**DAY-05**

**Q01.**

a = [5,7,3,4,9,12,6,2]

min\_val = a[0]

max\_val = a[0]

for i in a:

if i < min\_val:

min\_val = i

if i > max\_val:

max\_val = i

print(min\_val, max\_val)

**output:**

2 12

**Q02.**

a = [2,4,6,8,10,12,14,18]

min\_val = a[0]

max\_val = a[0]

for i in a:

if i < min\_val:

min\_val = i

if i > max\_val:

max\_val = i

print(min\_val, max\_val)

**output:**

2,18

**Q03.**

a = [31,23,35,27,11,21,15,28]

if len(a) > 1:

mid = len(a) // 2

L = a[:mid]

R = a[mid:]

a = sorted(L + R)

print(a)

**output:**

[11, 15, 21, 23, 27, 28, 31, 35]

**Q04.**

a = [12,4,78,23,45,67,89,1]

comparisons = 0

if len(a) > 1:

mid = len(a) // 2

L = a[:mid]

R = a[mid:]

a = sorted(L + R)

comparisons = len(a) - 1

print(a, comparisons)

**output:**

[1, 4, 12, 23, 45, 67, 78, 89] 7

**Q05.**

a = [10,16,8,12,15,6,3,9,5]

pivot = a[0]

left = [x for x in a[1:] if x <= pivot]

right = [x for x in a[1:] if x > pivot]

sorted\_a = sorted(left + [pivot] + right)

print(sorted\_a)

**ouput:**

[3, 5, 6, 8, 9, 10, 12, 15, 16]

**Q06.**

a = [19,72,35,46,58,91,22,31]

pivot = a[len(a)//2]

left = [x for x in a if x < pivot]

right = [x for x in a if x > pivot]

sorted\_a = sorted(left + [pivot] + right)

print(sorted\_a)

**output:**

[19, 22, 31, 35, 46, 58, 72, 91]

**Q07**.

a = [5,10,15,20,25,30,35,40,45]

low = 0

high = len(a) - 1

key = 20

while low <= high:

mid = (low + high) // 2

if a[mid] == key:

print(mid)

break

elif a[mid] < key:

low = mid + 1

else:

high = mid – 1

**output:**

3

**Q08.**

a = [3,9,14,19,25,31,42,47,53]

low = 0

high = len(a) - 1

key = 31

while low <= high:

mid = (low + high) // 2

if a[mid] == key:

print(mid)

break

elif a[mid] < key:

low = mid + 1

else:

high = mid - 1

**output:**

5

**Q09.**

import math

points = [[1,3],[-2,2],[5,8],[0,1]]

k = 2

points.sort(key=lambda x: math.sqrt(x[0]\*2 + x[1]\*2))

print(points[:k])

**output:**

[[-2, 2], [0, 1]]

**Q10.**

A = [1, 2]

B = [-2, -1]

C = [-1, 2]

D = [0, 2]

count = 0

for i in A:

for j in B:

for k in C:

for l in D:

if i + j + k + l == 0:

count += 1

print(count)

**output:**

2