PW SKILLS

arr → 50, 25, 38, 44, 99, 16, 11, 21 (indices 0 1 2 3 4 5 6 7)

n = 8

Selection Sort

min_idx = i ↳ to store the index of min value.

i = 0

min_idx = ~~0~~ ~~1~~ ~~5~~ 6

0	1	2	3	4	5	6	7
11	~~25~~ 16	38	44	99	~~16~~ 25	50	21

i = 1

min_idx = ~~1~~ 5

0	1	2	3	4	5	6	7
11	16	~~38~~ 21	44 ↑	99 ↑	25 ↑	50 ↑	~~21~~ 38 ↑

i = 2

min_idx = ~~2~~ ~~5~~ 7

0	1	2	3	4	5	6	7
11	16	21	~~44~~ 25	99	~~25~~ 44	50	38

i = 3

min_idx = ~~3~~ 5

0	1	2	3	4	5	6	7
11	16	21	25	~~99~~ 38	44 ↑	50 ↑	~~38~~ 99 ↑

i = 4

min_idx = ~~4~~ ~~5~~ 7

0	1	2	3	4	5	6	7
11	16	21	25	38	44	50	99

i = 5

min_idx = 5

(n-1) iterations

i = 6

min_idx = 6

11, 16, 21, 25, 38, 44, 50, 99

Note :-

1) At every iteration, smallest element at the extreme left.

2) At every iteration, only 1 swap is required.

Analysis

Time complexity → $O(n^2)$

Space complexity → $O(1)$