1. sorted array → | 1 | 2 | 3 | 4 |

key (3)

$i = 0$ to $\frac{n}{2}$ (1)

$\frac{n}{4}$ (2) , $\frac{n}{8} \rightarrow \frac{n}{2^k}$

$\rightarrow \frac{n}{2^k} = 1$

$\Rightarrow k = \log n$ ✓.

2. space complexity of the iterative version of binary search → O(1).

3.

4. i from 1 to n

inner loop { j from 1 to n }

time complexity → $O(n^2)$

space complexity → O(1) → no extra space.

5. for i = 1 to n

time complexity → O(n)

space complexity → O(1)

6. i = 1 to n, time complexity → O(n)

space complexity → O(1)

7.

8.

9. time complexity → O(n)
   space complexity → O(1)

10. time complexity → O(nlogn)
    space complexity → O(1)

11. Time complexity → O(n)
    space complexity → O(1)

12.

13. Time complexity → O(n2)
    space complexity → O(1)

14. Time complexity → O (logn)
    space complexity → O(1)

15. Time complexity → O(n)
    space complexity → O(1)

16. Time complexity → O(2n) / O(n)
    space complexity → O(1)

17. Time complexity → O(1)
    space complexity → O(1)

18. Time complexity → O(n3)
    space complexity → O(1)

19. Time complexity → $O(n^3)$
Space complexity → $O(1)$

20.

21. Time complexity → $O(1)$
Space complexity → $O(1)$

22. Time complexity → $O(n^2)$
Space complexity → $O(1)$

23. Time complexity → $O(n^2)$
Space " → $O(1)$

24. Time complexity → $O(\log n)$
Space " → $O(1)$

25. Time complexity → $O(n^2)$
Space complexity → $O(1)$

26. Time complexity → $O(n^2)$
Space " → $O(1)$

27. time complexity → $O(n^2)$

28. Time complexity → $O(n^2)$
Space " → $O(1)$

29.

30. Time complexity → $O(n^2)$
Space " → $O(1)$