

Assignment Project Exam Help Elastic Search

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What is Elasticsearch?

- Elasticsearch is a distributed, open source search and analytics engine for all types of data, including textual, numerical, geospatial, structured, and unstructured data

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- It indexes all fields on a document and they become instantly searchable.

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- Elasticsearch uses a data structure called an inverted index => very fast full-text searches. An inverted index lists every unique word that appears in any document and identifies all of the documents each word occurs in.

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Why use it?

- Elasticsearch is fast.
- Provides DSL (Domain specific language) based on JSON to define queries.
- One of the major use case of ES - Full text search. Example: log processing, text file searches
- Distributed by nature.
- Comes with a wide set of features (data rollups and index lifecycle management).
- Easily configurable with Kibana and therefore easy to visualize data.

Access control

- Public Access (Not secure)
- IP Based Access
- AWS IAM role/user based access. (Attach a policy to your ES domain and use AWS signature version 4 signing process to access it)
- Use your ElasticSearch cluster from inside a VPC (Most ideal)

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Authorize and query data

```
# https://search-demo-wsro5b325brukyrepugtbiury.us-east-2.es.amazonaws.com/  
from elasticsearch import Elasticsearch, RequestsHttpConnection  
from requests_aws4auth import AWS4Auth  
import boto3
```

```
def get_elastic_instance():
```

```
    host = 'search-demo-wsro5b325brukyrepugtbiury.us-east-2.es.amazonaws.com'  
    region = 'us-east-2'
```

```
    service = 'es'
```

```
    credentials = boto3.Session().get_credentials()
```

```
    awsauth = AWS4Auth(credentials.access_key, credentials.secret_key, region, service, session_token=credentials.token)
```

```
    es = Elasticsearch(  
        hosts=[{'host': host, 'port': 443}],  
        http_auth=awsauth,  
        use_ssl=True,  
        verify_certs=True,  
        connection_class=RequestsHttpConnection  
    )
```

```
    return es
```

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Authorize and query data

```
def query_elastic(key, value):  
    es = get_elastic_instance()  
    response = es.search(index="accounts",  
                          body={  
                              "query": {  
                                  "match": {  
                                      key: value  
                                  }  
                              }  
                          })  
    res = response['hits']['hits']  
    return res
```

```
def lambda_handler(event, context):  
    key = "address"  
    value = "mill lane"  
    res = query_elastic(key, value)  
  
    return {  
        'statusCode': 200,  
        'body': res  
    }
```

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Demo

1. <https://fj2ys6vtze.execute-api.us-east-2.amazonaws.com/demo>
2. <https://search-demo-wsro5b325brukyrepugtbuiry.us-east-2.es.amazonaws.com>
3. https://search-demo-wsro5b325brukyrepugtbuiry.us-east-2.es.amazonaws.com/_plogin/kibana/app/kibana#/discover?
4. <https://us-east-2.console.aws.amazon.com/es/home?region=us-east-2#domain:resource=demo;action=dashboard;tab=undefined>

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Query examples:

```
{ "query": { "match": { "state" : "NY" } } }
```

```
{ "query": { "wildcard": { "email": { "value": "*pheast.com" } } } }
```

References

<https://www.elastic.co/what-is/elasticsearch>

<https://www.elastic.co/guide/en/elasticsearch/reference/current/getting-started.html>

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<https://docs.aws.amazon.com/elasticsearch-service/latest/developerguide/es-request-signing.html#es-request-signing-python>

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<https://docs.aws.amazon.com/elasticsearch-service/latest/developerguide/es-ac.html>

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Multi match query: <https://www.elastic.co/guide/en/elasticsearch/reference/current/query-dsl-multi-match-query.html>

Wild card query: <https://www.elastic.co/guide/en/elasticsearch/reference/current/query-dsl-wildcard-query.html>