Problem 4 Oscillating subsequence

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Analysis:
Recurrence:

Algorithm 1:

Input:
Output:

1 ;   //
2
3 **for** *i = 2 to k* **do**
4   **for** $j = 0 to 1$ **do**
5
6 **return**

Runtime Analysis: To bound the running time

Proof of Correctness using induction:

Claim:

Base Case:

Inductive Case:

-If

-If

We have now exhausted the sample space,