

# Insertion Sort in R

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This function implements the insertion sort algorithm. The basic idea of insertion sort is to maintain a sorted sublist in the lower positions of the list, and then pick the element from the upper part and put it in the correct position. Its average case time complexity is  $O(n^2)$ .

```
insertion.sort <- function(vec){  
  # Iterate over the vector  
  for(i in 2:length(vec)){  
    # Initialize the index of the element to be inserted  
    j <- i  
    # While the index of the element to be inserted is greater than 0  
    while(j > 1 && vec[j] < vec[j-1]){  
      # Swap the elements  
      temp <- vec[j]  
      vec[j] <- vec[j-1]  
      vec[j-1] <- temp  
      # Decrement the index of the element to be inserted  
      j <- j - 1  
    }  
  }  
  vec  
}
```

## Example

```
vector <- c(7,6,5,1,0,9,5,5)  
insertion.sort(vector)
```

```
## [1] 0 1 5 5 5 6 7 9
```