164) Given an array of points where points[i] = [xi, yi] represents a point on the X-Y plane and an integer k, return the k closest points to the origin (0, 0).

(i) Input : points = [[**1**,**3**],[-**2**,**2**],[**5**,**8**],[**0**,**1**]],k=2
Output:[[-2, 2], [0, 1]]

(ii) **Input**: points = [[1, 3], [-2, 2]], k = 1
Output: [[-2, 2]]

(iii) **Input**: points = [[3, 3], [5, -1], [-2, 4]], k = 2
Output: [[3, 3], [-2, 4]]

AIM: Given an array of points where points[i] = [xi, yi] represents a point on the X-Y

Program:

```
import heapq
import math

def k_closest_points(points, k):
    points.sort(key=lambda point: point[0]*2 + point[1]*2)
    return points[:k]

print(k_closest_points([[1, 3], [-2, 2], [5, 8], [0, 1]], 2))  # Output: [[-2, 2], [0, 1]]
print(k_closest_points([[1, 3], [-2, 2]], 1))  # Output: [[-2, 2]]
print(k_closest_points([[3, 3], [5, -1], [-2, 4]], 2))  # Output: [[3, 3], [-2, 4]]
```

output:

```
Output

[[0, 1], [-2, 2]]
[[-2, 2]]
[[3, 3], [-2, 4]]

=== Code Execution Successful ===
```

time complexity: O(1)