TECHNOLOGY SUMMIT 5.0
DIGITAL • MOBILE • GLOBAL

Enterprise Search

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Who Am I?

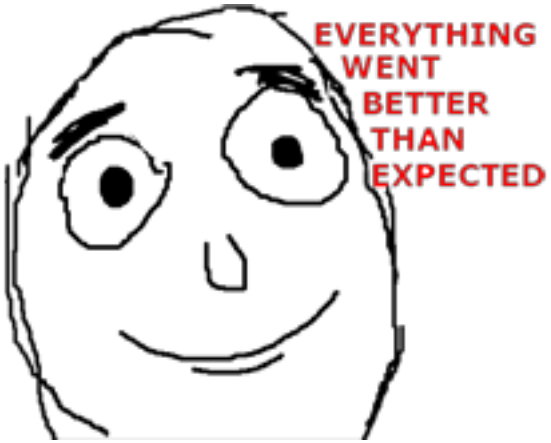
A Story You Have Heard Before

A Story You Have Heard Before

Shiny New Site!

Students

First Name	Last Name	Grade	Test
Jim	Johnson	8	Math
Jane	Li	6	Science
Karen	Anderson	9	Reading
Luke	Skywalker	4	Science



Version 2 - Your Designer Gets Clever

Shiny New Site 2.0!

Students

search

First Name	Last Name	Grade	Test
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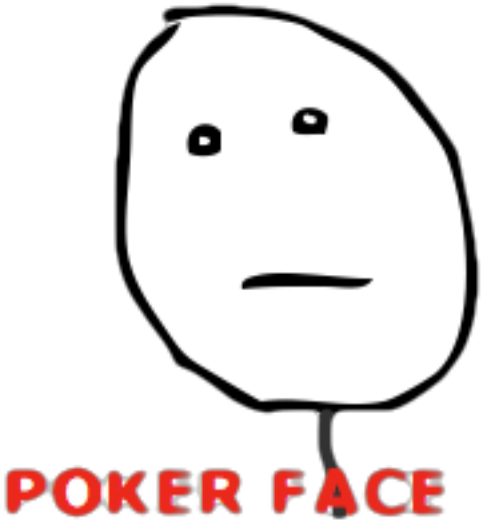
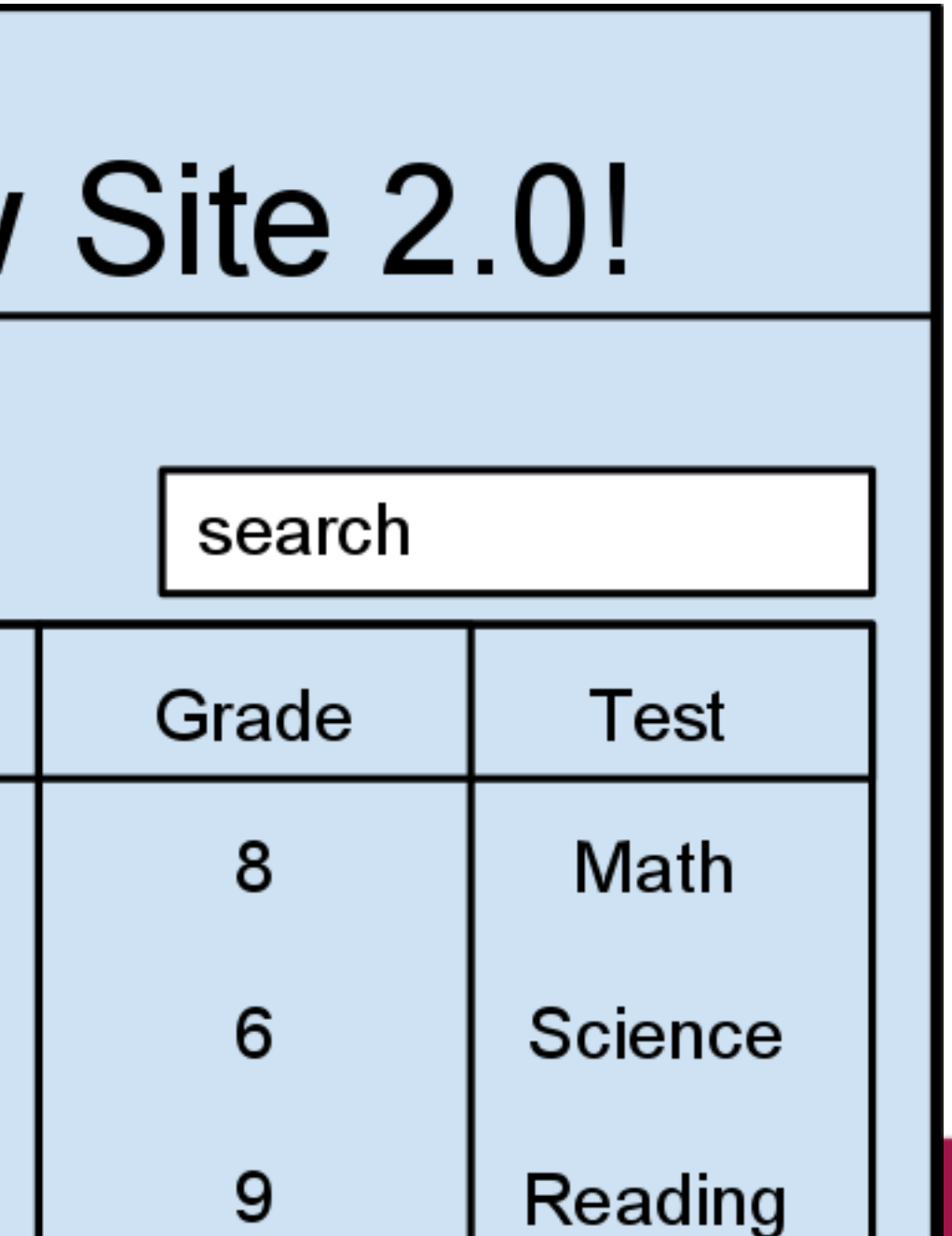
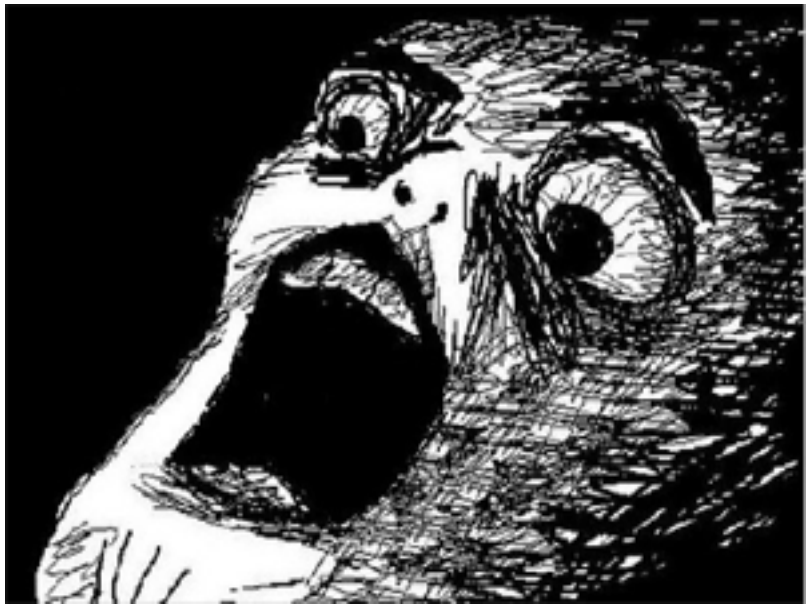




Looking at the requirements,



I need SEARCH

"I'll Use A Database Query!"

```
select * from students where
firstname like '%term%' or
lastname like '%term%' or code
like '%term%' order by lastname
```

select * from students where firstname like '%foo%' or lastname like '%foo%' or code like '%foo%' order by lastname

You will have to parse the input
"joe smith" => "joe", "smith"

Full Table Scan

Best results will not appear first

Wrong tool for the job.

DB FULLTEXT index?

Oracle, SQLServer, PostgreSQL, MySQL

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FULLTEXT not supported on InnoDB

Database FULLTEXT is a pretty good option.

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Avoid sync issues

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Little additional complexity

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Avoid sync issues

Little additional complexity

Few advanced features

The Cadillac of Search

Based on lucene

Lucene

- Low level Search API
- 100% Java
- Depends on local index files
- Esoteric API

Features of Solr

HTTP api

localhost:8983/solr.war/sele

localhost:8983/solr.war/select/?q=electronics&indent=on


```
▼<result name="response" numFound="3" start="0">
  ▼<doc>
    ▼<arr name="cat">
       <str>electronics</str>
       <str>memory</str>
     </arr>
     <str name="id">VS1GB400C3</str>
     <bool name="inStock">true</bool>
     <str name="manu">Corsair Microsystems Inc.</str>
     <date name="manufacturedate_dt">2006-02-13T15:26:37Z</date>
    ▼<str name="name">
       CORSAIR ValueSelect 1GB 184-Pin DDR SDRAM Unbuffered DDR 400 (PC 3200) System Memory - Retail
     </str>
     <str name="payloads">electronics|4.0 memory|2.0</str>
     <int name="popularity">7</int>
     <float name="price">74.99</float>
     <str name="store">37.7752,-100.0232</str>
   </doc>
  ▼<doc>
    ▼<arr name="cat">
       <str>electronics</str>
       <str>memory</str>
     </arr>
    ▼<arr name="features">
       <str>CAS latency 3, 2.7v</str>
     </arr>
     <str name="id">VDBDB1A16</str>
     <bool name="inStock">true</bool>
     <str name="manu">A-DATA Technology Inc.</str>
     <date name="manufacturedate_dt">2006-02-13T15:26:37Z</date>
    ▼<str name="name">
```

JSON Support

http://localhost:8983/solr.war/select/?q=electronics&indent=on&wt=json

{ "response":
{"numFound":3,"start":0, "docs":
[
{ "id":"VS1GB400C3", "name":"CORSAIR ValueSelect 1GB"
"manu":"Corsair Microsystems Inc.",
"price":74.99, "popularity":7, "inStock":true,
"store":"37.7752,-100.0232", "manufacturedate_dt":"2006-02-13T15
26:37Z", "payloads":"electronics|4.0 memory|2.0", "cat":["electronics","
memory"]},

Spellcheck

http://localhost:8983/solr/spell?q=delll&spellcheck=true&spellcheck.collate=true


```
<lst name="spellcheck">
  <lst name="suggestions">
    <lst name="delll">
      <int name="numFound">1</int>
      <int name="startOffset">0</int>
      <int name="endOffset">5</int>
      <arr name="suggestion">
          <str name="collation">dell ultrasharp</str>
    </lst>
</lst>
```

Suggestions

http://localhost:
8983/solr/suggest?q=ac

<?xml version="1.0" encoding="
UTF-8"?> <response> <lst
name="spellcheck"> <lst name="
suggestions"> <lst name="ac">
<int name="numFound">2</int>
<int name="startOffset">0</int>
<int name="endOffset">2</int>
<arr name="suggestion">
<str>acquire</str>
<str>accommodate</str> </arr>
</lst> <str name="collation"
>acquire</str> </lst> </lst>

Highlighting

http://localhost:8983/solr/select/?q=corsair&fl=name,id&hl=true&hl.fl=name,features


```
<lst name="highlighting">
  <lst name="VS1GB400C3">
    <arr name="name">
      <str>
<em>CORSAIR</em>
ValueSelect 1GB 184-Pin DDR
SDRAM Unbuffered DDR 400
(PC 3200) System Memory -
Retail
      </str>
    </arr>
  </lst>
```

Facet Query

http://localhost:8983/solr.war/select/?q=Corsair&facet=true&facet.field=inStock

```
<lst name="facet_counts">
  <lst name="facet_fields">
    <lst name="inStock">
      <int name="true">2</int>
    </lst>
  </lst>
</lst>
```

Advanced Queries

Search Specific Fields

firstName:John lastName:Smith

Required / Ignored Terms

division +math -biology

Exact Match

"C++ Vector"

Boolean Logic

(firstName:Jennifer AND lastName:Smith)

Sharding / Replication

DEMO

~ 15 minutes

Downsides

SPOT Principle
No Single Point Of Truth

SPOT Principle

Your data is now in two places.

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Partial Solution: Return IDs from Solr

SPOT Principle

Your data is now in two places.

Partial solution: return ID from Solr

Look up data from DB

Frequent commits == bad performance

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use commitAfter

Frequent commits == bad performance

use commitAfter

queue commits

Solr 4.0 - NRT

Solr 4.0 - NRT

Soft commit - real time updates

You know, for search.

- New kid on the block
- Real time updates
- No XML
- No schema

Questions?

Further Reading

- http://lucene.apache.org/solr/
- http://wiki.apache.org/solr/
- http://www.elasticsearch.org/
- https://github.com/tjake/Solandra