**<Last Name>, <First Name>**

<Date>

Harvard Extension - Big Data Principles e88

**Homework 11: Distributed Indexing and Search with ElasticSearch**

Please identify which problems were completed. If any were incomplete, please identify where you encountered problems:

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| Problem 1:  Problem 2:  Problem 3:  Problem 4:  Problem 5: Bonus  Problem 6: Bonus |

**Problem 1 [25 points] ES setup**

Show main steps you took to install ES + X-Pack + Kibana [15 points]

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Include a screenshot of the Monitoring tab with your cluster state [10 points]

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**Problem 2 [25 Points] basic indexing into ES**

Show ES mapping you created for your data [10 points]

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Show CURL commands you used to index events into ES [5 points]

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Show results of the basic query - content of your index - you can limit the number of results to 10 or so [10 points]

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**Problem 3 [25 Points] basic ES queries and profiling**

Show code/JSON of your Q1 and the results of its execution: [10 points]

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Show code/JSON of your Q2 and the results of its execution: [10 points]

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Show results (screenshots) of the profiling of Q1 and Q2 [5] points

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**Problem 4 [25 Points] visualization of GEO data with Kibana**

Show the new mapping you created for your geo events [10 points]

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Show the new index you created and its content [5 points]

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Show your Kibana geohash grid with locations where TTFB > 5 seconds: [10 points]

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**Problem 5: [Bonus: +15 Points] programming with ES APIs**

Enter your well-commented code to index events into ES [5 points]

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Show execution of your application and a sample of the data inserted into ES [10 points]

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**Problem 6: [Bonus: +15 Points] Dashboard visualization with Kibana**

Show your Kibana Dashboard with the required elements: [10 points]

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Show results with a few different time ranges: [5 points]

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