

Q). Given an array of points where $\text{points}[i] = [x_i, y_i]$ represents a point on the X-Y plane and an integer k , return the k closest points to the origin $(0, 0)$. The distance between two points on the X-Y plane is the Euclidean distance (i.e., $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$). You may return the answer in any order. The answer is guaranteed to be unique (except for the order that it is in).

Program:

```
import heapq
def kClosest(points, k):
    heap = []
    for (x, y) in points:
        dist = x * x + y * y
        heapq.heappush(heap, (dist, (x, y)))
    result = []
    for _ in range(k):
        result.append(heapq.heappop(heap)[1])
    return result
points = [[1, 3], [-2, 2], [5, 8], [0, 1]]
k = 2
print(kClosest(points, k))
```

Output:

```
C:\Users\srika\Desktop\CSA0863\pythonProject\.venv\Scripts\python.exe C:\Users\srika\Desktop\CSA0863\pythonProject\problem.py
[(0, 1), (-2, 2)]

Process finished with exit code 0
```

Time complexity: $O(k \log n)$