Assignment 4

Algorithms & Complexity (CIS 522-01)

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Part A: Read the solved exercises and Practice

Solved excercise #1 in Chapter 5

Algorithm Pseudocode

Algorithm 1 Finding maximum pseudocode

```
1: function FindMaximum(pos_start, pos_end, array)
2:     n = (pos_start + pos_end)/2
3:     if array(n/2 − 1) < array(n/2) < array(n/2 + 1) then
4:         We have a positive slope, so we havent reached the maximum yet
5:         FindMaximum((pos_start + pos_end)/2, pos_end, array)
6:     else if array(n/2 − 1) > array(n/2) > array(n/2 + 1) then
7:         We have a negative slope, we already passed the maximum
8:         FindMaximum(pos_start, (pos_start + pos_end)/2)
9:     else if array(n/2 − 1) > array(n/2) < array(n/2 + 1) then
10:        We have found the maximum point
11:        return value(n/2)
12:    end if
13: end function
```

Solution for problem instance of size 10

Time Complexity

Solved exercise #2 in Chapter 5

Algorithm Pseudocode

Solution for problem instance of size 10

Time Complexity

Part B: Problem Solving

Significant inversion

Local minimum