

# Algorithm Examples

Your Name

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## 1 Introduction

This document demonstrates algorithm pseudocode.

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**Algorithm 1** Binary Search

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```
1: procedure BINARYSEARCH( $A, x, low, high$ )
2:   if  $low > high$  then
3:     return  $-1$ 
4:   end if
5:    $mid \leftarrow \lfloor (low + high)/2 \rfloor$ 
6:   if  $A[mid] = x$  then
7:     return  $mid$ 
8:   else if  $A[mid] > x$  then
9:     return BINARYSEARCH( $A, x, low, mid - 1$ )
10:  else
11:    return BINARYSEARCH( $A, x, mid + 1, high$ )
12:  end if
13: end procedure
```

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**Algorithm 2** Quick Sort

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```
1: procedure QUICKSORT( $A, p, r$ )
2:   if  $p < r$  then
3:      $q \leftarrow \text{PARTITION}(A, p, r)$ 
4:     QUICKSORT( $A, p, q - 1$ )
5:     QUICKSORT( $A, q + 1, r$ )
6:   end if
7: end procedure
```

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## 2 Complexity Analysis

The time complexity is  $O(n \log n)$  on average.