# GCD Assignments week 7

## Assignment 1: ZIPS.JSON

1. Download zips.json
2. Open a command window and run

mongoimport --db scratch --collection zips --file zips.json

Sanders-MacBook-Pro-3:MongoDB sandervanlaar$ mongoimport --db scratch --collection zips --file zips.json

connected to: 127.0.0.1

2015-01-26T15:17:53.925+0100 check 9 29353

2015-01-26T15:17:54.005+0100 imported 29353 objects

1. Inspect the data
   1. View the database
   2. View the collection
   3. View the data
2. Indexes
   1. Run find query on the data (without index):

db.zips.find().count()

db.zips.find({"city":"FLAGSTAFF"}).count()

db.zips.find({"city":"FLAGSTAFF"}).explain("executionStats")

* 1. Run find query on the data (with index):

db.zips.createIndex({"city" : 1})

db.zips.find().count()

db.zips.find({"city":"FLAGSTAFF"}).count()

db.zips.find({"city":"FLAGSTAFF"}).explain("executionStats")

* 1. Explain the difference.

**The query planner only examined two keys and two documents instead of the whole database.**

1. Queries
   1. How many records does the zips collection consist of?\

**db.zips.find().count()**

**The collection exists of 29353 documents.**

* 1. How many zipcodes are there in the state of Massachusetts?

**db.zips.find({state: "MA"}).count()**

**474**

* 1. Give all state names from the zips collection.

**db.zips.distinct("state")**

**"MA"**

**"RI",**

**"NH",**

**"ME",**

**"VT",**

**"CT",**

**"NY",**

**"NJ",**

**"PA",**

**"DE",**

**"DC",**

**"MD",**

**"VA",**

**"WV",**

**"NC",**

**"SC",**

**"GA",**

**"FL",**

**"AL",**

**"TN",**

**"MS",**

**"KY",**

**"OH",**

**"IN",**

**"MI",**

**"IA",**

**"WI",**

**"MN",**

**"SD",**

**"ND",**

**"MT",**

**"IL",**

**"MO",**

**"KS",**

**"NE",**

**"LA",**

**"AR",**

**"OK",**

**"TX",**

**"CO",**

**"WY",**

**"ID",**

**"UT",**

**"AZ",**

**"NM",**

**"NV",**

**"CA",**

**"HI",**

**"OR",**

**"WA",**

**"AK"**

* 1. Sort the state names alphabetically.

**db.zips.distinct("state").sort()**

**"AK",**

**"AL",**

**"AR",**

**"AZ",**

**"CA",**

**"CO",**

**"CT",**

**"DC",**

**"DE",**

**"FL",**

**"GA",**

**"HI",**

**"IA",**

**"ID",**

**"IL",**

**"IN",**

**"KS",**

**"KY",**

**"LA",**

**"MA",**

**"MD",**

**"ME",**

**"MI",**

**"MN",**

**"MO",**

**"MS",**

**"MT",**

**"NC",**

**"ND",**

**"NE",**

**"NH",**

**"NJ",**

**"NM",**

**"NV",**

**"NY",**

**"OH",**

**"OK",**

**"OR",**

**"PA",**

**"RI",**

**"SC",**

**"SD",**

**"TN",**

**"TX",**

**"UT",**

**"VA",**

**"VT",**

**"WA",**

**"WI",**

**"WV",**

**"WY"**

* 1. How many states are there in the zips collection?   
     **db.zips.distinct("state").count()**

**52**

* 1. How many cities have population of less than 50?

**db.zips.find({pop: {$lt: 50}}).count()**

**356**

* 1. Which cities have population of less than 50?

**db.zips.find({pop: {$lt: 50}}).count()**

**"BUCKLAND"**

**"CAMBRIDGE"**

**"CLAYVILLE"**

**"EAST HEBRON"**

**"WEST NOTTINGHAM"**

**"BUSTINS ISLAND"**

**"CUSHING ISLAND"**

**"FRYE"**

**"RUMFORD POINT"**

**"SQUIRREL ISLAND"**

**"CUSHING"**

**"ISLE AU HAUT"**

**"SARGENTVILLE"**

**"TAFTSVILLE"**

**"UNIV OF VERMONT"**

**"AVERILL"**

**"EAST KILLINGLY"**

**"TETERBORO"**

**"LEESBURG"**

**"IMLAYSTOWN"**

**"ROSEMONT"**

**"BEAR MOUNTAIN"**

**"SOUTHFIELDS"**

**"NEW HYDE PARK"**

**"BROOKLYN NAVY YA"**

**"FLUSHING"**

**"ASHLAND"**

**"GRAND GORGE"**

**"PILOT KNOB"**

**"PARADOX"**

**"SEVERANCE"**

**"SILVER BAY"**

**"CHILDWOLD"**

**"LAWRENCEVILLE"**

**"BROOKFIELD"**

**"EAST SPRINGFIELD"**

**"NEW LISBON"**

**"RAQUETTE LAKE"**

**"ROSEBOOM"**

**"VAN HORNESVILLE"**

**"WEST BURLINGTON"**

**"FORT DRUM"**

**"GILBERTSVILLE"**

**"MASONVILLE"**

**"MERIDALE"**

**"JAVA VILLAGE"**

**"CERES"**

**"KILL BUCK"**

**"HAMILTON"**

**"COOLSPRING"**

**"OLIVEBURG"**

**"NORTHPOINT"**

**"VALIER"**

**"SEANOR"**

**"COOKSBURG"**

**"LICKINGVILLE"**

**"MARBLE"**

**"KOSSUTH"**

**"OLANTA"**

**"POTTERSDALE"**

**"GENESEE"**

**"WESTPORT"**

**"LAWTON"**

**"PHILADELPHIA"**

**"WASHINGTON"**

**"PENTAGON"**

**"ANNAPOLIS JUNCTI"**

**"BALTIMORE"**

**"CHANCE"**

**"LORETTO"**

**"MITCHELLS"**

**"BASYE"**

**"COBHAM"**

**"KEENE"**

**"MILES"**

**"WARNER"**

**"WALLOPS ISLAND"**

**"RIPPLEMEAD"**

**"DAVENPORT"**

**"HOWARDSVILLE"**

**"KIEFFER"**

**"BURNWELL"**

**"MOUNT CARBON"**

**"STICKNEY"**

**"ROBSON"**

**"VAN"**

**"LEVELS"**

**"LAWTON"**

**"WINDING GULF"**

**"BROHARD"**

**"HELVETIA"**

**"SELBYVILLE"**

**"BLANDVILLE"**

**"BLACKSVILLE"**

**"FALLS MILL"**

**"RIO"**

**"LAHMANSVILLE"**

**"FISHER"**

**"MILAM"**

**"GLOUCESTER"**

**"ROARING GAP"**

**"QUINBY"**

**"ATLANTA"**

**"ATLANTA"**

**"FORT STEWART"**

**"CECIL FIELD NAS"**

**"LAKE BUENA VISTA"**

**"KENNEDY SPACE CE"**

**"MIAMI"**

**"ALLEN"**

**"CARLTON"**

**"MORVIN"**

**"MEMPHIS"**

**"ALLRED"**

**"JACKSON"**

**"BUCKNER"**

**"SAINT CATHARINE"**

**"SAINT FRANCIS"**

**"CUSTER"**

**"MC DANIELS"**

**"LAMERO"**

**"WOODBINE"**

**"BIG LAUREL"**

**"DAYHOIT"**

**"DIZNEY"**

**"TUTOR KEY"**

**"LAMBRIC"**

**"GILLMORE"**

**"ZACHARIAH"**

**"SPEIGHT"**

**"ENDICOTT"**

**"BROWDER"**

**"SLOANS VALLEY"**

**"TATEVILLE"**

**"ISLE SAINT GEORG"**

**"ANN ARBOR"**

**"RIDGEWAY"**

**"LELAND"**

**"COOKS"**

**"SIOUX CITY"**

**"CONROY"**

**"SOUTH AMANA"**

**"DOUDS"**

**"STAR PRAIRIE"**

**"NEOPIT"**

**"CLAM LAKE"**

**"LA POINTE"**

**"MINNEAPOLIS"**

**"JOHNSON"**

**"OAK ISLAND"**

**"HOLABIRD"**

**"KEYAPAHA"**

**"MAHTO"**

**"SHADEHILL"**

**"MARCUS"**

**"PROVO"**

**"REDOWL"**

**"SMITHWICK"**

**"ZEONA"**

**"TROTTERS"**

**"LUTHER"**

**"MOSBY"**

**"HOMESTEAD"**

**"RAYMOND"**

**"ANGELA"**

**"POWDERVILLE"**

**"WILLARD"**

**"EAST GLACIER PAR"**

**"LEDGER"**

**"CHICAGO"**

**"CHICAGO"**

**"CHICAGO"**

**"ROCKFORD"**

**"ANCONA"**

**"BRIDGETON"**

**"KANSAS CITY"**

**"KANSAS CITY"**

**"BENDAVIS"**

**"KANSAS CITY"**

**"KANSAS CITY"**

**"ARNOLD"**

**"GALATIA"**

**"NEW ALMELO"**

**"PENOKEE"**

**"LAKESIDE"**

**"LAFITTE"**

**"VARNADO"**

**"FORDOCHE"**

**"LOTTIE"**

**"TORBERT"**

**"SUMMERFIELD"**

**"SPENCER"**

**"ARKANSAS CITY"**

**"ETHEL"**

**"FRENCHMANS BAYOU"**

**"DRIVER"**

**"TOMATO"**

**"WISEMAN"**

**"OSCAR"**

**"SOUTHARD"**

**"KNOWLES"**

**"ROSSTON"**

**"ART"**

**"BEND"**

**"FORT MC KAVETT"**

**"TELEGRAPH"**

**"SILVER"**

**"HOUSTON"**

**"PASADENA"**

**"PORT O CONNOR"**

**"MEYERSVILLE"**

**"MC COY"**

**"ECLETO"**

**"GUERRA"**

**"FULTON"**

**"CORPUS CHRISTI"**

**"BLUFFTON"**

**"WRIGHTSBORO"**

**"TARPLEY"**

**"MULDOON"**

**"LIPSCOMB"**

**"FLOMOT"**

**"FIELDTON"**

**"TOKIO"**

**"GOLDSBORO"**

**"AURORA"**

**"CHEYENNE MTN AFB"**

**"ARLINGTON"**

**"TRINCHERA"**

**"POWDERHORN"**

**"TWIN LAKES"**

**"ELK SPRINGS"**

**"LARAMIE"**

**"MERIDEN"**

**"TIE SIDING"**

**"LOST SPRINGS"**

**"ARMINTO"**

**"ALCOVA"**

**"FOUR CORNERS"**

**"RANCHESTER"**

**"CORA"**

**"LONETREE"**

**"CLAYTON"**

**"CONDA"**

**"DARLINGTON"**

**"ISLAND PARK"**

**"FELT"**

**"KEUTERVILLE"**

**"LETHA"**

**"MEDIMONT"**

**"ALTONAH"**

**"DUCHESNE"**

**"BERYL"**

**"MOUNT CARMEL"**

**"MODENA"**

**"PINE VALLEY"**

**"SEVIER"**

**"BLUE"**

**"PAULDEN"**

**"HUALAPAI"**

**"NAVAJO"**

**"ALGODONES"**

**"JARALES"**

**"JEMEZ SPRINGS"**

**"LA JARA"**

**"REGINA"**

**"KIRTLAND A F B E"**

**"NAVAJO DAM"**

**"RUTHERON"**

**"MILLS"**

**"SAPELLO"**

**"BINGHAM"**

**"CROSSROADS"**

**"MILNESAND"**

**"ROGERS"**

**"CAPROCK"**

**"MONUMENT"**

**"OIL CENTER"**

**"PICACHO"**

**"BUEYEROS"**

**"MOUNT DORA"**

**"GLADSTONE"**

**"QUAY"**

**"NEWKIRK"**

**"NORTH LAS VEGAS"**

**"RUBY VALLEY"**

**"TUSCARORA"**

**"LOS ANGELES"**

**"TORRANCE"**

**"CHULA VISTA"**

**"CHULA VISTA"**

**"VIDAL"**

**"AMBOY"**

**"KELSO"**

**"TECOPA"**

**"IRVINE"**

**"O NEALS"**

**"CHUALAR"**

**"BIRDS LANDING"**

**"DAVENPORT"**

**"MOUNT HAMILTON"**

**"SAN JOSE"**

**"WILSEYVILLE"**

**"CHINESE CAMP"**

**"HORNITOS"**

**"PINECREST"**

**"ANNAPOLIS"**

**"DOS RIOS"**

**"MAD RIVER"**

**"ECHO LAKE"**

**"EMIGRANT GAP"**

**"TWIN BRIDGES"**

**"SACRAMENTO"**

**"ALLEGHANY"**

**"BELDEN"**

**"CANYONDAM"**

**"DOWNIEVILLE"**

**"OREGON HOUSE"**

**"SCOTT BAR"**

**"LITCHFIELD"**

**"VINTON"**

**"NINOLE"**

**"BRIDAL VEIL"**

**"KENT"**

**"ODELL"**

**"LYONS"**

**"GARDINER"**

**"DAIRY"**

**"SUMMER LAKE"**

**"BROTHERS"**

**"FORT ROCK"**

**"FOX"**

**"WESTFALL"**

**"APPLETON"**

**"KLICKITAT"**

**"PALISADES"**

**"BENGE"**

**"DANVILLE"**

**"LINCOLN"**

**"CHEVAK"**

**"CROOKED CREEK"**

**"GRAYLING"**

**"EMMONAK"**

**"NAKNEK"**

**"NIKOLSKI"**

**"PLATINUM"**

**"PORT ALSWORTH"**

**"RUSSIAN MISSION"**

**"SLEETMUTE"**

**"TRAPPER CREEK"**

**"DUTCH HARBOR"**

**"DENALI NATIONAL"**

**"LAKE MINCHUMINA"**

**"SELAWIK"**

**"SHUNGNAK"**

**"AMBLER"**

Tip: use <http://docs.mongodb.org/manual/core/read-operations-introduction/>

And <http://docs.mongodb.org/manual/tutorial/query-documents/>

1. GeoNear index
   1. Create a 2d index on location:

**db.zips.createIndex({"loc": "2dsphere"})**

* 1. Find locations within 50 000 meters (50km) from Flagstaff

Tip: <http://docs.mongodb.org/manual/reference/operator/query/near/>

**db.zips.find(**

**{**

**loc:**

**{ $near :**

**{**

**$geometry: { type: "Point", coordinates: [ -111.574109, 35.225736 ] },**

**$maxDistance: 50000**

**}**

**}**

**}**

**)**

“Mormon Lake”

“Sedona”

Put the statements and (parts of) the output in your portfolio.

## Assigment 2: Mini Project

1. Design a MongoDB schema, choose one of the cases below
2. Develop and create the database
3. Insert at least 2 sample documents and subdocuments
4. Give an overview of the data (tip: use the .pretty( ) method)
5. Give a query and the result of that query on the sample data (see MongoDB documentations on arrays)

Tip: to implement 1:N relations, use arrays, see documentation.

Put the statements to create the database and the queries in your portfolio.

**Cases**

Case 1: [Customer orders]

Customer --- 1:N --- Order --- 1:N --- Product

Attributes: Customer (custnr, name), Order (date), Product (nr, name, quantity)

Case 2: [Enrollment]

Student --- N:1 --- Class --- N:N --- Course

Attributes: Student (nr, name), Class (code, semester), Course (name, credits)

Case 3: [Blog site]

User --- 1:N --- Post --- 1:N --- Comment --- 1:1 --- Commenter

Attributes: User (name), Post (date, text), Comment (date, text), Commenter (name)

Case 4: [Facebook]

User --- 1:N --- Status --- 1:N --- Comment --- 1:1 --- Commenter

Attributes: User (name), Status (date, text), Comment (date, text), Commenter (name)

Case 5: [TV series]

TVseries --- 1:N --- Season --- 1:N --- Episode --- 1:N --- Review

Attributes: TVseries (title), Season (seasonNr), Episode (episodeNr, title), Review (date, text, nrOfStars)

use blog

db.blog.insert({

name: "MonkeyTail",

text: "Hello from the otter side",

posts: [

{

date: new Date(),

text: "Hello world",

comments: [{

date: new Date(),

text: "Foo",

commenter: {

name: "Bar"

}

}]

}

]

})

db.blog.insert({

name: "The Fooz",

text: "Are otters dangerous",

posts: [

{

date: new Date(),

text: "No",

comments: [{

date: new Date(),

text: "They are...",

commenter: {

name: "OtterLover9102"

}

}]

}

]

})

db.blog.find().pretty()

db.blog.find({text: /side/}).pretty()