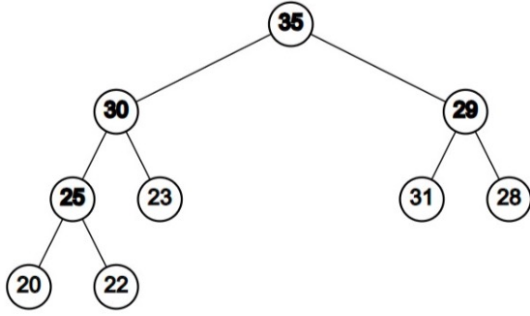


Quiz 6

1)



True or false: The binary tree above satisfies the max heap condition (for every node).

Select one:

- True
- False

what is used ?

2)

Let T be a (max) heap. Let v be a node at depth 2 in T , and let w be a node at depth 4 in T . Which of the following statements about the keys of v and w is true?

Select one:

- a. The key of v **must be larger than or equal to** the key of w .
- b. The key of w **must be larger than or equal to** the key of v .
- c. None of the above.

3)

In the lecture you saw the ExtractMax procedure to remove the root of a (max) heap, and subsequently restore the heap condition. Let ℓ be the rightmost leaf in the lowest level of a max heap consisting of at least 2 nodes, and assume all keys in the heap are unique. True or false: The node ℓ is guaranteed to be a leaf again after running the ExtractMax procedure. (A leaf is a node without children)

Select one:

- True
- False

4)

True or false: the runtime of the quick sort algorithm depends on the way in which the pivot is chosen.

Select one:

- True
- False

5)

Let B be the binary decision tree of a comparison-based sorting algorithm for arrays of length n . Which of the following statements are true for B ?

Select one or more:

- a. B contains at most 2^n nodes.
- b. $|B|$ contains at least $(n!)$ nodes.
- c. $|B|$ has depth at least $\Omega(n \log n)$.
- d. $|B|$ has depth at most $O(n \log n)$.