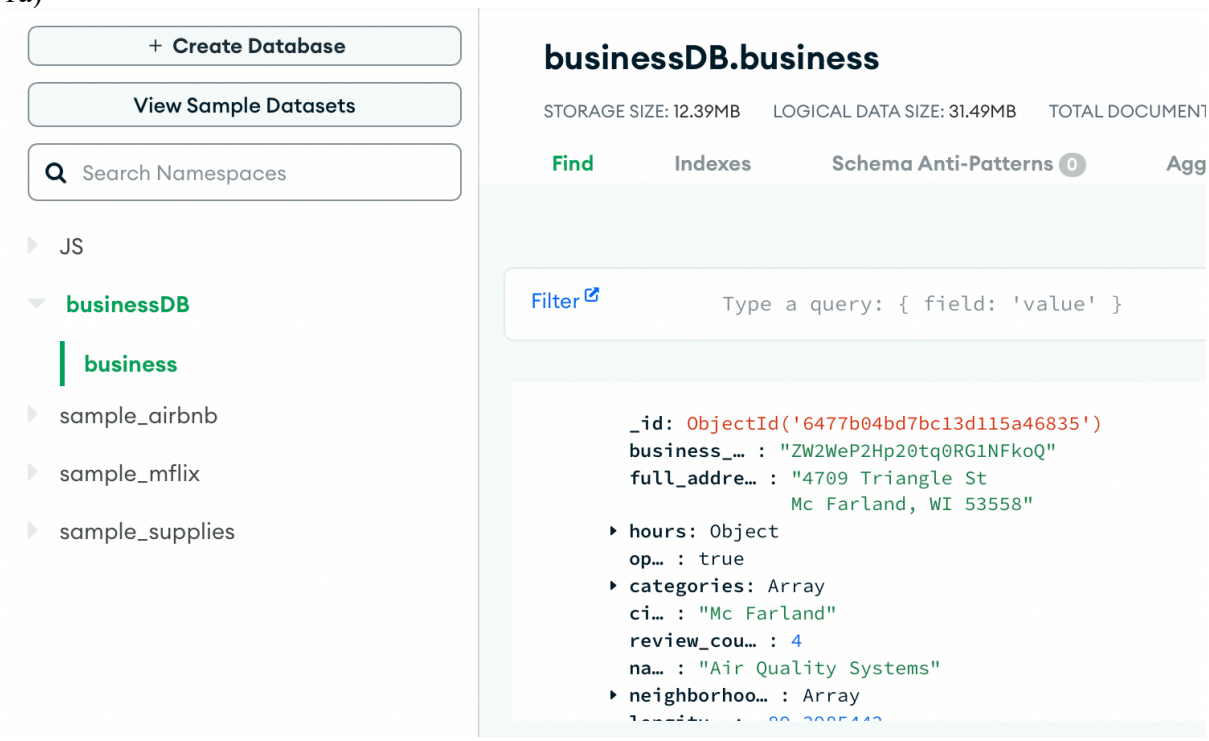
Julia Smerdel
MongoDB
Zadanie domowe

1a)




```
db.business.find(
  {
  categories: "Restaurants",
  "hours.Monday": {$exists: true},
  stars: {$gte: 4}
  },
  {
    name: true,
    full_address: true,
    categories: true,
    hours: true,
    stars: true,
  }
).sort({"name": 1});
```

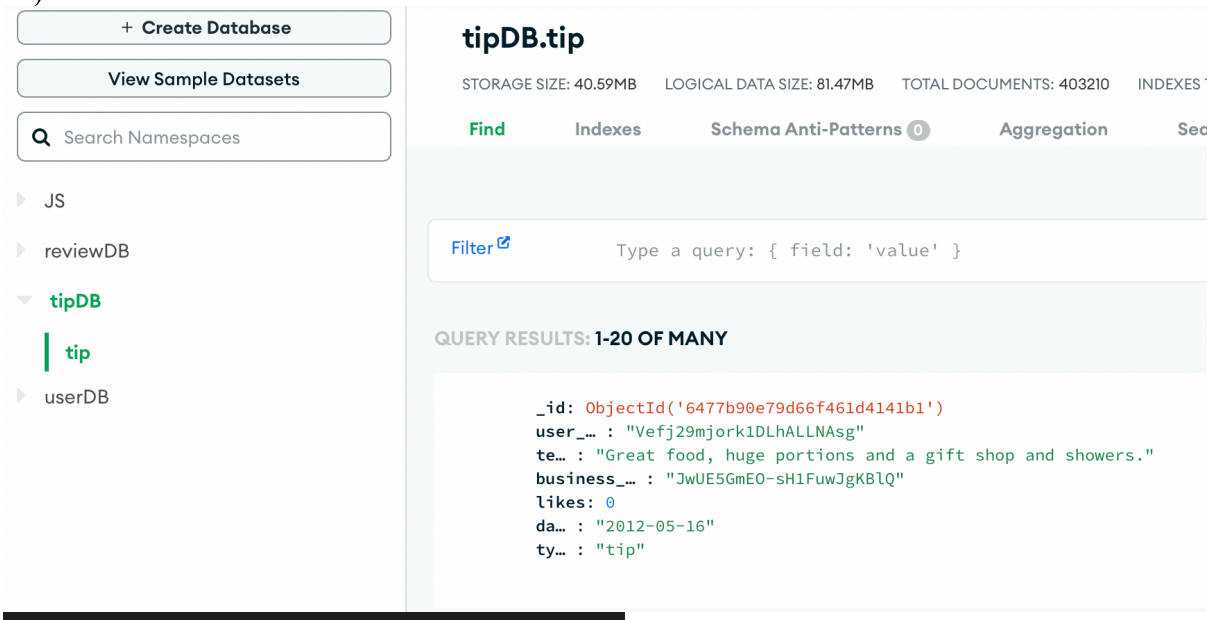
```
{
  _id: ObjectId("6477b080d7bc13d115a4c615"),
  full_address: '7051 E 5th Ave\nScottsdale, AZ 85251',
  hours: {
    Monday: { close: '21:00', open: '11:00' },
    Tuesday: { close: '22:00', open: '11:00' },
    Friday: { close: '23:00', open: '11:00' },
    Wednesday: { close: '22:00', open: '11:00' },
    Thursday: { close: '22:00', open: '11:00' },
    Sunday: { close: '21:00', open: '11:00' },
    Saturday: { close: '23:00', open: '11:00' }
  },
  categories: [
    'Wine Bars',
    'Bars',
    'American (New)',
    'Nightlife',
    'Restaurants'
  ],
  name: '5th and Wine',
  stars: 4
},
{
  _id: ObjectId("6477b0b0d7bc13d115a50cd1"),
  full_address: '6475 W Charleston Blvd\nSte 150\nWestside\nLas Vegas, NV 89146',
  hours: {
    Monday: { close: '20:00', open: '11:00' },
    Tuesday: { close: '20:00', open: '11:00' },
    Friday: { close: '20:00', open: '11:00' },
    Wednesday: { close: '20:00', open: '11:00' },
    Thursday: { close: '20:00', open: '11:00' },
    Sunday: { close: '20:00', open: '11:00' },
    Saturday: { close: '20:00', open: '11:00' }
  },
  categories: [ 'Chicken Wings', 'Restaurants' ],
  name: '702 Wing Spot',
  stars: 4.5
}
]
```

1b)

```
db.business.aggregate(
  {
    $match: {
      $or: [
        {categories: "Hotels & Travel"},
        {categories: "Hotels"}
      ]
    }
  },
  {
    $group:{
      _id: "$city",
      hotelsCounter: {$sum:1}
    }
  },
  {
    $sort: {hotelsCounter: 1}
  }
)
```

```
Atlas atlas-84ca13-shard-0 [primary] businessDB> it
[
  { _id: 'Maricopa', hotelsCounter: 1 },
  { _id: 'Buckeye', hotelsCounter: 1 },
  { _id: 'Fort McDowell', hotelsCounter: 1 },
  { _id: 'Ratho', hotelsCounter: 1 },
  { _id: 'Youngtown', hotelsCounter: 1 },
  { _id: 'Heidelberg', hotelsCounter: 1 },
  { _id: 'Carefree', hotelsCounter: 2 },
  { _id: 'Fitchburg', hotelsCounter: 2 },
  { _id: 'Anthem', hotelsCounter: 2 },
  { _id: 'Clark County', hotelsCounter: 2 },
  { _id: 'South Queensferry', hotelsCounter: 2 },
  { _id: 'Cambridge', hotelsCounter: 2 },
  { _id: 'Gold Canyon', hotelsCounter: 2 },
  { _id: 'Litchfield Park', hotelsCounter: 2 },
  { _id: 'Queen Creek', hotelsCounter: 2 },
  { _id: 'Lasswade', hotelsCounter: 2 },
  { _id: 'Florence', hotelsCounter: 3 },
  { _id: 'Cave Creek', hotelsCounter: 3 },
  { _id: 'Apache Junction', hotelsCounter: 3 },
  { _id: 'Paradise Valley', hotelsCounter: 3 }
]
Type "it" for more
Atlas atlas-84ca13-shard-0 [primary] businessDB> it
[
  { _id: 'Tolleson', hotelsCounter: 3 },
  { _id: 'Fountain Hills', hotelsCounter: 4 },
  { _id: 'Gilbert', hotelsCounter: 4 },
  { _id: 'Avondale', hotelsCounter: 5 },
  { _id: 'Kitchener', hotelsCounter: 5 },
  { _id: 'Waterloo', hotelsCounter: 5 },
  { _id: 'Wickenburg', hotelsCounter: 5 },
  { _id: 'Gila Bend', hotelsCounter: 6 },
  { _id: 'Middleton', hotelsCounter: 7 },
  { _id: 'Casa Grande', hotelsCounter: 7 },
  { _id: 'Goodyear', hotelsCounter: 9 },
  { _id: 'Surprise', hotelsCounter: 10 },
  { _id: 'Peoria', hotelsCounter: 12 },
  { _id: 'North Las Vegas', hotelsCounter: 12 },
  { _id: 'Glendale', hotelsCounter: 20 },
  { _id: 'Chandler', hotelsCounter: 30 },
  { _id: 'Henderson', hotelsCounter: 41 },
  { _id: 'Mesa', hotelsCounter: 53 },
  { _id: 'Tempe', hotelsCounter: 57 },
  { _id: 'Madison', hotelsCounter: 67 }
]
Type "it" for more
```

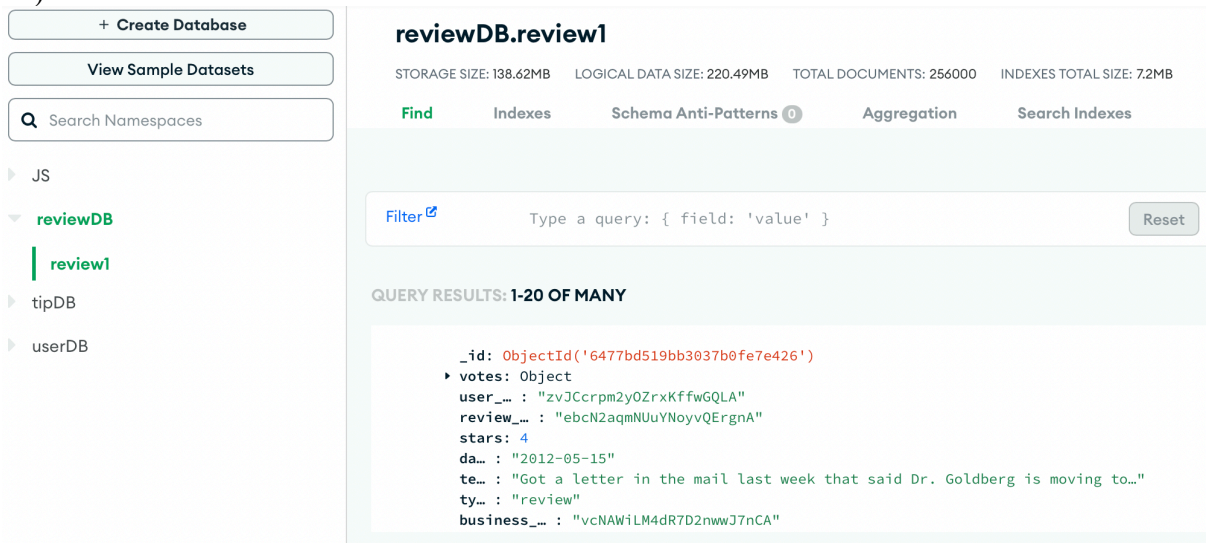
1c)




```
use('tipDB');

db.tip.aggregate(
  {
    $match: {date: /2012/}
  },
  {
    $group: {
      _id: "$business_id",
      count: {$sum: 1}
    }
  },
  {
    $sort: {count: -1}
  }
)
```

```
Type "it" for more
Atlas atlas-84ca13-shard-0 [primary] tipDB> db.tip.aggregate(
...   {
...     $match: {date: /2012/}
...   },
...   {
...     $group: {
...       _id: "$business_id",
...       count: {$sum: 1}
...     }
...   },
...   {
...     $sort: {count: -1}
...   }
... )
[
  { _id: 'jf67Z1pnwElRSXllpQHiJg', count: 1084 },
  { _id: 'hW0Ne_HTHEAgGF1rAdmR-g', count: 622 },
  { _id: '2e2e7WgqU1BnpxmQL5jbfw', count: 430 },
  { _id: 'CsNOg-u_wCuXSt9Z-xU92Q', count: 374 },
  { _id: 'AtjsjFzalWqJ7S9DUFQ4bw', count: 351 },
  { _id: 'zt1TpTuJ6y9n551sw9TaEg', count: 347 },
  { _id: 'AeKTQBtPRDHLAFL9bzbUnA', count: 258 },
  { _id: 'FV16IeXJp2W6pnghTz2FAw', count: 252 },
  { _id: 'eq6lQI039SBLC6sHm3idGA', count: 239 },
  { _id: 'Ht8mXLuqJSTPrU9kvzosUA', count: 227 },
  { _id: 'DjOxXobyGDwWt89q4z1twg', count: 221 },
  { _id: 'UZbkczu-KJour2Hgt_5WWw', count: 209 },
  { _id: 'JpHE7yhMS5ehA9e8WG_ETg', count: 208 },
  { _id: '8buIr1zBCO7OEcAQSZko7w', count: 201 },
  { _id: 'vxxMqBaAHuWdx4impsLSSA', count: 197 },
  { _id: 'Xhg93cMdemu5pAMkDoEdtQ', count: 197 },
  { _id: '4bEjOyTaDG24SY5TxsaUNQ', count: 196 },
  { _id: 'H_SuH7uLiYahDMbNBB9kog', count: 185 },
  { _id: 'z3SyT8blMIhsZNvKJgKcRA', count: 184 },
  { _id: 'eWPFXL1Bmu1ImtIa2Rqliw', count: 184 }
]
```

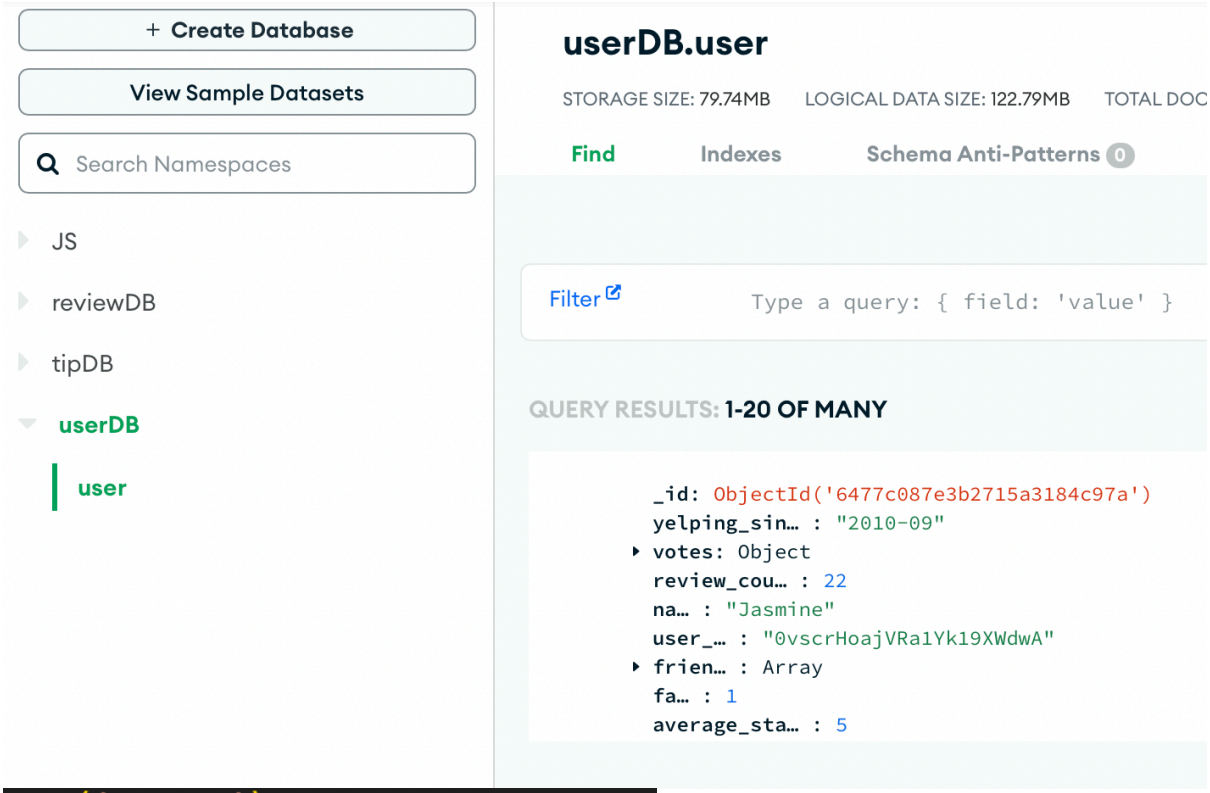
1d)




```
use('reviewDB');

db.review1.aggregate([
  {
    $group: {
      _id: null,
      cool: {
        $sum:{
          $cond: [{$gt: ["$votes.cool", 0]}, 1, 0]
        }
      },
      useful: {
        $sum:{
          $cond: [{$gt: ["$votes.useful", 0]}, 1, 0]
        }
      },
      funny: {
        $sum:{
          $cond: [{$gt: ["$votes.funny", 0]}, 1, 0]
        }
      }
    }
  },
  {
    $project:{
      _id: 0,
      cool: 1,
      useful: 1,
      funny: 1
    }
  }
])
```

```
Atlas atlas-84ca13-shard-0 [primary] reviewDB> db.review1.aggregate([
...   {
...     $group: {
...       _id: null,
...       cool: {
...         $sum:{
...           $cond: [{$gt: ["$votes.cool", 0]}, 1, 0]
...         }
...       },
...       useful: {
...         $sum:{
...           $cond: [{$gt: ["$votes.useful", 0]}, 1, 0]
...         }
...       },
...       funny: {
...         $sum:{
...           $cond: [{$gt: ["$votes.funny", 0]}, 1, 0]
...         }
...       }
...     }
...   },
...   {
...     $project:{
...       _id: 0,
...       cool: 1,
...       useful: 1,
...       funny: 1
...     }
...   }
... ])

[ { cool: 77638, useful: 125472, funny: 62015 } ]
```

1e)




```
use('userDB');

db.user.find(
  {
    $and:[
      {"votes.funny": {$eq: 0}},
      {"votes.useful": {$eq: 0}}
    ]
  },
  {
    _id: false,
    name: true,
    "votes.funny": true,
    "votes.useful": true
  }
).sort({"name": 1})
```

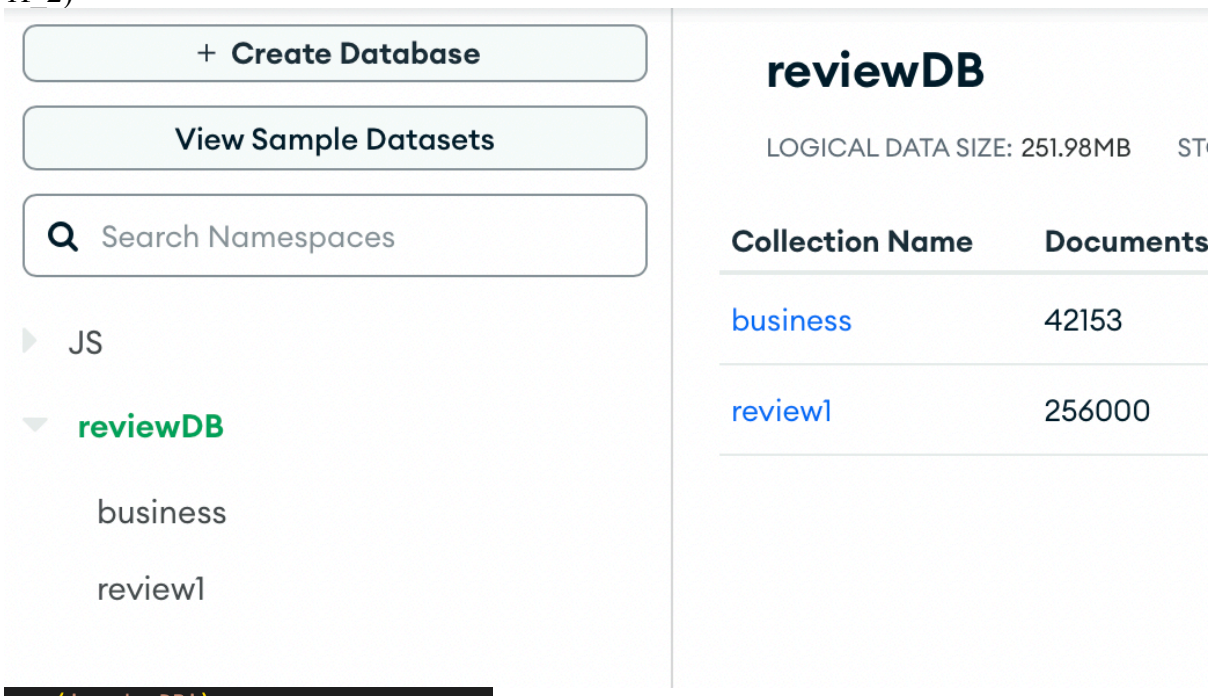
```
Atlas atlas-84ca13-shard-0 [primary] userDB> db.user.find(
...   {
...     $and:[
...       {"votes.funny": {$eq: 0}},
...       {"votes.useful": {$eq: 0}}
...     ]
...   },
...   {
...     _id: false,
...     name: true,
...     "votes.funny": true,
...     "votes.useful": true
...   }
... ).sort({"name": 1})
[
  { votes: { funny: 0, useful: 0 }, name: ' Bernard' },
  { votes: { funny: 0, useful: 0 }, name: ',Maria' },
  { votes: { funny: 0, useful: 0 }, name: '006969123' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' },
  { votes: { funny: 0, useful: 0 }, name: 'A' }
]
```

1f_1)

```
use('reviewDB');

db.review1.aggregate([
  {
    $group: {
      _id: "$business_id",
      avg: {$avg: "$stars"}
    }
  },
  {
    $match:{
      avg: {$gt: 3}
    }
  },
  {
    $sort: {
      _id: 1
    }
  }
])
```

```
Atlas atlas-84ca13-shard-0 [primary] reviewDB> db.review1.aggregate([
...   {
...     $group: {
...       _id: "$business_id",
...       avg: {$avg: "$stars"}
...     }
...   },
...   {
...     $match:{
...       avg: {$gt: 3}
...     }
...   },
...   {
...     $sort: {
...       _id: 1
...     }
...   }
... ])

[
  { _id: '--XBxRlD92RaV6TyUnP8Ow', avg: 3.6666666666666665 },
  { _id: '-0HGqwlfw3I8nkJyMHxAsQ', avg: 4 },
  { _id: '-0QBrNvhrPQCaeo7mTo0zQ', avg: 4.333333333333333 },
  { _id: '-1bOb2izeJBZjHC7NWxiPA', avg: 3.824324324324324 },
  { _id: '-34jE_5dujSWMIOBudQsiQ', avg: 4.75 },
  { _id: '-3JXOT-i2gDbASLgDeOSwQ', avg: 4.75 },
  { _id: '-3WVw1TNQbPBzaKCaQQ1AQ', avg: 3.7892156862745097 },
  { _id: '-3qWPkQAxsggQJYqgi5myA', avg: 3.25 },
  { _id: '-3xbryp44xhpN4BohxXDdQ', avg: 3.8151260504201683 },
  { _id: '-4BtfPW3_v092G8pqHrv4w', avg: 3.625 },
  { _id: '-4zMr3jk0ykmsk5sxsQMlA', avg: 4 },
  { _id: '-5IgAihccTd8_iENVgpd9A', avg: 3.5 },
  { _id: '-5bLhMLNGbIVyoPOVl0yLg', avg: 3.3333333333333335 },
  { _id: '-63VfA2tnYyzwRt81B1AKw', avg: 4.0588235294117645 },
  { _id: '-65rmLRQ5JDwI-l8UDEV7Q', avg: 3.8 },
  { _id: '-6Ft3hulif7O2sIdKiG0Og', avg: 4.5 },
  { _id: '-6O53B-ksqSKzWM6Y9moEQ', avg: 3.25 },
  { _id: '-6Roo-EHgSdUa4rP3tWyRw', avg: 3.4571428571428573 },
  { _id: '-6c7Tfec-X0aDmzjKO6R-Q', avg: 3.1666666666666665 },
  { _id: '-7DxAxnXkAlTXUrtByoXAg', avg: 4.666666666666667 }
]
```

1f_2)




```
use('reviewDB');

db.review1.aggregate([
  {
    $limit: 200
  },
  {
    $lookup:{
      from: "business",
      localField: "business_id",
      foreignField: "business_id",
      as: "company"
    }
  },
  {
    $unwind: "$company"
  },
  {
    $group: {
      _id: "$company.name",
      avg: {$avg: "$stars"}
    }
  },
  {
    $match:{
      avg: {$gt: 3}
    }
  },
  {
    $sort: {
      _id: 1
    }
  }
])
```

```
Atlas atlas-84ca13-shard-0 [primary] reviewDB> db.review1.aggregate([
...   {
...     $limit: 200
...   },
...   {
...     $lookup:{
...       from: "business",
...       localField: "business_id",
...       foreignField: "business_id",
...       as: "company"
...     }
...   },
...   {
...     $unwind: "$company"
...   },
...   {
...     $group: {
...       _id: "$company.name",
...       avg: {$avg: "$stars"}
...     }
...   },
...   {
...     $match:{
...       avg: {$gt: 3}
...     }
...   },
...   {
...     $sort: {
...       _id: 1
...     }
...   }
... ])

[
  { _id: 'Beach House Restaurant & Lounge', avg: 3.3870967741935485 },
  { _id: 'Chang Jiang Chinese Kitchen', avg: 4 },
  { _id: 'Crandalls Carryout & Catering', avg: 4 },
  { _id: "Culver's", avg: 4.375 },
  { _id: 'Deforest Family Restaurant', avg: 3.923076923076923 },
  { _id: 'Eric Goldberg, MD', avg: 3.75 },
  { _id: 'Green Lantern Restaurant', avg: 3.8666666666666667 },
  {
    _id: 'Imperial Garden Chinese Restaurant',
    avg: 3.2432432432432434
  },
  { _id: 'Main Moon Chinese Restaurant', avg: 3.5714285714285716 },
  { _id: 'Parsonage Bed & Breakfast the', avg: 4.75 },
  { _id: 'Pine Cone Restaurant', avg: 4.181818181818182 },
  { _id: 'Spartan Animal Hospital', avg: 4.5 },
  { _id: 'Spartan Pizza', avg: 3.4 }
]
```

Zadanie 2

Embedded Data Model – podejście dokumentowe:
Dane są hierarchicznie zagnieżdżane w jednym dokumencie, nie ma podziału na kolekcje.

Zalety:
- szybki odczyt danych o całym dokumencie
- większa wydajność (wystarczy jedno zapytanie bez konieczności łączenia dokumentów i kolekcji)

Wady:
- konieczność wykonywania bardziej złożonych zapytań, gdy chce się dostać do głęboko zagnieżdżonego dokumentu
- przy aktualizacji danych może wystąpić konieczność aktualizacji ich w wielu dokumentach, co negatywnie wpływa na wydajność

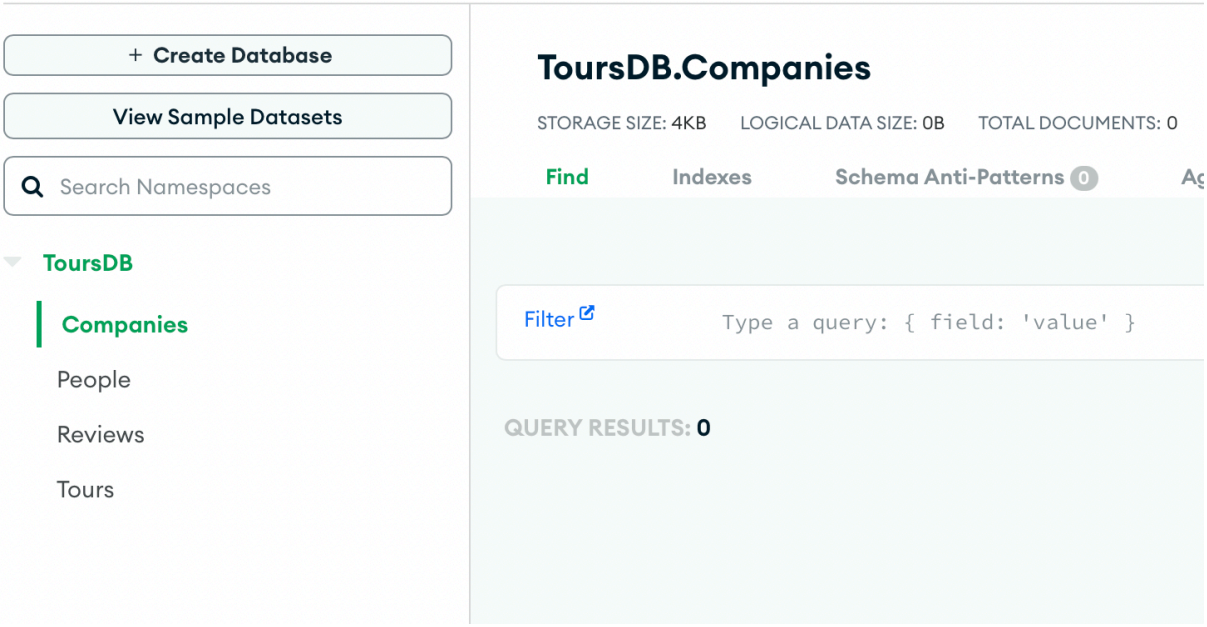
Referenced Data Model – podejście tabelaryczne:
W dokumentach przechowywane są identyfikatory powiązanych dokumentów, a dane są podzielone na kolekcje.

Zalety:
- odseparowanie danych między kolekcjami daje elastyczność i skalowalność bazy danych
- dane są bardziej uporządkowane, dzięki czemu baza jest bardziej przejrzysta
- szybsza aktualizacja i pobieranie danych
- mniejsze ryzyko przekroczenia maksymalnego rozmiaru pojedynczego dokumentu, gdyż dane można rozdzielić na wiele dokumentów

Wady:
- konieczność łączenia dokumentów znajdujących się w różnych kolekcjach
- prawdopodobieństwo redundancji danych i błędów referencyjnych

Wariant B - wycieczki, Referenced Data Model

Baza zawiera 4 kolekcje:
- firmy
- wycieczki
- osoby
- recenzje

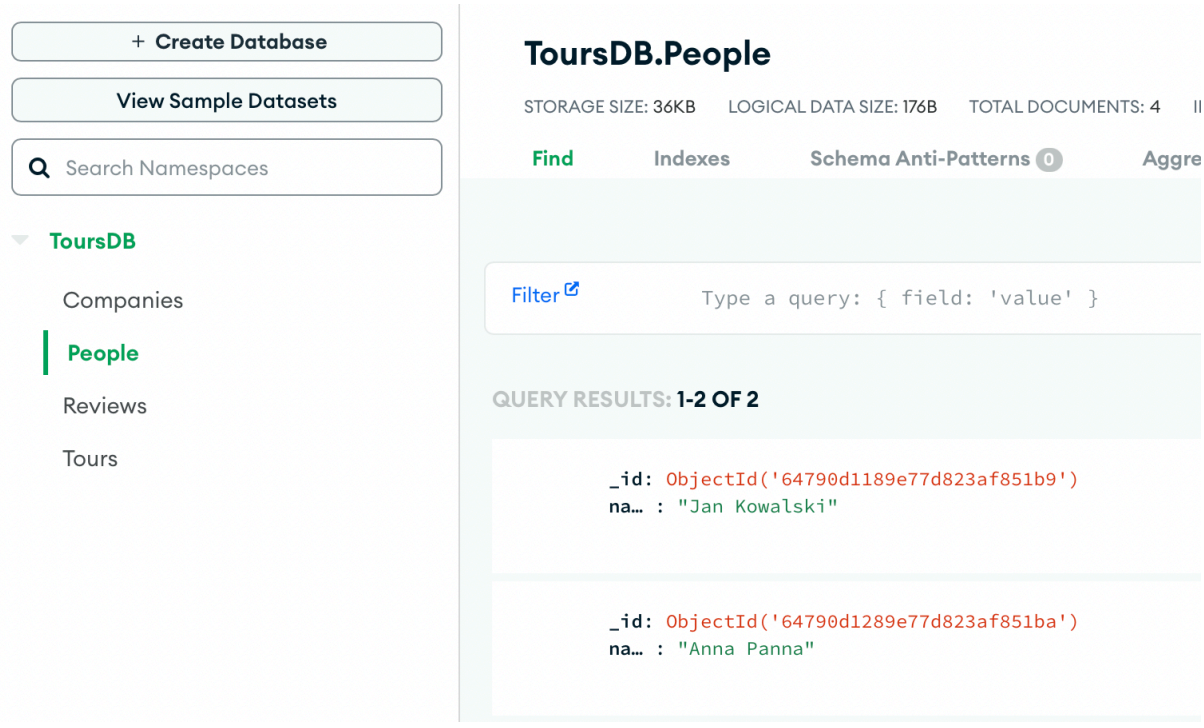


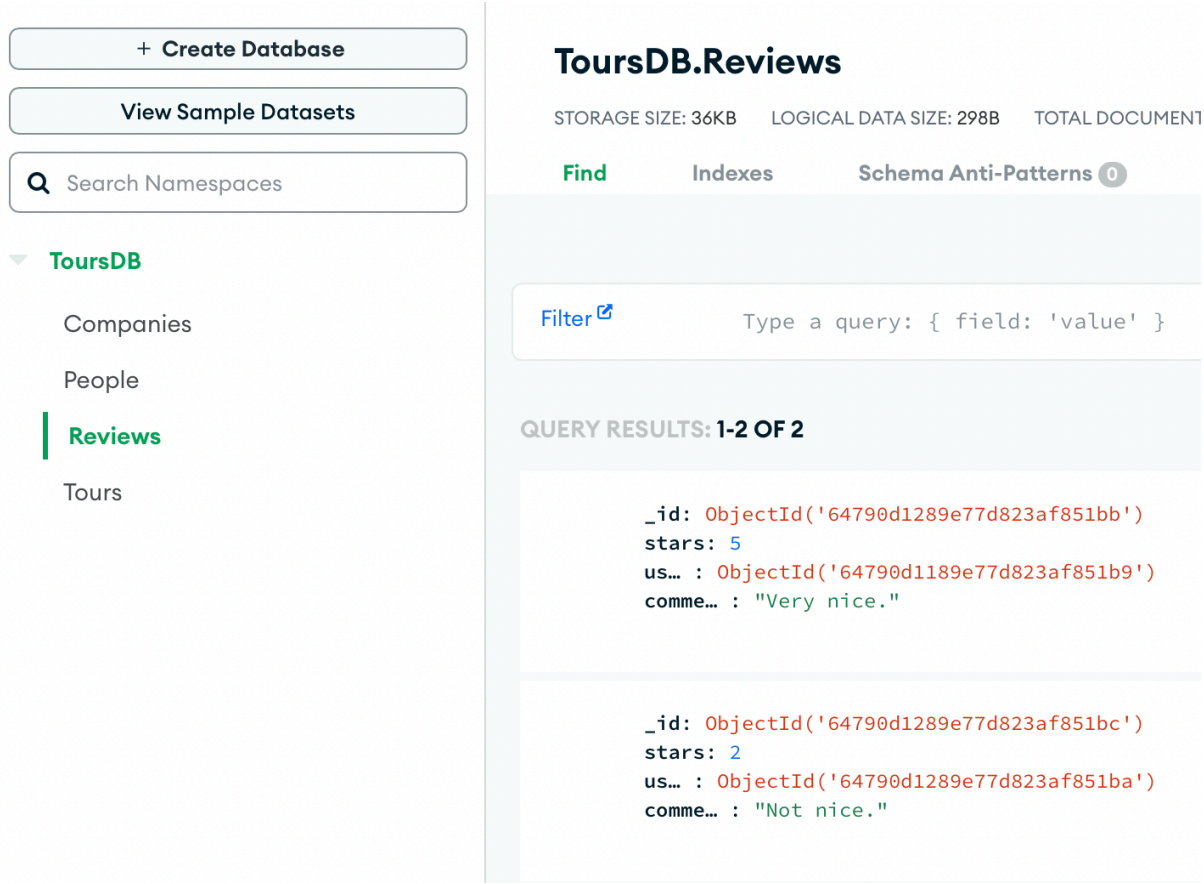
Przykładowe dane wprowadzone do bazy:

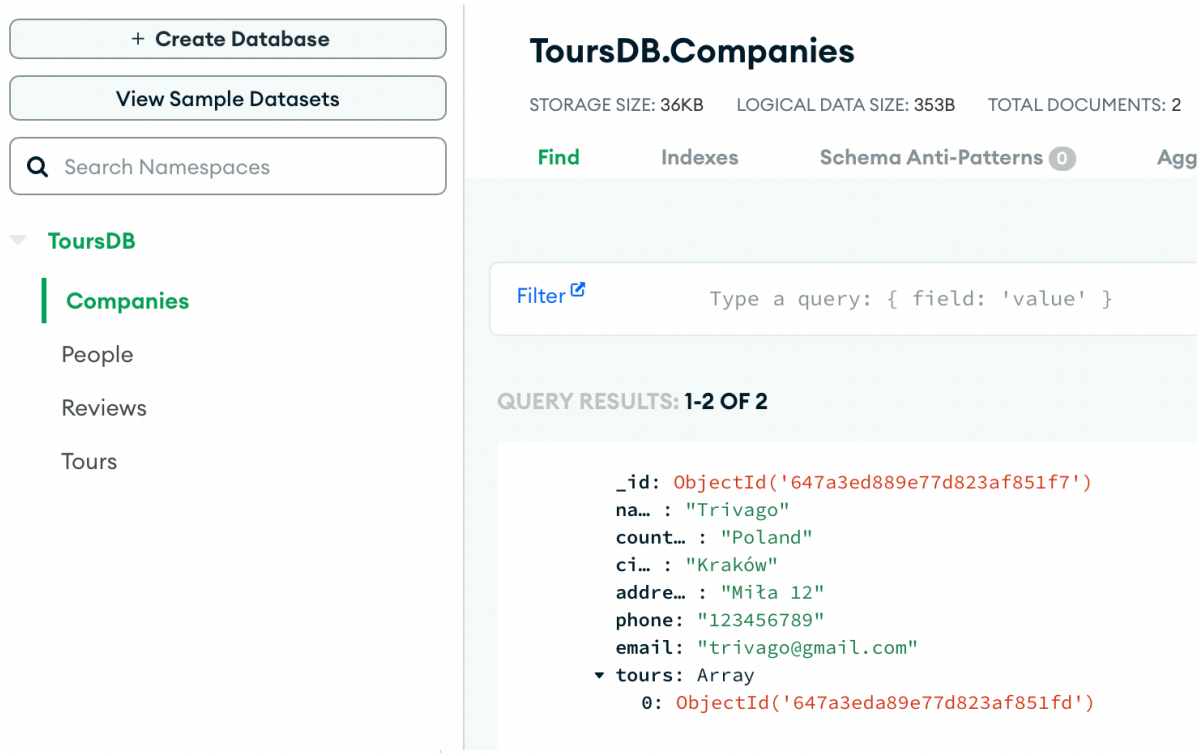
```
const firstCompanyInsert = db.Companies.insertOne({
  name: "Trivago",
  country: "Poland",
  city: "Kraków",
  address: "Miła 12",
  phone: "123456789",
  email: "trivago@gmail.com",
  tours: []
});

const secondCompanyInsert = db.Companies.insertOne({
  name: "Booking",
  country: "Poland",
  city: "Warszawa",
  address: "Zła 1",
  phone: "987654321",
  email: "booking@gmail.com",
  tours: []
});


const firstPersonInsert = db.People.insertOne({
  name: "Jan Kowalski"
});

const secondPersonInsert = db.People.insertOne({
  name: "Anna Panna"
});

firstPerson = db.People.findOne(
  {_id: firstPersonInsert.insertedId}
)

secondPerson = db.People.findOne(
  {_id: secondPersonInsert.insertedId}
)
```

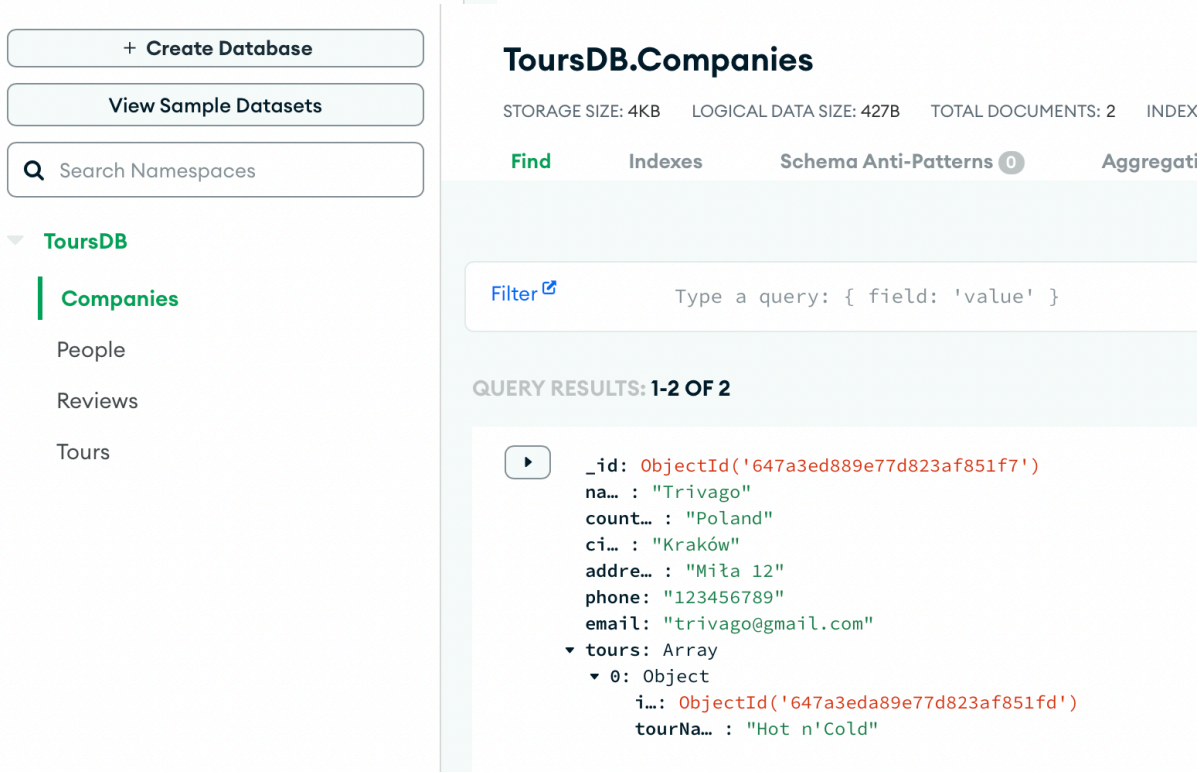
```
firstReview = db.Reviews.insertOne({
  stars: 5,
  user: firstPersonInsert.insertedId,
  comment: "Very nice."
});

secondReview = db.Reviews.insertOne({
  stars: 2,
  user: secondPersonInsert.insertedId,
  comment: "Not nice."
});


const firstTourInsert = db.Tours.insertOne({
  company: firstCompanyInsert.insertedId,
  tourName: "Hot n'Cold",
  price: 92000,
  destination: "Egypt and North Pole",
  availablePlaces: 7,
  startDate: "12.07.2023",
  endDate: "20.08.2023",
  reviews: [],
  tourists: []
});

const secondTourInsert = db.Tours.insertOne({
  company: secondCompanyInsert.insertedId,
  tourName: "Colorful Rainbow",
  price: 19800,
  destination: "New Zealand",
  availablePlaces: 2,
  startDate: "12.07.2023",
  endDate: "25.07.2023",
  reviews: [],
  tourists: []
});
```

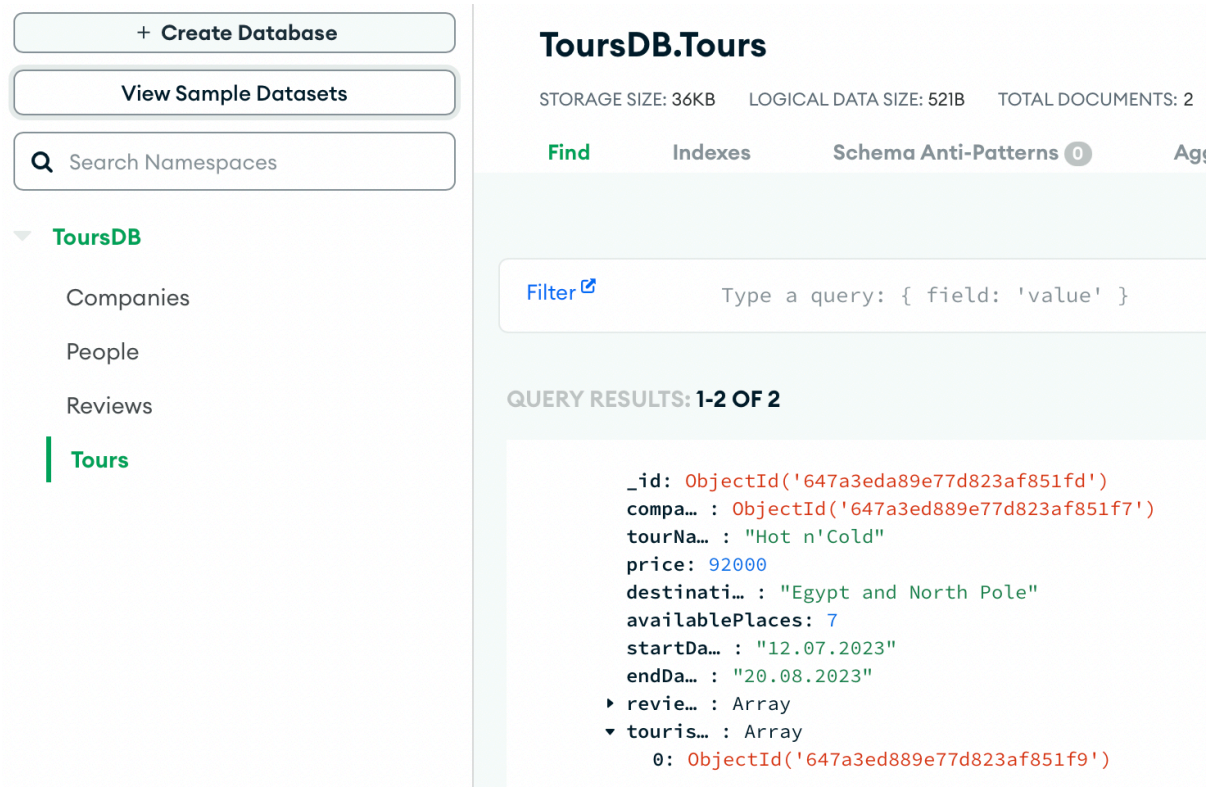
```
firstTour = db.Tours.findOne(
  {_id: firstTourInsert.insertedId}
)
secondTour = db.Tours.findOne(
  {_id: secondTourInsert.insertedId}
)


db.Companies.updateOne(
  {_id: firstCompanyInsert.insertedId},
  {$push: {tours: firstTourInsert.insertedId}}
)

db.Companies.updateOne(
  {_id: secondCompanyInsert.insertedId},
  {$push: {tours: secondTourInsert.insertedId}}
)

db.Tours.updateOne(
  {_id: firstTourInsert.insertedId},
  {$push: {reviews: firstReview.insertedId, tourists: firstPersonInsert.insertedId}}
)

db.Tours.updateOne(
  {_id: secondTourInsert.insertedId},
  {$push: {reviews: secondReview.insertedId, tourists: secondPersonInsert.insertedId}}
)
```




+ Create Database
View Sample Datasets
Search Namespaces
ToursDB
Companies
People
Reviews
Tours
ToursDB.Reviews
STORAGE SIZE: 36KB
LOGICAL DATA SIZE: 298B
TOTAL DOCUMENT
Find
Indexes
Schema Anti-Patterns 0
Filter
Type a query: { field: 'value' }
QUERY RESULTS: 1-2 OF 2
_id: ObjectId('64790d1289e77d823af851bb')
stars: 5
us… : ObjectId('64790d1189e77d823af851b9')
comme… : "Very nice."
_id: ObjectId('64790d1289e77d823af851bc')
stars: 2
us… : ObjectId('64790d1289e77d823af851ba')
comme… : "Not nice."


+ Create Database
View Sample Datasets
Search Namespaces
ToursDB
Companies
People
Reviews
Tours
ToursDB.Companies
STORAGE SIZE: 36KB
LOGICAL DATA SIZE: 353B
TOTAL DOCUMENTS: 2
Find
Indexes
Schema Anti-Patterns 0
Agg
Filter
Type a query: { field: 'value' }
QUERY RESULTS: 1-2 OF 2
_id: ObjectId('647a3ed889e77d823af851f7')
na… : "Trivago"
count… : "Poland"
ci… : "Kraków"
addre… : "Miła 12"
phone: "123456789"
email: "trivago@gmail.com"
tours: Array
0: ObjectId('647a3eda89e77d823af851fd')


+ Create Database
View Sample Datasets
Search Namespaces
ToursDB
Companies
People
Reviews
Tours
ToursDB.Companies
STORAGE SIZE: 4KB
LOGICAL DATA SIZE: 427B
TOTAL DOCUMENTS: 2
INDEX
Find
Indexes
Schema Anti-Patterns 0
Aggregati
Filter
Type a query: { field: 'value' }
QUERY RESULTS: 1-2 OF 2
_id: ObjectId('647a3ed889e77d823af851f7')
na… : "Trivago"
count… : "Poland"
ci… : "Kraków"
addre… : "Miła 12"
phone: "123456789"
email: "trivago@gmail.com"
tours: Array
0: Object
i…: ObjectId('647a3eda89e77d823af851fd')
tourNa… : "Hot n'Cold"



Wyszukiwanie wycieczek danej osoby:

```
Atlas atlas-84ca13-shard-0 [primary] ToursDB> db.Tours.find(
...     {tourists: firstPersonInsert.insertedId}
... )
[
  {
    _id: ObjectId("647a3eda89e77d823af851fd"),
    company: ObjectId("647a3ed889e77d823af851f7"),
    tourName: "Hot n'Cold",
    price: 92000,
    destination: 'Egypt and North Pole',
    availablePlaces: 7,
    startDate: '12.07.2023',
    endDate: '20.08.2023',
    reviews: [ ObjectId("647a3ed989e77d823af851fb") ],
    tourists: [ ObjectId("647a3ed889e77d823af851f9") ]
  }
]
```

Wyszukiwanie recenzji danej osoby:

```
Atlas atlas-84ca13-shard-0 [primary] ToursDB> db.People.aggregate([
...     {
...       $match: {_id: firstPersonInsert.insertedId}
...     },
...     {
...       $lookup:{
...         from: "Reviews",
...         localField: "_id",
...         foreignField: "user",
...         as: "reviewInfo"
...       }
...     },
...     {
...       $unwind: "$reviewInfo"
...     },
...     {
...       $lookup:{
...         from: "Tours",
...         localField: "_id",
...         foreignField: "tourists",
...         as: "tourInfo"
...       }
...     },
...     {
...       $unwind: "$tourInfo"
...     },
...     {
...       $project: {
...         personName: firstPerson.name,
...         personComment: "$reviewInfo.comment",
...         starsGiven: "$reviewInfo.stars",
...         tourName: "$tourInfo.tourName"
...       }
...     }
...   ])
[
  {
    _id: ObjectId("647a3ed889e77d823af851f9"),
    personName: 'Jan Kowalski',
    personComment: 'Very nice.',
    starsGiven: 5,
    tourName: "Hot n'Cold"
  }
]
```

Zmiana imienia i nazwiska osoby:

Przed zmianą:

```
_id: ObjectId('647a3ed889e77d823af851f9')
na… : "Jan Kowalski"
```

```
Atlas atlas-84ca13-shard-0 [primary] ToursDB> db.People.updateOne(
...   {_id: firstPersonInsert.insertedId},
...   {$set: {name: "Grzegorz Pomidor"}}
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

Po zmianie:

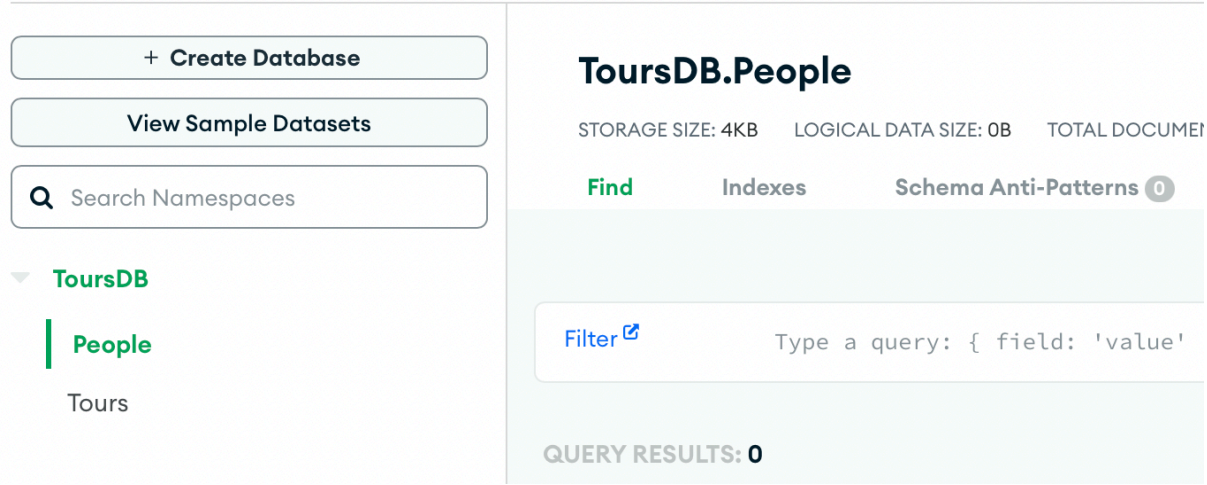
```
_id: ObjectId('647a3ed889e77d823af851f9')
na… : "Grzegorz Pomidor"
```

```
Atlas atlas-84ca13-shard-0 [primary] ToursDB> firstPerson = db.People.findOne(
...     {_id: firstPersonInsert.insertedId}
...   )
{ _id: ObjectId("647a3ed889e77d823af851f9"), name: 'Grzegorz Pomidor' }
Atlas atlas-84ca13-shard-0 [primary] ToursDB>

Atlas atlas-84ca13-shard-0 [primary] ToursDB> db.People.aggregate([
...     {
...       $match: {_id: firstPersonInsert.insertedId}
...     },
...     {
...       $lookup:{
...         from: "Reviews",
...         localField: "_id",
...         foreignField: "user",
...         as: "reviewInfo"
...       }
...     },
...     {
...       $unwind: "$reviewInfo"
...     },
...     {
...       $lookup:{
...         from: "Tours",
...         localField: "_id",
...         foreignField: "tourists",
...         as: "tourInfo"
...       }
...     },
...     {
...       $unwind: "$tourInfo"
...     },
...     {
...       $project: {
...         personName: firstPerson.name,
...         personComment: "$reviewInfo.comment",
...         starsGiven: "$reviewInfo.stars",
...         tourName: "$tourInfo.tourName"
...       }
...     }
... ])
[
  {
    _id: ObjectId("647a3ed889e77d823af851f9"),
    personName: 'Grzegorz Pomidor',
    personComment: 'Very nice.',
    starsGiven: 5,
    tourName: "Hot n'Cold"
  }
]
```

Wystarczyło zmienić imię tylko w jednym miejscu, aby zmiana pojawiła się przy zapytaniach.

Wariant B - wycieczki, Embedded Data Model

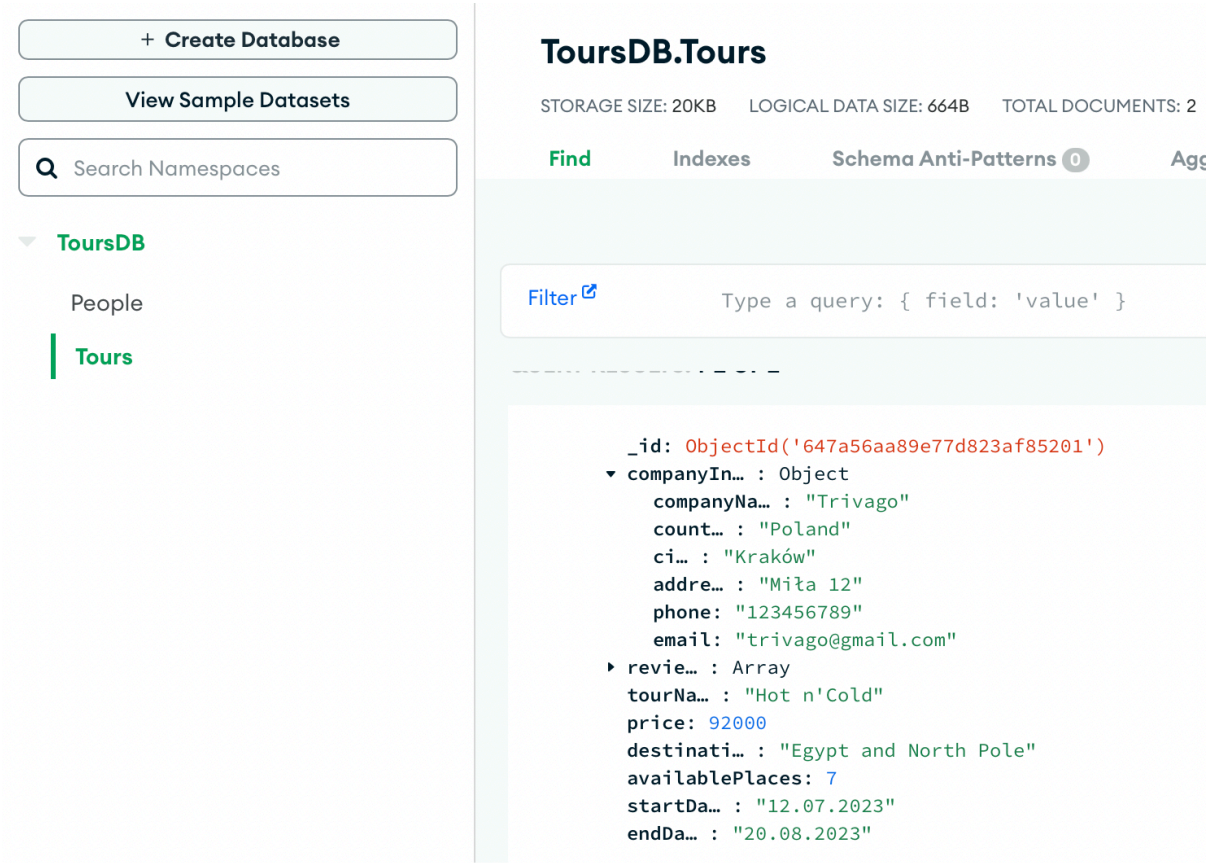
Baza zawiera 2 kolekcje:
- wycieczki (zawierają informacje o wycieczkach, ich recenzjach i biurach, które je organizują)
- osoby (zawierają informacje o osobach)

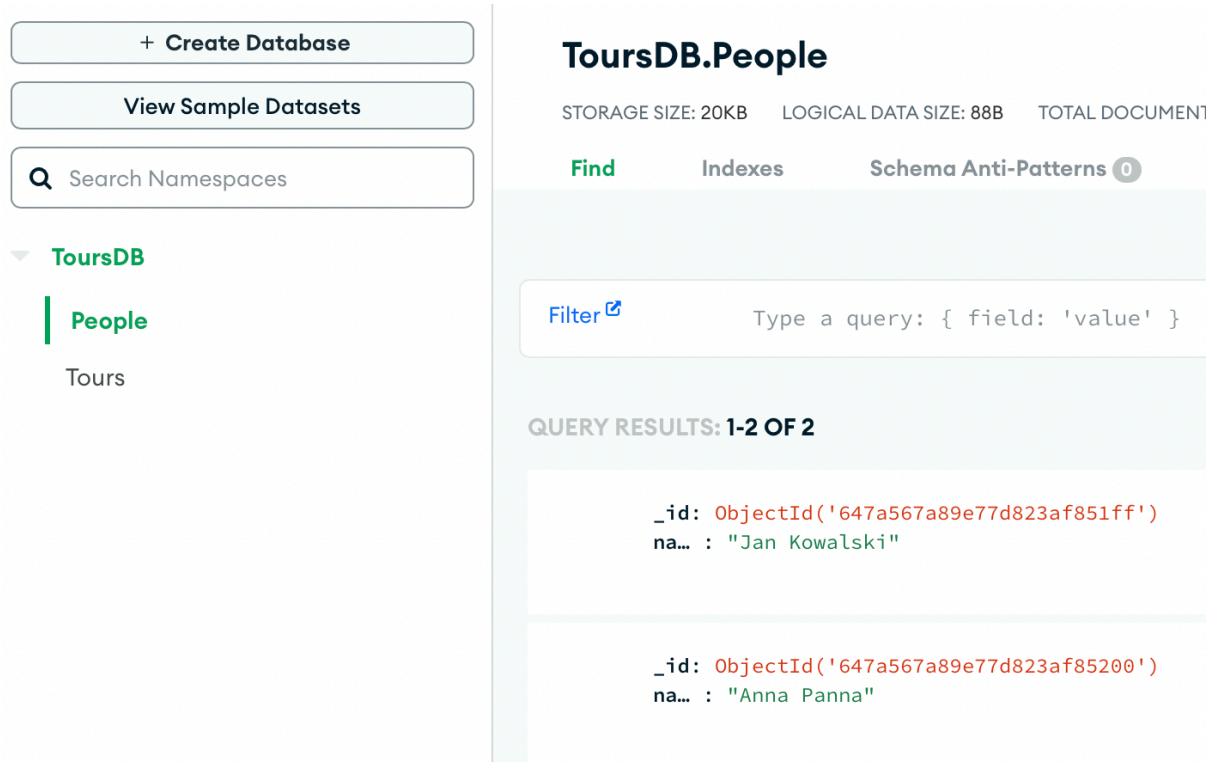


Dodanie przykładowych danych:

```
firstTourInsert = db.Tours.insertOne({
  companyInfo:{
    companyName: "Trivago",
    country: "Poland",
    city: "Kraków",
    address: "Miła 12",
    phone: "123456789",
    email: "trivago@gmail.com"
  },
  reviews:[],
  tourName: "Hot n'Cold",
  price: 92000,
  destination: "Egypt and North Pole",
  availablePlaces: 7,
  startDate: "12.07.2023",
  endDate: "20.08.2023",
});

secondTourInsert = db.Tours.insertOne({
  companyInfo: {
    companyName: "Booking",
    country: "Poland",
    city: "Warszawa",
    address: "Zła 1",
    phone: "987654321",
    email: "booking@gmail.com",
  },
  reviews:[],
  tourName: "Colorful Rainbow",
  price: 19800,
  destination: "New Zealand",
  availablePlaces: 2,
  startDate: "12.07.2023",
  endDate: "25.07.2023",
});
```

```
const firstPersonInsert = db.People.insertOne({
  name: "Jan Kowalski"
});
const secondPersonInsert = db.People.insertOne({
  name: "Anna Panna"
});

firstPerson = db.People.findOne(
  {_id: firstPersonInsert.insertedId}
)

secondPerson = db.People.findOne(
  {_id: secondPersonInsert.insertedId}
)
```





Aktualizacja recenzji:

```
firstReview = {
  stars: 5,
  user: firstPersonInsert.insertedId,
  comment: "Very nice."
};

secondReview = {
  stars: 2,
  user: secondPersonInsert.insertedId,
  comment: "Not nice."
};

db.Tours.update(
  {_id: firstTourInsert.insertedId},
  {$push: {reviews: firstReview}}
)

db.Tours.update(
  {_id: secondTourInsert.insertedId},
  {$push: {reviews: secondReview}}
)
```

```
    _id: ObjectId('647a56aa89e77d823af85201')
  ▸ companyIn… : Object
  ▾ revie… : Array
    ▾ 0: Object
        stars: 5
        us… : ObjectId('647a567a89e77d823af851ff')
        comme… : "Very nice."
    tourNa… : "Hot n'Cold"
    price: 92000
    destinati… : "Egypt and North Pole"
    availablePlaces: 7
    startDa… : "12.07.2023"
    endDa… : "20.08.2023"
```

Wyszukanie wycieczek danej osoby:
(wcześniej jeszcze jedna opinia secondPerson została dodana do wycieczki numer 1)

```
Atlas atlas-84ca13-shard-0 [primary] ToursDB> db.People.aggregate([
...   {
...     $match: {"_id": secondPersonInsert.insertedId}
...   },
...   {
...     $lookup: {
...       from: "Tours",
...       localField:"_id",
...       foreignField: "reviews.user",
...       as: "info"
...     }
...   },
...   {
...     $unwind: "$info"
...   },
...   {
...     $project:{
...       personName: "$name",
...       tourName: "$info.tourName",
...       stars: "$info.review.stars"
...     }
...   }
... ])
[
  {
    _id: ObjectId("647a567a89e77d823af85200"),
    personName: 'Anna Panna',
    tourName: "Hot n'Cold"
  },
  {
    _id: ObjectId("647a567a89e77d823af85200"),
    personName: 'Anna Panna',
    tourName: 'Colorful Rainbow'
  }
]
```

Wyszukanie recenzji danej osoby:

```
Atlas atlas-84ca13-shard-0 [primary] ToursDB> db.Tours.find(
...   {
...     reviews:
...     {
...       $elemMatch: {user: secondPersonInsert.insertedId}
...     }
...   },
...   {
...     name: secondPerson.name,
...     tourName: true,
...     "reviews.$": 1
...   }
... )
[
  {
    _id: ObjectId("647a56aa89e77d823af85201"),
    reviews: [
      {
        stars: 2,
        user: ObjectId("647a567a89e77d823af85200"),
        comment: 'Not nice.'
      }
    ],
    tourName: "Hot n'Cold",
    name: 'Anna Panna'
  },
  {
    _id: ObjectId("647a56ab89e77d823af85202"),
    reviews: [
      {
        stars: 2,
        user: ObjectId("647a567a89e77d823af85200"),
        comment: 'Not nice.'
      }
    ],
    tourName: 'Colorful Rainbow',
    name: 'Anna Panna'
  }
]
```