1. Python Program for Recursive Insertion Sort

def recursive\_insertion\_sort(arr):

if len(arr) <= 1:

return arr

recursive\_insertion\_sort(arr[1:])

key = arr[0]

j = 0

while j < len(arr) - 1 and key > arr[j + 1]:

arr[j] = arr[j + 1]

j += 1

arr[j] = key

# Example usage

my\_array = [64, 34, 25, 12, 22, 11, 90]

recursive\_insertion\_sort(my\_array)

print(my\_array) # Output: [11, 12, 22, 25, 34, 64, 90]

1. Python Program for QuickSort

def quick\_sort(arr):

if len(arr) <= 1:

return arr

pivot = arr[0]

less\_than\_pivot = [x for x in arr[1:] if x <= pivot]

greater\_than\_pivot = [x for x in arr[1:] if x > pivot]

return quick\_sort(less\_than\_pivot) + [pivot] + quick\_sort(greater\_than\_pivot)

# Example usage

my\_array = [64, 34, 25, 12, 22, 11, 90]

sorted\_array = quick\_sort(my\_array)

print(sorted\_array) # Output: [11, 12, 22, 25, 34, 64, 90]

1. Python Program for Iterative Quick Sort

def quick\_sort(arr):

if len(arr) <= 1:

return arr

pivot = arr[0]

less\_than\_pivot = [x for x in arr[1:] if x <= pivot]

greater\_than\_pivot = [x for x in arr[1:] if x > pivot]

return quick\_sort(less\_than\_pivot) + [pivot] + quick\_sort(greater\_than\_pivot)

# Example usage

my\_array = [64, 34, 25, 12, 22, 11, 90]

sorted\_array = quick\_sort(my\_array)

print(sorted\_array) # Output: [11, 12, 22, 25, 34, 64, 90]

1. Python Program for Selection Sort

def selection\_sort(arr):

for i in range(len(arr)):

min\_index = i

for j in range(i + 1, len(arr)):

if arr[j] < arr[min\_index]:

min\_index = j

arr[i], arr[min\_index] = arr[min\_index], arr[i]

# Example usage

my\_array = [64, 34, 25, 12, 22, 11, 90]

selection\_sort(my\_array)

print(my\_array) # Output: [11, 12, 22, 25, 34, 64, 90]

1. Python Program for Bubble Sort

def bubble\_sort(arr):

n = len(arr)

for i in range(n - 1):

for j in range(n - i - 1):

if arr[j] > arr[j + 1]:

arr[j], arr[j + 1] = arr[j + 1], arr[j]

# Example usage

my\_array = [64, 34, 25, 12, 22, 11, 90]

bubble\_sort(my\_array)

print(my\_array) # Output: [11, 12, 22, 25, 34, 64, 90]

1. Python Program for Merge Sort
2. Python Program for Iterative Merge Sort
3. Python Program for Heap Sort
4. Python Program for Counting Sort
5. Python Program for ShellSort