# Unit 9: Faceted Search

# Learning Objectives

- Describe faceted search and its prerequisites.
- Calculate facet values and return them in the search response.
- Work with facet values in your application code.
- Create a bucketed constraint.

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# Examples of Facets

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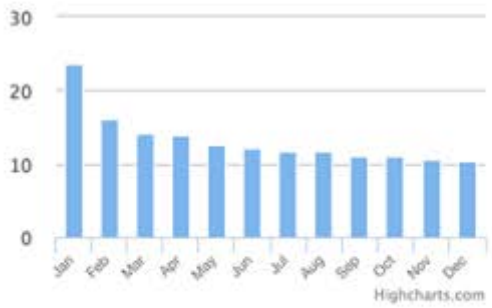


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# Facet Prerequisites

- Create a Range Index

**range element index** -- *An index for fast element inequality comparisons.* delete

**scalar type**
string
An atomic type specification.

**namespace uri**
http://marklogic.com/MLU/top-songs
A namespace URI.

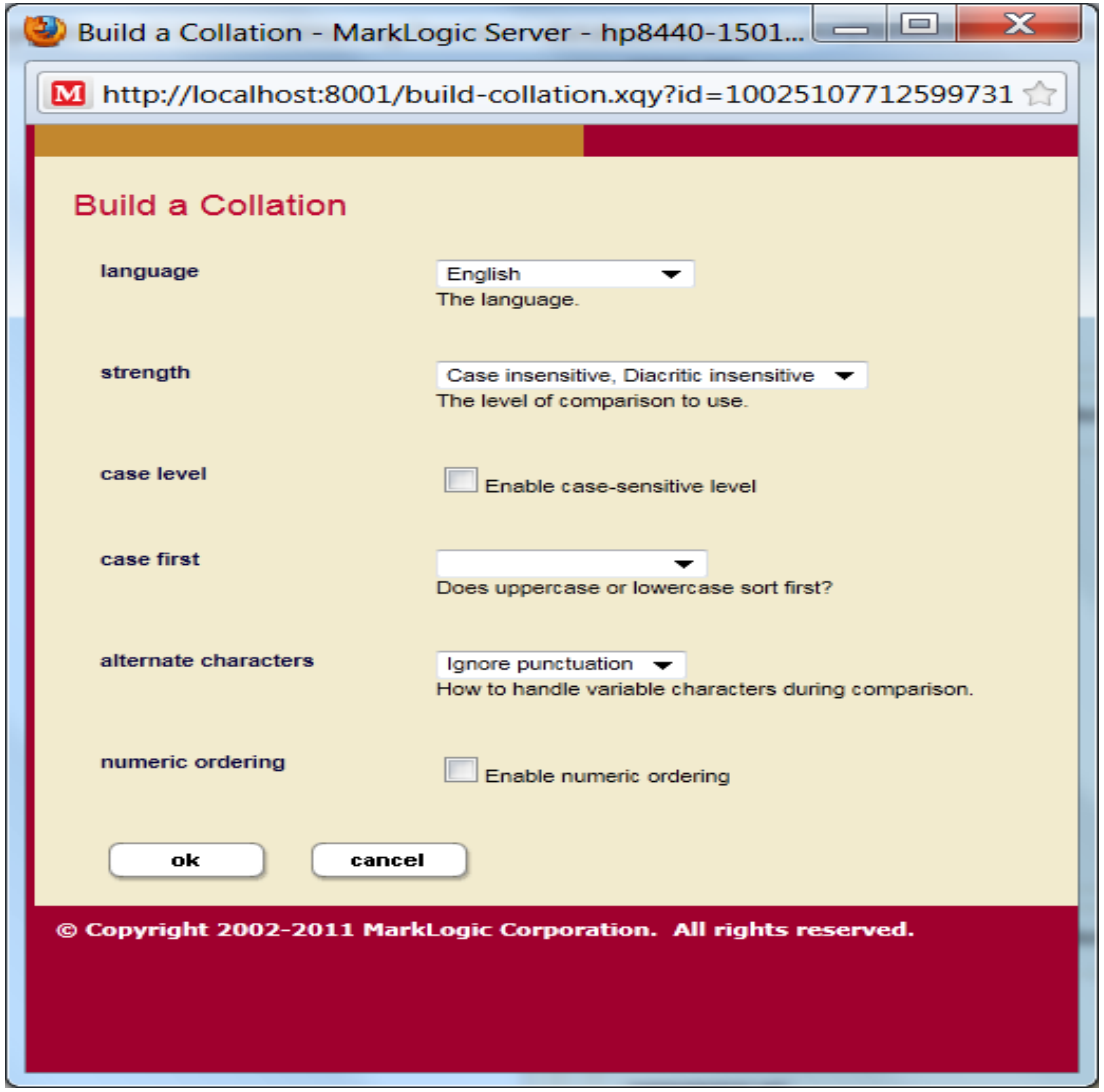
**localname**
artist
One or more localnames.

**collation**
arklogic.com/collation/en/S1/AS/T00BB collation builder
A collation URI for string comparisons.

**range value positions**
true false
Index range value positions for faster near searches involving range queries (slower document loads and larger database files).

# Facet Prerequisites

- Create a Collation
- For string range indexes
- Governs string comparisons
  - Doc 1:
    - <artist>The Beatles</artist>
  - Doc 2:
    - <artist>the beatles</artist>
  - What data will the range index on <artist> contain?



# Get Facet Data

- You'll need a query builder instance:

```
var qb = marklogic.queryBuilder;
```

- You'll need your database clients:

```
var dbRead = marklogic.createDatabaseClient(dbConn.restReader);
var dbWrite = marklogic.createDatabaseClient(dbConn.restWriter);
var dbAdmin = marklogic.createDatabaseClient(dbConn.restAdmin);
```

- Assume these things are in place for the next few code examples.

# Get Facet Data: The Full Response

- Query:

```
var qText = "coldplay";

dbRead.documents.query(
    qb.where(
      qb.parsedFrom(qText)
    )
    .calculate(
      qb.facet("artist")
    )
    .slice(1, 2, qb.extract({
        paths: ["//artist", "//title"]
      })
    )
).result( function(responseData) {
  console.log("----FULL RESPONSE DATA----");
  console.log(responseData);
});
```

- Response:

```
----FULL RESPONSE DATA----
[ { 'snippet-format': 'empty-snippet',
    total: 9,
    start: 1,
    'page-length': 2,
    results: [],
    facets: { artist: [Object] } },
  { uri: '/songs/Coldplay+Viva-la-Vida.json',
    category: 'content',
    format: 'json',
    contentType: 'application/json',
    contentLength: '122',
    content:
     { context: 'fn:doc("/songs/Coldplay+Viva-la-Vida.json")',
       extracted: [Object] } },
  { uri: '/songs/Katy-Perry+I-Kissed-a-Girl.json',
    category: 'content',
    format: 'json',
    contentType: 'application/json',
    contentLength: '132',
    content:
     { context: 'fn:doc("/songs/Katy-Perry+I-Kissed-a-Girl.json")',
       extracted: [Object] } } ]
```

- The full response is an array.
  - Item[0] contains the result summary and facet data.

# Get Facet Data: Digging Deeper

- Query:

```
console.log(responseData[0].facets);
```

- Response:

```
{ artist:
   { type: 'xs:string',
     facetValues:
      [ [Object],
        [Object],
        [Object],
        [Object],
        [Object],
        [Object],
        [Object],
        [Object],
        [Object] ] } }
```

```
console.log(responseData[0].facets.artist.facetValues);
```

```
[ { name: 'Beyoncé featuring Jay-Z',
    count: 1,
    value: 'Beyoncé featuring Jay-Z' },
  { name: 'Coldplay', count: 1, value: 'Coldplay' },
  { name: 'Jay Sean featuring Lil Wayne',
    count: 1,
    value: 'Jay Sean featuring Lil Wayne' },
  { name: 'Katy Perry', count: 1, value: 'Katy Perry' },
  { name: 'Michael Jackson', count: 1, value: 'Michael Jackson' },
  { name: 'Nelly', count: 1, value: 'Nelly' },
  { name: 'Nelly Furtado', count: 1, value: 'Nelly Furtado' },
  { name: 'OutKast', count: 1, value: 'OutKast' },
  { name: 'Ray Charles', count: 1, value: 'Ray Charles' } ]
```

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# Get Facet Counts

- Query:

```
dbRead.documents.query(
    qb.where(
      qb.parsedFrom(qText)
    )
    .calculate(
      qb.facet("artist")
    )
    .slice(1, 2, qb.extract({
        paths: ["//artist", "//title"]
      })
    )
).result( function(responseData) {

    responseData[0].facets.artist.facetValues.forEach(function(facet) {
    console.log(facet.value + " (" + facet.count + ")");

  });
});
```

- Response:

```
Beyoncé featuring Jay-Z (1)
Coldplay (1)
Jay Sean featuring Lil Wayne (1)
Katy Perry (1)
Michael Jackson (1)
Nelly (1)
Nelly Furtado (1)
OutKast (1)
Ray Charles (1)
```

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# Facet Options

- Customize the response data:
  - `marklogic.queryBuilder.facetOptions`

```
var qText = "the beatles";

dbRead.documents.query(
    qb.where(
      qb.parsedFrom(qText)
    )
    .calculate(
      qb.facet("artist", qb.facetOptions("frequency-order", "descending", "limit=10"))
    )
    .slice(1, 2, qb.extract({
        paths: ["//artist", "//title"]
      })
    )
).result( function(responseData) {
  responseData[0].facets.artist.facetValues.forEach(function(facet) {
    console.log(facet.value + " (" + facet.count + ")");
  });
});
```

```
The Beatles (19)
George Harrison (3)
Michael Jackson (2)
Whitney Houston (2)
"Honeycomb" Jimmie Rodgers (1)
"Learning the Blues" Frank Sinatra (1)
"Round and Round" Perry Como (1)
#cite_note-34[35] (1)
Bobby Goldsboro (1)
Bobby Vee (1)
```

# Bucketed Constraints

- Range queries with lower and upper bounds.
- Counts of documents that fall within defined ranges.

```
.calculate(
  qb.facet(
    "price",
    qb.bucket("0 to 10", "0", "<", "10"),
    qb.bucket("10 to 20", "10", "<", "20"),
    qb.bucket("20 to 30", "20", "<", "30"),
    qb.bucket("30 and up", "30", "<")
  )
)
```

# Debugging Facets

- First thing to always check:
  - Do I have a range index backing this up?
- Second thing to check:
  - Do I have the range index **exactly** as I'm specifying in my facet definition?
    - Correct data type?
    - If string range index, is collation correct?
- Example of trying to get facet results without a backing range index:

```
Error: query documents: response with invalid 400 status
```

# Labs: Unit 9

Exercise 1: Return and Process Facet Data
Exercise 2: Customize Facet Response Data
Exercise 3: Create a Second Facet
DIY: Create a Bucketed Constraint

# Unit Review Question 1:

These range indexes, defined on the same database, are the same and therefore interchangeable:

1. True
2. False

**scalar type** string
An atomic type specification.

**namespace uri**
A namespace URI.

**localname** artist
One or more localnames.

**collation** http://marklogic.com/collation/en/S1/AS/T00BB
collation builder
A collation URI for string comparisons.

**range value positions** true false
Index range value positions for faster near searches involving range queries (slower document loads and larger database files).

**invalid values** reject
Allow ingestion of documents that do not have matching type of data.

**scalar type** string
An atomic type specification.

**namespace uri**
A namespace URI.

**localname** artist
One or more localnames.

**collation** http://marklogic.com/collation/ Root Collation
collation builder
A collation URI for string comparisons.

**range value positions** true false
Index range value positions for faster near searches involving range queries (slower document loads and larger database files).

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Allow ingestion of documents that do not have matching type of data.

# Unit Review Question 1:

These range indexes, defined on the same database, are the same and therefore interchangeable:

1. True
2. **False**

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**range value positions** true false
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**scalar type** string ▼
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**namespace uri**
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**localname** artist
One or more localnames.

**collation** http://marklogic.com/collation/ Root Collation ▼
collation builder
A collation URI for string comparisons.

**range value positions** true false
Index range value positions for faster near searches involving range queries (slower document loads and larger database files).

**invalid values** reject ▼
Allow ingestion of documents that do not have matching type of data.

# Unit Review Question 2:

Facet values are returned from memory and are very fast:

1. True
2. False

# Unit Review Question 2:

Facet values are returned from memory and are very fast:

1. **True – remember, range indexes live in memory.**
2. False