134 .
Checks if a given number x exists in a sorted array arr using binary search. Analyze its time complexity using Big-O notation.
Test Case:
Example X={ 3,4,6,-9,10,8,9,30} KEY=10
Output: Element 10 is found at position 5

AIM: To find an element by using binary search in sorted array

PROGRAM:

```
def binary_search(arr, x):
    left, right = 0, len(arr) - 1


    while left <= right:
        mid = (left + right) // 2
        if arr[mid] == x:
            return f"Element {x} is found at position {mid}"
        elif arr[mid] < x:
            left = mid + 1
        else:
            right = mid - 1
        return f"Element {x} is not found in the array"
arr = [3, 4, 6, -9, 10, 8, 9, 30]
x = 10
print(binary_search(sorted(arr), x))
```

OUTPUT:

```
Element 10 is found at position 4
```

TIME COMPLEXITY: O(log n)