

# Insertion Sort Cheatsheet

## Overview

- Insertion sort is a simple sorting algorithm.
- It works by iterating through the array, comparing each element with the previous elements, and inserting it into its correct position.
- It is efficient for small data sets, but inefficient for large data sets.

## Algorithm

```
def insertion_sort(arr):  
    # Traverse through 1 to len(arr)  
    for i in range(1, len(arr)):  
        key = arr[i]  
        j = i - 1  
        # Move elements of arr[0..i-1], that are greater than key, to one position  
        # ahead of their current position  
        while j >= 0 and key < arr[j]:  
            arr[j + 1] = arr[j]  
            j -= 1  
        arr[j + 1] = key
```

## Time Complexity

- Worst-case performance:  $O(n^2)$
- Best-case performance:  $O(n)$
- Average-case performance:  $O(n^2)$

## Resources

- [Insertion Sort Wikipedia](#)
- [GeeksforGeeks: Insertion Sort](#)
- [Visualgo: Insertion Sort](#)