79.Finding the Maximum and Minimum

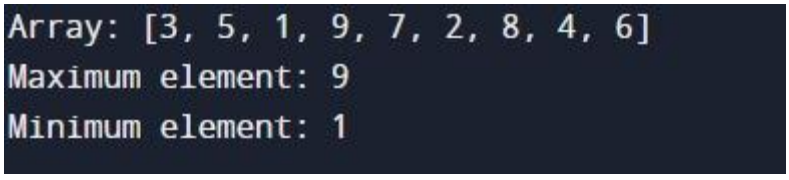
AIM: To find the maximum and minimum element for an array by using divide and conquer method

PROGRAM:

```
def find_max_min(arr):
    def divide_and_conquer(arr, left, right):
        if left == right:
            return (arr[left], arr[left])
        if right - left == 1:
            return (max(arr[left], arr[right]), min(arr[left], arr[right]))
        mid = (left + right) // 2
        max1, min1 = divide_and_conquer(arr, left, mid)
        max2, min2 = divide_and_conquer(arr, mid + 1, right)
        return (max(max1, max2), min(min1, min2))
    n = len(arr)
    if n == 0:
        return (None, None)  # If array is empty
    max_val, min_val = divide_and_conquer(arr, 0, n - 1)
    return max_val, min_val


arr = [3, 5, 1, 9, 7, 2, 8, 4, 6]
max_val, min_val = find_max_min(arr)
print(f"Array: {arr}")
print(f"Maximum element: {max_val}")
print(f"Minimum element: {min_val}")
```

OUTPUT:



TIME COMPLEXITY: O (log n)