

Ans 1: Python Program for selection Sort :-

The selection sort algorithm sorts an array by repeatedly finding the minimum element from (considering ascending order) from unsorted part and putting it at the beginning. The algorithm maintains two subarrays in a given array.

- 1) The subarrays in which is already sorted.
- 2) Remaining subarray which is unsorted.

In every iteration of selection sort, the minimum element (considering ascending order) from the unsorted subarray is picked and moved to the sorted subarray.

Program Solution :-

- Create a function selection-sort that takes a list as argument.
- Inside the function ~~not~~ create a loop with a loop variable i that counts from 0 to the length of the list - 1.
- Create a variable smallest with initial value i .
- Create an inner loop with the loop variable j that counts from $i + 1$ up to the length of the list - 1.
- Inside the inner loop, if the element at index

j is smaller than the element at index smallest, then set smallest equal to j .

- After the inner loop finishes, swap the element at indexes i and smallest.

Source Code :-

```
def selection_sort (a list):
```

```
    for i in range (0, len (a list) - 1):
```

```
        smallest = i
```

```
        for j in range (i + 1, len (a list)):
```

```
            if a list [j] < a list [smallest]:
```

```
                smallest = j
```

```
        a list [i], a list [smallest] = a list [smallest], a list [i]
```

```
a list = input ('Enter the list of numbers :').split ()
```

```
a list = [int (x) for x in a list]
```

```
selection_sort (a list)
```

```
print ('Sorted list: ', end = '')
```

```
print (a list)
```

Program Explanation :

- The user is prompted to enter a list of numbers.
- The list is passed to the selection_sort function.
- The sorted list is displayed.