

Astana IT University
Design and analysis of algorithm
Assignment 2

Group: SE-2401

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Algorithms: Kadane's Algorithm, Boyer-Moore Majority Vote

Kadane's Algorithm:

Before:

100

Maximum Subarray Sum: 3297

Start Index: 65

End Index: 77

Execution Time: 20242900 ns

1000

Maximum Subarray Sum: 22722

Start Index: 115

End Index: 559

Execution Time: 42585800 ns

10000

Maximum Subarray Sum: 23914

Start Index: 8387

End Index: 8818

Execution Time: 2702600 ns

100000

Maximum Subarray Sum: 217401

Start Index: 67149

End Index: 95535

Execution Time: 9571600 ns

After:

100

Maximum Subarray Sum: 5718

Start Index: 20

End Index: 32

Execution Time: 2687300 ns

1000

Maximum Subarray Sum: 11326

Start Index: 580

End Index: 829

Execution Time: 12306100 ns

10000

Maximum Subarray Sum: 58071

Start Index: 9165

End Index: 9978

Execution Time: 3401900 ns

Maximum Subarray Sum: 110417

Start Index: 14443

End Index: 52660

Execution Time: 52603400 ns

**Boyer-Moore Majority Vote
Before:**

100

No majority element found

Comparisons: 162

Array accesses: 200

Execution Time: 0.037375 ms

1000

Majority element: 0

Comparisons: 1563

Array accesses: 2000

Execution Time: 0.396083 ms

10000

Majority element: 1

Comparisons: 15133

Array accesses: 20000

Execution Time: 1.475291 ms

100000

Majority element: 0

Comparisons: 150312

Array accesses: 200000

Execution Time: 14.184916 ms

After:

100

Majority element: 0

Comparisons: 200

Array accesses: 200

Execution Time: 0.033083 ms

1000

Majority element: 0

Comparisons: 2000

Array accesses: 2000

Execution Time: 0.294458 ms

10000

Majority element: 0

Comparisons: 20000

Array accesses: 20000

Execution Time: 1.917708 ms

100000

Majority element: 0

Comparisons: 200000

Array accesses: 200000

Execution Time: 11.556125 ms