이루어진다.

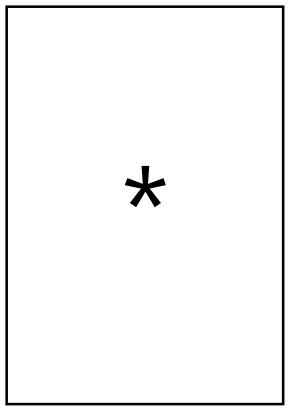
5. Nim은 성냥개비가 쌓여 있는 기둥에서 성냥개비를 제거하는 게임이다. 플레이어는 번갈아 가며 1개, 또는 2개, 또는 3개의 성냥개비를 제거할 수 있다. 마지막 성냥개비를 집도록 강요 받는 플레이어가 지게 된다. 우리는 6개의 성냥개비가 쌓여있다고 가정한다. 이 게임에 대한 게임 트리를 그려보자. 미니 맥스 알고리즘도 적용해보자.



초기 상태

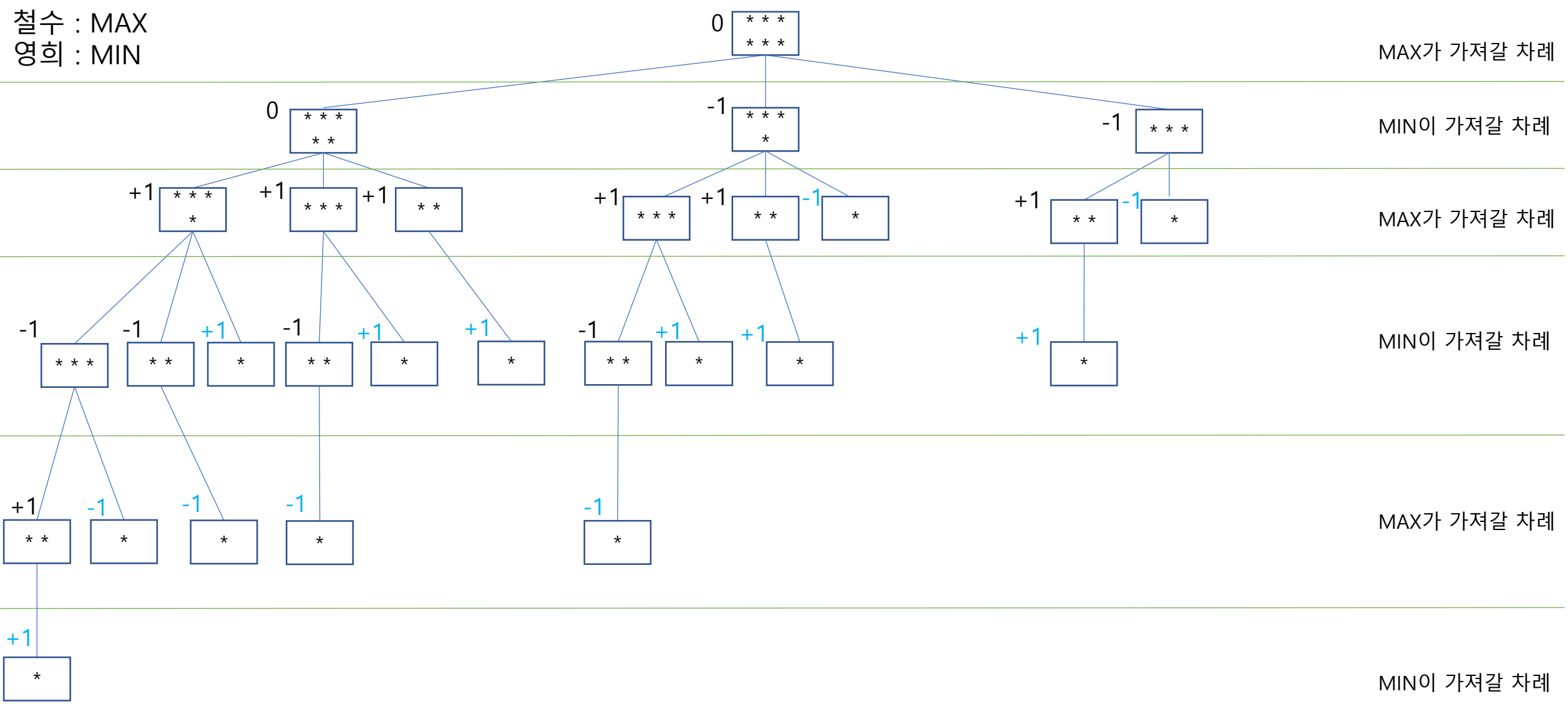


철수가 기둥에서
3개를 가져간다.



영희가 기둥에서
2개를 가져간다.
영희가 이긴다.

철수 : MAX
영희 : MIN


0
* * *
* * *
MAX가 가져갈 차례
0
* * *
* *
-1
* * *
*
-1
* * *
MIN이 가져갈 차례
+1
* * *
*
+1
* * *
+1
* *
+1
* * *
+1
* *
-1
*
+1
* *
-1
*
MAX가 가져갈 차례
-1
* * *
-1
* *
+1
*
-1
* *
+1
*
+1
*
-1
* *
+1
*
+1
*
+1
*
MIN이 가져갈 차례
+1
* *
-1
*
-1
*
-1
*
-1
*
MAX가 가져갈 차례
+1
*
MIN이 가져갈 차례