Elastic Certified Engineer Curriculum

## Day 1: Data Management and Searching Basics

### Learning Objectives

Understand the core concepts of indices, templates, and lifecycle management.

Master basic search functionalities, including term, phrase, and Boolean queries.

Content:

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Introduction to Elastic Stack (Elasticsearch, Kibana, Logstash, Beats)

Understanding indices, shards, and replicas

Defining indices with specific requirements

Creating and using index templates

Dynamic templates: Concept and use cases

Basic search queries: terms, phrases, and Boolean combinations

Asynchronous search

## Day 2: Advanced Searching and Aggregations

### Learning Objectives:

Grasp complex search queries and aggregations.

Learn to analyze and visualize data using aggregations.

Content:

Metric and bucket aggregations

Sub-aggregations: Combining aggregations for deeper insights

Runtime fields: Enhancing search capabilities

Query DSL: Deep dive into query structure

Performance optimization techniques

## Day 3: Developing Search Applications

### Learning Objectives:

Build interactive search applications.

Utilize search features to enhance user experience.

Content:

Highlighting search terms in results

Sorting search results

Pagination

Index aliases: Managing indices without downtime

Search templates: Predefined search queries

Integrating Elasticsearch with applications: APIs and libraries

## Day 4: Data Processing and Ingest

### Learning Objectives:

Understand data mapping and analysis.

Master data transformation and enrichment using ingest pipelines.

Content:

Defining mappings for different data types

Custom analyzers: Tailoring text analysis

Multi-fields: Storing data in multiple ways

Reindexing and updating documents: Reindex API and Update By Query API

Ingest pipelines: Processing data before indexing

Painless scripting: Customizing data transformations

## Day 5: Cluster Management and Troubleshooting

### Learning Objectives:

Manage and monitor Elasticsearch clusters.

Implement backup, restore, and disaster recovery strategies.

Content:

Index Lifecycle Management (ILM) for time-series data

Introduction to data streams

Cluster health and diagnostics

Shard management and rebalancing

Backup and restore: Snapshots and repositories

Searchable snapshots

Cross-cluster search

Cross-cluster replication

Throughout the course, hands-on exercises, quizzes, and practical projects will be incorporated to assess participants' learning.

## Additional Considerations

Hands-on Labs: Provide ample opportunities for hands-on practice with Elasticsearch and Kibana.

Real-world Examples: Use practical scenarios and datasets to illustrate concepts.

Certification Preparation: Align the curriculum with the Elastic Certified Engineer exam objectives.

Continuous Learning: Encourage participants to explore additional Elastic features and certifications.

By following this curriculum and incorporating hands-on learning, participants will develop a solid foundation in Elasticsearch and be well-prepared to tackle real-world challenges in data management and search.

Note: The time allocation for each topic can be adjusted based on the participants' experience level and the desired depth of coverage.