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ACME Corporation and AJAX Inc. Sorting Algorithm Analysis

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COLUMBUS
SOFTWARE
SOLUTIONS

Overview

- Columbus Software Solutions is looking for a method to implement a new sorting platform.
  - The choices are AJAX Inc. and ACME Corp.

AJAX CORP (Cost per sort request)	Cost
up to 100,000 daily requests	$1,000 USD per request
Between 100,001 to 1,000,000 requests daily requests	$10,000 USD per request
(each request can sort up to 1000 records)	

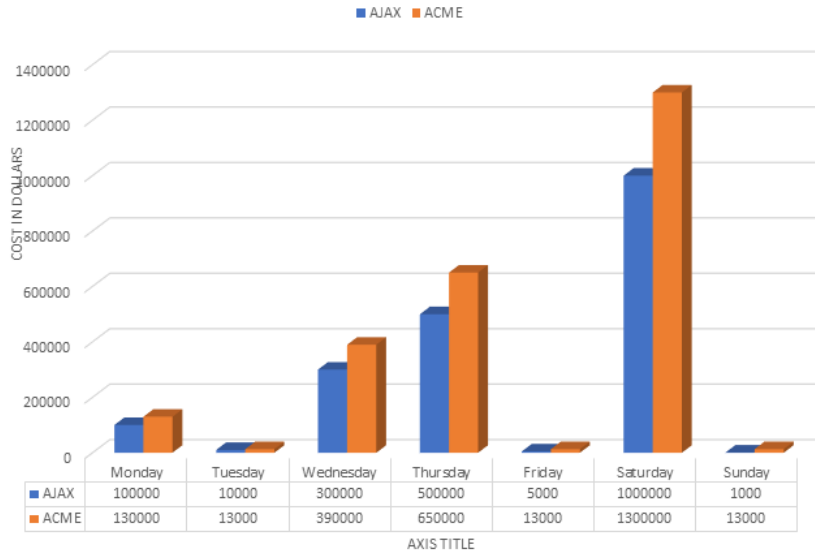| ACME CORP (Cost per item to sort)	Cost
up to 100 items to sort per request	$1.00 USD per request
up to 1000 items to sort per request	$700 USD per request
up to 1,000,000 items to sort per request	$13,000 per request

Analysis

We carefully experimented with both algorithms and determined:

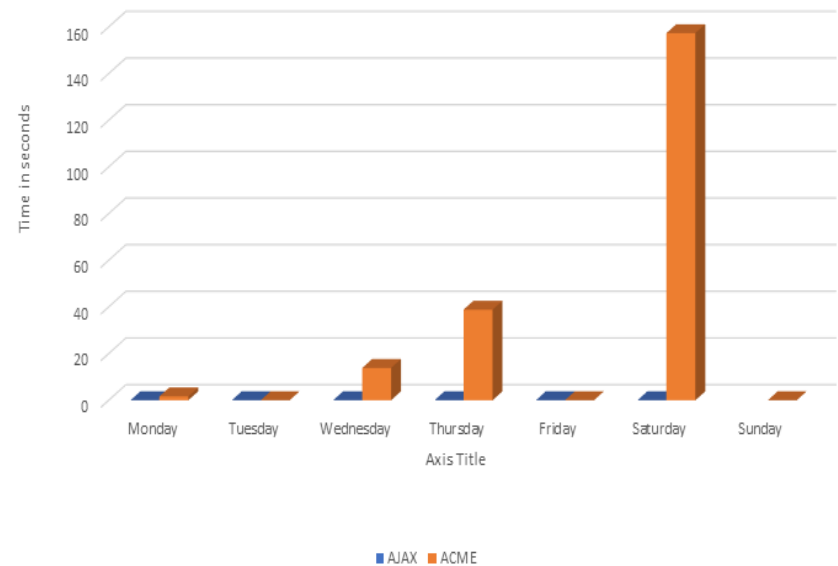AJAX had a complexity of $O(n \log_2(n))$ - implements a quick sort

ACME had a complexity of $O(n(n+1)/2)$ - implements a bubble sort
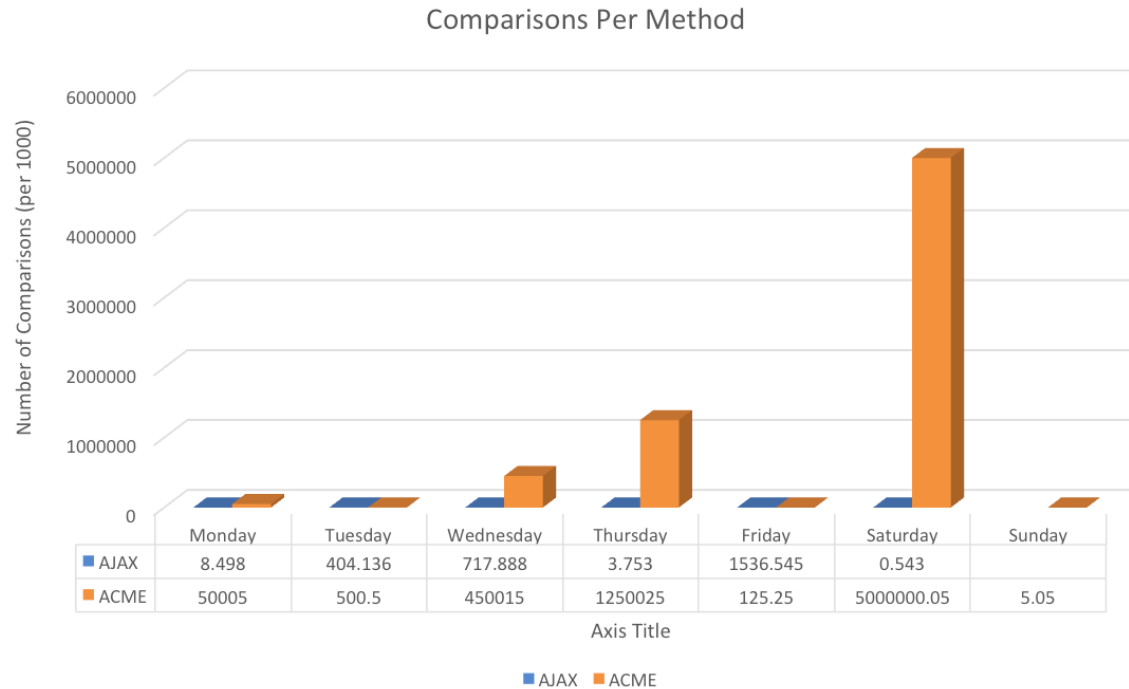
Results from the Analysis

Price Per Method

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
AJAX	100000	10000	300000	500000	5000	1000000	1000
ACME	130000	13000	390000	650000	13000	1300000	13000

Time Per Method

Results continued

Comparisons Per Method

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
AJAX	8.498	404.136	717.888	3.753	1536.545	0.543	
ACME	50005	500.5	450015	1250025	125.25	5000000.05	5.05

Number of Comparisons (per 1000)

Axis Title

AJAX ACME
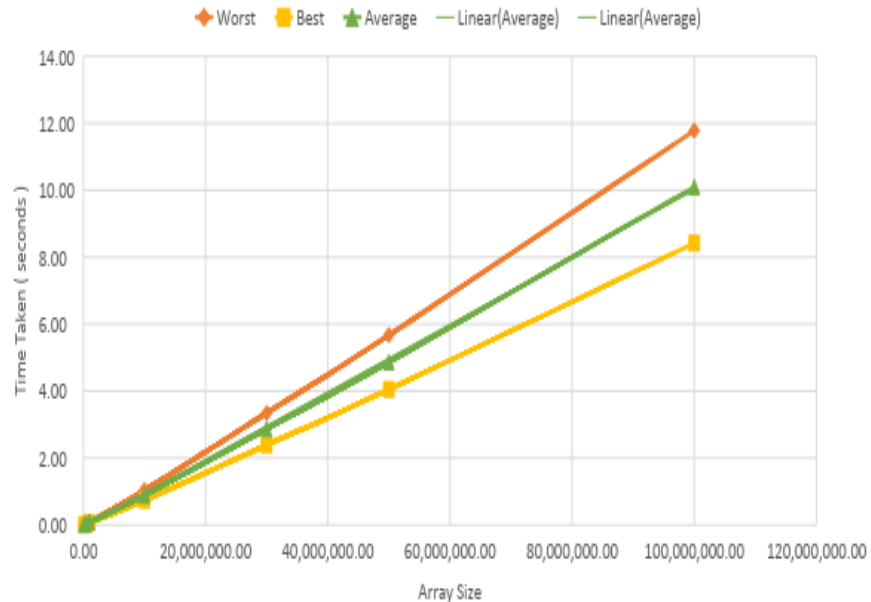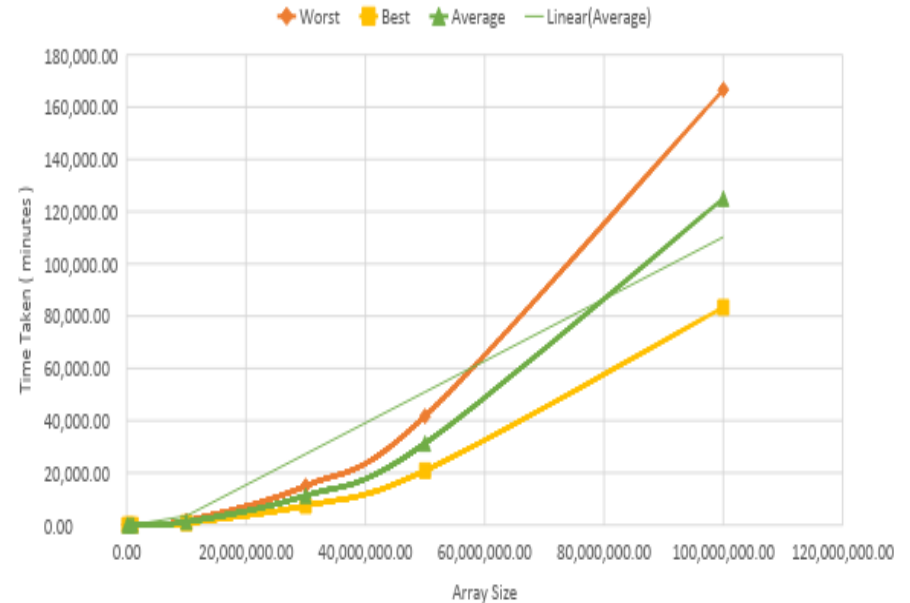
Results continued

Future Predictions AJAX

Future Predictions ACME

Evaluation

- AJAX will be chosen to implement Columbus Software Solutions' sorting platform. AJAX is faster and cheaper than ACME.

AJAX's sorting algorithm is 235, 300 times faster (average case) than ACME's algorithm.