
ENTRINSICON
LEVEL UP!
September 26th-29th, 2023
Raleigh, NC

Working with Large Datasets

Creation, Maintenance and Modification

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Agenda

1. How large can we get?
2. Initial Ingest
3. Updates
4. Adding columns
5. Questions?

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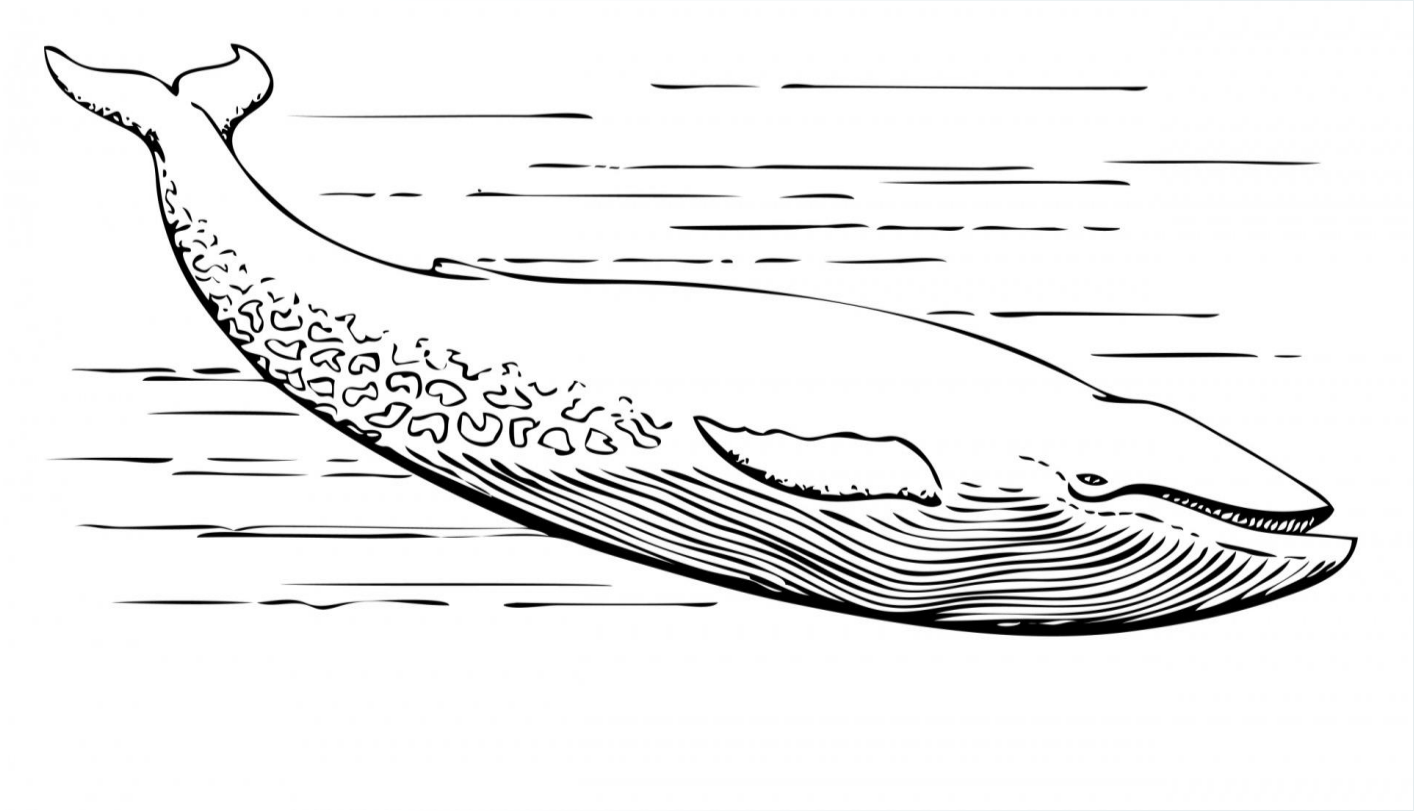
How large is large?

- Big as you want!
- Demo today is the Iowa Liquor Sales publicly available dataset.
- Filtering easier than database queries (and quicker).



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Creating a large dataset

- A huge query running in one thread has a limit for Records per Second (RPS)
- A single query against our 27 million row database table would simply not return any data
- Break up the query into smaller queries, to leverage multiple Informer threads, and database capabilities.

Entrinsik IR tool

- May be run on any computer that can log into Informer.
- Can stage many queries to run in parallel
- Works by filtering on date fields
- Installs with `npm install -g @entrinsik/ir`

Set up your dataset

- Create your dataset
- Add "on or after" and "on or before" conditions, with inputs
- Set your dataset to upsert or append mode. Upsert requires a column with a unique value

Prepare the ingest process with IR

- Clear any old tasks
- Edit the plan configuration file
- Load the ingest plan for staging
- Start your ingest server
- Start the ingest process

Ingest Plan – plan.json

```
{
  "defaults": {
    "tenant":["entrinsicon"]
  },
  "datasets": {
    "andrew:all-iowa-liquor-sales-2012": {
      "params": {
        "start": "${start.format('YYYY-MM-DD')}",
        "end": "${end.format('YYYY-MM-DD')}"
      },
      "interval": "P1M",
      "start": "2012-01-01",
      "end": "2012-02-28"
    }
  }
}
```

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INGEST DEMO

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Maintaining your large dataset

Query should now be adjusted to retrieve all the records since the last refresh data, on a schedule:

- Date on or after LAST_QUERIED_AT
- Remove inputs
- Put on schedule of your choosing
- Because we are in upsert mode, any invoice will be either updated or added

Adding fields - Elasticsearch Script

If you want to add a calculated field but don't want to reindex all 27M + rows, you might be able to use an Elasticsearch script field to your data. These are values derived from fields in each ES document (row). Today we'll add two fields: a arithmetic field to calculate profits per liter sold, and a location field, so we can make use of a Google maps visual to show the distribution of various products.

The script language is called "painless" and is proprietary to Elastic. Chat GPT helps tremendously with these.

Elasticsearch Script – Profit per liter

```
if(doc['bottleVolumeMl'].size()==0) return null;

// need 1000.00 because 1000 would result in a rounded integer
def multiplier = 1000.00 / doc['bottleVolumeMl'].value;

def retail = doc['stateBottleRetail'].size()==0 ? 0 :
doc['stateBottleRetail'].value;

def cost = doc['stateBottleCost'].size()==0 ? 0 :
doc['stateBottleCost'].value;
return (retail - cost) * multiplier;
```

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Elasticsearch Script – Location code

```
if(doc['storeLocation'].size() == 0) return null;

// the storeLocation looks like POINT (-95.144439 43.13837)

def pattern = /^POINT \(([0-9\.-]+) ([0-9\.-]+)\)$/;

def matcher = pattern.matcher(doc['storeLocation'].value);
if(matcher.matches()) {
      return [ 'lon' : Double.parseDouble(matcher.group(1)),
                  'lat' : Double.parseDouble(matcher.group(2))];
}
return null;
```

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Q & A

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Thank You

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