

VE203 Assignment 5

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Exercise 5.1

i)

Require: a_0, \dots, a_{n-1} , n unsorted elements

Ensure: all the a_i , $0 \leq i < n$ in increasing order

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1: for  $i \leftarrow 1$  to  $n - 1$  do
2:    $left \leftarrow 0$ 
3:    $right \leftarrow i$ 
4:   while  $left < right$  do
5:      $middle \leftarrow \lfloor (left + right)/2 \rfloor$ 
6:     if  $a[i] < a[middle]$  then
7:        $right = middle$ 
8:     else
9:        $left = middle + 1$ 
10:    end if
11:  end while
12:   $temp \leftarrow a[i]$ 
13:  for  $j \leftarrow i$  to  $l + 1$  do
14:     $a[j] \leftarrow a[j - 1]$ 
15:  end for
16:   $a[left] \leftarrow temp$ 
17: end for
```

ii)