Name : Yash Srivastava || Section - A || Roll. No - 63

Implementation and Analysis of Insertion Sort

```
def insertion_sort(arr):
   for i in range(1, len(arr)):
       key = arr[i]
       j = i - 1
       while j >= 0 and arr[j] > key:
           arr[j + 1] = arr[j]
           j = j - 1
       arr[j + 1] = key
   return arr


arr = list(map(int, input("Enter the value in Array: 
").split()))
insertion_sort(arr)
print("Sorted Array is: ")
for i in arr:
   print(i)
```

Input:

10 20 30 50 40 60

Output:

```
10
20
30
40
50
60
```

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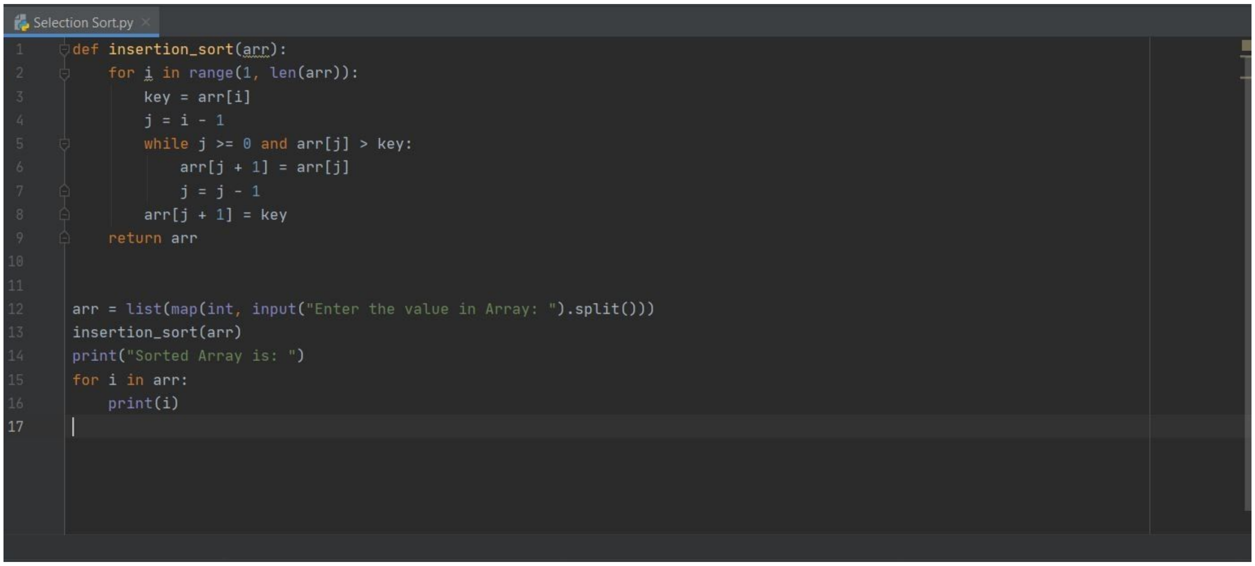
Time Complexity:

- O(n) in best case
- O(n^2) in worst and average case

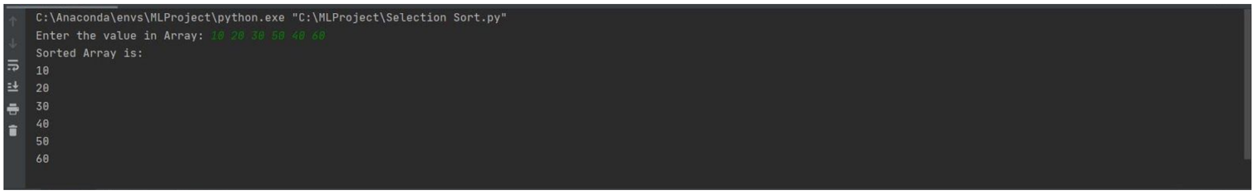
Program:



```python
def insertion_sort(arr):
    for i in range(1, len(arr)):
        key = arr[i]
        j = i - 1
        while j >= 0 and arr[j] > key:
            arr[j + 1] = arr[j]
            j = j - 1
        arr[j + 1] = key
    return arr


arr = list(map(int, input("Enter the value in Array: ").split()))
insertion_sort(arr)
print("Sorted Array is: ")
for i in arr:
    print(i)
```

Input/Output:



```
C:\Anaconda\envs\MLProject\python.exe "C:\MLProject\Selection Sort.py"
Enter the value in Array: 10 20 30 50 40 60
Sorted Array is:
10
20
30
40
50
60
```