

1. Solution,

PUT recipes

```
{
  "mappings": {
    "_doc": {
      "dynamic": false,
      "properties": {
        "title": {
          "type": "text"
        },
        "description": {
          "type": "text"
        },
        "preparation_time_minutes": {
          "type": "integer"
        },
        "servings": {
          "properties": {
            "min": {
              "type": "integer"
            },
            "max": {
              "type": "integer"
            }
          }
        },
        "steps": {
          "type": "text"
        },
        "ingredients": {
          "type": "nested",
          "properties": {
            "name": {
              "type": "text"
            },
            "quantity": {
              "type": "keyword"
            }
          }
        },
        "created": {
          "type": "date",
          "format": "yyyy/MM/dd"
        },
        "ratings": {
          "type": "double"
        }
      }
    }
  }
}
```

```

    }
  }
}

```

PUT analyzed_index

```

{
  "settings": {
    "index": {
      "analysis": {
        "analyzer": {
          "custom_analyzer": {
            "type": "custom",
            "tokenizer": "standard",
            "filter": [
              "lowercase",
              "custom_stopwords",
              "synonyms_recipes"
            ]
          }
        },
        "filter": {
          "custom_stopwords": {
            "type": "stop",
            "stopwords": "_english_"
          },
          "synonyms_recipes": {
            "type": "synonym",
            "synonyms_path": "synonyms_recipes.txt"
          }
        }
      }
    }
  },
  "mappings": {
    "_doc": {
      "properties": {
        "description": {
          "type": "text",
          "analyzer": "custom_analyzer"
        },
        "steps": {
          "type": "text",
          "analyzer": "custom_analyzer"
        }
      }
    }
  }
}

```

```

    }
  }
}

```

2. Solution,

```

curl -H "Content-Type: application/json" -XPOST "http://localhost:9200/recipes/_doc/_bulk?pretty"
--data-binary @recipe.json

```

3. Solution,

POST recipes/_update_by_query?conflicts=proceed

```

{
  "query": {
    "range": {
      "preparation_time_minutes": {
        "lte": 15
      }
    }
  },
  "script": {
    "lang": "painless",
    "source": ""
    if ((ctx._source.servings.max - ctx._source.servings.min).contains([1,2,3])) {
    }
    ""
  }
}

```

4. Solution,

GET product/_search

```

{
  "query": {
    "bool": {
      "must_not": {
        "exists": {
          "field": "tags"
        }
      }
    }
  }
}

```

POST recipes/_update_by_query?conflicts=proceed

```

{
  "query": {
    "nested": {
      "path": "ingredients"
    }
  }
}

```

```

    }
  }
}

```

5. Solution,

POST recipes/_delete_by_query

```

{
  "query": {
    "term": {
      "ratings": "NULL"
    }
  }
}

```

6. Solution,

PUT recipes/_mapping/_doc

```

{
  "properties": {
    "steps": {
      "type": "text",
      "fielddata": true
    }
  }
}

```

GET recipes/_search

```

{
  "_source": ["title", "ratings", "steps"],
  "query": {
    "nested": {
      "path": "ingredients",
      "query": {
        "match": {
          "ingredients.name": "egg"
        }
      }
    }
  },
  "script_fields": {
    "number_of_steps": {
      "script": {
        "lang": "painless",
        "source": "params['_source']['steps'].size()"
      }
    }
  },
  "sort": [

```

```

    {
      "ratings": {
        "mode": "avg"
      }
    }
  ]
}

```

7. Solution,

GET recipes/_doc/_search

```

{
  "size":0,
  "aggs":{
    "avg_amount":{
      "avg": {
        "field": "preparation_time_minutes"
      }
    }
  }
}

```

PUT recipes/_mapping/_doc

```

{
  "properties": {
    "num_of_ingredients": {
      "type": "integer"
    }
  }
}

```

POST recipes/_doc/_update_by_query

```

{
  "query": {
    "match_all": {}
  },
  "script": {
    "source": "ctx._source.num_of_ingredients = ctx._source.ingredients.size()"
  }
}

```

POST orders/_doc/_update_by_query

```

{
  "script": {
    "source": "ctx._source.enhance=10"
  },
  "query": {
    "match_all": {}
  }
}

```

```
}
```

GET recipes/_doc/_search

```
{
  "size": 0,
  "aggs": {
    "weighted_avg_amount": {
      "weighted_avg": {
        "value": {
          "field": "preparation_time_minutes"
        },
        "weight": {
          "field": "enhance"
        }
      }
    }
  }
}
```

GET recipes/_doc/_search

```
{
  "size": 0,
  "aggs": {
    "total_ingredients": {
      "max": {
        "field": "preparation_time_minutes"
      }
    }
  }
}
```

GET recipes/_doc/_search

```
{
  "size": 0,
  "aggs": {
    "total_ingredients": {
      "sum": {
        "field": "preparation_time_minutes"
      }
    }
  }
}
```

GET recipes/_doc/_search

```
{
  "size": 0,
  "aggs": {
```

```
      "total_ingredients": {
        "min": {
          "field": "preparation_time_minutes"
        }
      }
    }
  }
}
```

GET recipes/_doc/_search

```
{
  "size": 0,
  "aggs": {
    "num_of_ingredients": {
      "terms": {
        "field": "created",
        "missing": "1970/01/01",
        "min_doc_count": 0
      }
    }
  }
}
```

GET recipes/_doc/_search

```
{
  "size": 0,
  "aggs": {
    "created": {
      "terms": {
        "field": "created",
        "size": 5,
        "show_term_doc_count_error": true,
        "order": {
          "_key": "asc"
        }
      }
    }
  }
}
```

GET recipes/_doc/_search

```
{
  "size": 0,
  "aggs": {
    "preparation_time_range": {
      "range": {
        "field": "preparation_time_minutes",
        "ranges": [
```

```

        {
            "from": 10,
            "to": 25
        }
    ]
}
}
}
}

```

GET recipes/_doc/_search

```

{
  "size": 0,
  "aggs": {
    "preparation_time_range": {
      "range": {
        "field": "preparation_time_minutes",
        "ranges": [
          {
            "key": "quick recipes",
            "to": 10
          },
          {
            "key": "failry quick recipes",
            "from": 10,
            "to": 25
          },
          {
            "key": "very long recipes",
            "from": 25
          }
        ]
      }
    }
  }
}

```

GET recipes/_doc/_search

```

{
  "size": 0,
  "aggs": {
    "created_range": {
      "date_range": {
        "field": "created",
        "format": "yyyy/mm/dd",
        "ranges": [
          {

```



```

        "to": "2010/01/01"
      },
      {
        "from": "2010/01/01"
      }
    ]
  }
}
}
}

```

GET recipes/_doc/_search

```

{
  "size": 0,
  "aggs": {
    "preparation_time_range": {
      "range": {
        "script": {
          "source": "doc.preparation_time_minutes.value"
        },
        "keyed": true,
        "ranges": [
          {
            "key": "quick recipes",
            "to": 10
          },
          {
            "key": "fairly quick recipes",
            "from": 10,
            "to": 25
          },
          {
            "key": "very long recipes",
            "from": 25
          }
        ]
      },
    },
    "aggs": {
      "statistics": {
        "stats": {
          "script": {
            "source": "doc.preparation_time_minutes.value"
          }
        }
      }
    }
  }
}

```

```

    }
  }
}

GET recipes/_doc/_search
{
  "size": 0,
  "aggs": {
    "preparation_time_minutes": {
      "terms": {
        "field": "preparation_time_minutes"
      },
      "aggs": {
        "created": {
          "terms": {
            "field": "created"
          }
        }
      }
    }
  }
}

```

8. Solution,

```

GET recipes/_doc/_search
{
  "query": {
    "bool": {
      "must": [
        {
          "match_phrase": {
            "title": {
              "query": "tomato",
              "slop": 3
            }
          }
        },
        {
          "fuzzy": {
            "description": {
              "value": "sause",
              "fuzziness": 2
            }
          }
        }
      ],
      "filter": [
        {

```

```

    "range": {
      "created": {
        "gt": "2010/01/01"
      }
    },
    {
      "query_string": {
        "default_field": "description",
        "query": "(paste) or (pasta)"
      }
    }
  ],
  "should": [
    {
      "range": {
        "preparation_time_minutes": {
          "gt": 15
        }
      }
    }
  ]
}
}
}

```

9. Solution,

GET recipes/_search

```

{
  "query": {
    "match": {
      "steps": {
        "query": "shaken but not stirred",
        "cutoff_frequency": 11
      }
    }
  }
}

```

GET recipes/_search

```

{
  "query": {
    "match": {
      "steps": {
        "query": "shaken but not stirred",
        "cutoff_frequency": 0.001
      }
    }
  }
}

```

```

    }
  }
}

```

10. Solution,

A.

PUT store

```

{
  "mappings": {
    "_doc": {
      "dynamic": false,
      "properties": {
        "item_id": {
          "type": "integer"
        },
        "name": {
          "type": "text"
        },
        "stock": {
          "type": "integer"
        },
        "vendor": {
          "properties": {
            "name": {
              "type": "text"
            },
            "contact": {
              "type": "keyword"
            },
            "address": {
              "type": "geo_point"
            }
          }
        }
      }
    }
  }
}

```

B.

PUT store/_doc/_bulk

```

{"index":{"_id":1}}
{"item_id":1,"name":"Sugar","stock": 300, "vendor": {"name": "Big Mart", "contact": "01556738", "address":
{"lat": 65.43, "lon": 43.54}}}
{"index":{"_id":2}}
{"item_id":2,"name":"Shampoo","stock": 150, "vendor": {"name": "Clinc Plus", "contact": "01665362", "address":
{"lat": 67.73, "lon": 34.74}}}
{"index":{"_id":3}}

```

```

{"item_id":3,"name":"Detergent","stock": 200, "vendor": {"name": "Surf Excel", "contact": "01419203", "address":
{"lat": 66.56, "lon": 39.78}}}
{"index":{"_id":4}}
{"item_id":4,"name":"Lipstick","stock": 100, "vendor": {"name": "Loreal", "contact": "01558732", "address": {"lat":
64.21, "lon": 42.74}}}
{"index":{"_id":5}}
{"item_id":5,"name":"Handcream","stock": 500, "vendor": {"name": "Himani", "contact": "01437283", "address":
{"lat": 66.32, "lon": 47.34}}}

```

C.

GET store/_search

```

{
  "query": {
    "bool": {
      "filter": {
        "geo_bounding_box": {
          "vendor.address": {
            "top_left": {
              "lat": 60,
              "lon": 50
            },
            "bottom_right": {
              "lat": 60,
              "lon": 50
            }
          }
        }
      }
    }
  }
}

```

D.

PUT category_items

```

{
  "mappings": {
    "_doc": {
      "dynamic": false,
      "properties": {
        "category": {
          "type": "text"
        }
      },
    },
    "items": {
      "type": "nested",
      "properties": {
        "item_ids": {
          "type": "integer"
        }
      }
    }
  }
}

```

```

    }
  }
}
}
}
}
}
}

```

E. PUT category_items/_doc/1

```

{
  "category": "cosmetic",
  "items": [
    {
      "item_ids": 4
    },
    {
      "item_ids": 5
    }
  ]
}

```

PUT category_items/_doc/2

```

{
  "category": "household",
  "items": [
    {
      "item_ids": 1
    },
    {
      "item_ids": 3
    }
  ]
}

```

F.

11. Solution,

POST /_aliases

```

{
  "actions": [
    {
      "add": {
        "index": "orders",
        "alias": "order_sample",
        "filter": {
          "bool": {
            "must": [
              {
                "query_string": {
                  "default_field": "status",

```

```

        "query": "(processed) or (completed)"
      }
    },
    {
      "query_string": {
        "default_field": "sales_channel",
        "query": "(phone) and (app)"
      }
    }
  ],
  {
    "range": {
      "total_amount": {
        "gte": 100
      }
    }
  }
]
}

```

12. Solution,

GET order_sample/_search

```

{
  "query": {
    "term": {
      "status": {
        "value": "completed"
      }
    }
  }
}

```

GET order_sample/_search

```

{
  "query": {
    "range": {
      "total_amount": {
        "gte": 150,
        "lte": 200
      }
    }
  }
}

```

```
GET order_sample/_search
{
  "query": {
    "prefix": {
      "salesman.name": "lena"
    }
  }
}
```

```
GET order_sample/_search
{
  "query": {
    "wildcard": {
      "salesman.name": "l???a"
    }
  }
}
```

```
GET order_sample/_search
{
  "query": {
    "wildcard": {
      "salesman.name": "l*a"
    }
  }
}
```

```
GET order_sample/_search
{
  "query": {
    "match": {
      "salesman.name": "rene"
    }
  }
}
```

```
GET order_sample/_search
{
  "query": {
    "match": {
      "salesman.name": {
        "query": "lena",
        "fuzziness": 2
      }
    }
  }
}
```