

4.binary search.

Code:

```
def binary_search_recursive(arr,low,high,x):  
    if high>=low:  
        mid=(low+high)//2  
        if arr[mid]==x:  
            return mid  
        elif arr[mid]>x:  
            return binary_search_recursive(arr, low, mid - 1,x)  
        else:  
            return binary_search_recursive(arr, mid + 1, high,x)  
    else:  
        return -1  
arr = [2,3,4,10,30]  
x = 10  
result = binary_search_recursive(arr, 0, len(arr) - 1, x)  
if result != -1:  
    print(f"Element is present at index {result}")  
else:  
    print("Element is not present in array")
```

output:

```
PS C:\Users\karth>  
PS C:\Users\karth> & C:/Users/karth/AppData/Local/Programs/Python/Python312/python.exe c:/Users/karth/OneDrive/Desktop/daa.py  
Element is present at index 3  
PS C:\Users\karth>
```

Time complexity:

$F(n)=O(\log n)$