

Day-21 Python DSA

Sorting

1. Selection Sort

<https://www.geeksforgeeks.org/problems/selection-sort/1>

class Solution:

```
def select(self, arr, i):
```

```
    n = len(arr)
```

```
    for i in range(0, n):
```

```
        min_index = i
```

```
        for j in range(i + 1, n):
```

```
            if arr[j] < arr[min_index]:
```

```
                min_index = j
            arr[i], arr[min_index] =
            arr[min_index], arr[i]
```

```
def selectionSort(self, arr):
```

```
    self.select(arr,0)
```

2. Bubble Sort

<https://www.geeksforgeeks.org/problems/bubble-sort/1>

class Solution:

```
def bubbleSort(self, arr):
```

```
    n = len(arr)
```

```
    for i in range(n-2, -1, -1):
```

```
        for j in range(0, i+1):
```

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

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

TC – $O(N^2)$

SC – $O(1)$

3. Insertion Sort

<https://www.geeksforgeeks.org/problems/insertion-sort/0>

```
class Solution:
```

```
    def insertionSort(self, 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 -= 1
```

```
            arr[j+1] = key
```

TC – $O(N^2)$

SC- $O(1)$