

# Dokumentowe bazy danych – MongoDB

## ćwiczenie 2

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## Zadanie 1 - połączenie z serwerem bazy danych

Połącz się serwerem MongoDB

Można skorzystać z własnego/lokanego serwera MongoDB Można stworzyć własny klaster/bazę danych w serwisie MongoDB Atlas

- <https://www.mongodb.com/atlas/database>

Połącz za pomocą konsoli mongosh

Ewentualnie zdefiniuj połączenie w wybranym przez siebie narzędziu

Stwórz bazę danych/kolekcję/dokument

- może to być dowolna kolekcja, dowolny dokument – o dowolnej strukturze, chodzi o przetestowanie działania połączenia

## Zadanie 1 - rozwiązanie

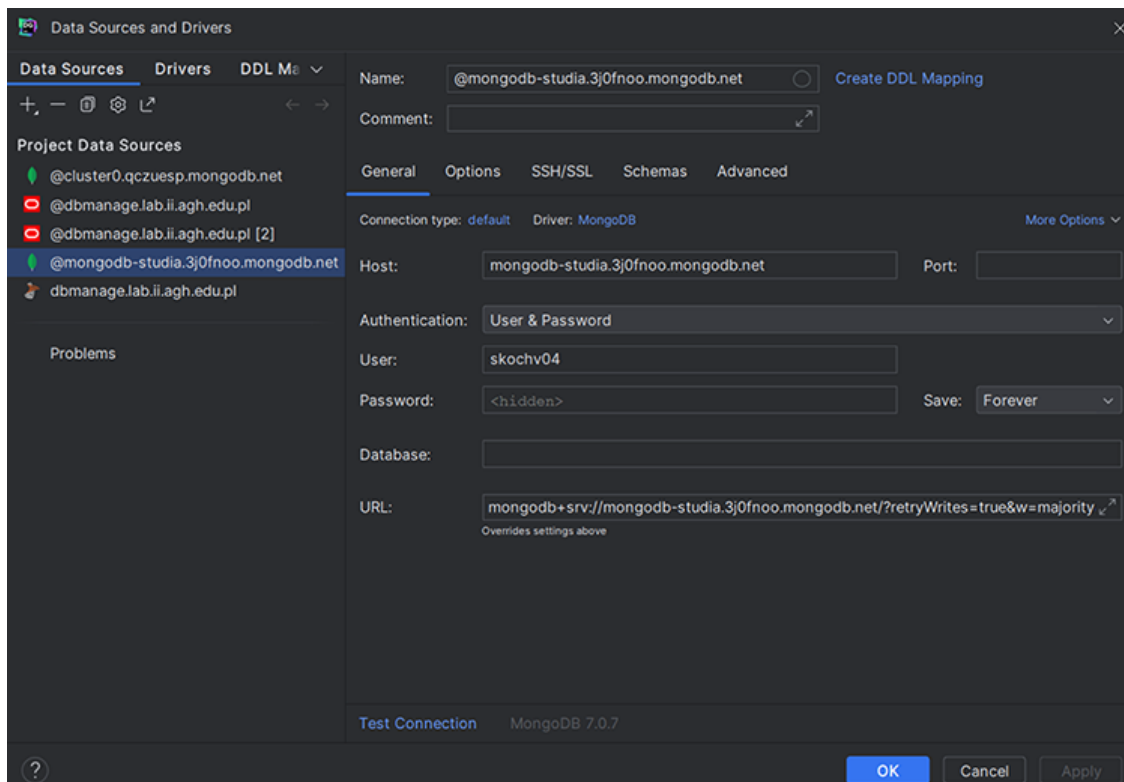
- Połączenie z bazą danych za pomocą konsoli mongosh

```
C:\Users\govaz>mongosh "mongodb+srv://<username>:<password>@mongodb-studio.3j0fnoo.mongodb.net/?retryWrites=true&w=majority&appName=MongoDB-Studio" --username skochv04 --password "bazydanych2024"
Current Mongosh Log ID: 660fb5a07e562b0e8b16c9b4
Connecting to:
  mongodb+srv://<credentials>@mongodb-studio.3j0fnoo.mongodb.net/?retryWrites=true&w=majority&appName=MongoDB-Studio
Using MongoDB:
  7.0.7
Using Mongosh:
  2.2.3

For mongosh info see: https://docs.mongodb.com/mongodb-shell/

Atlas atlas-rnaf11-shard-0 [primary] test> _
```

- Połączenie z bazą danych w narzędziu DataGrip



- Stworzenie przykładowego dokumentu & wyświetlanie zawartości

```
db.students.insertMany([
  {age: 25,
   grade: "A",
   name: "John Doe"},

  {age: 50,
   grade: "B",
   name: "Barak Obama"}
])
```

	{_id}	{age}	{grade}	{name}
1	660fbf341a3e342f0e2bad12	25	A	John Doe
2	660fbf541a3e342f0e2bad14	50	B	Barak Obama

---

## Zadanie 2 - przykładowe zbiory danych

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Zaimportuj przykładowe zbiory danych

MongoDB Atlas Sample Dataset

- <https://docs.atlas.mongodb.com/sample-data>
- w przypadku importu z lokalnych plików można wykorzystać polecenie `mongorestore`
  - <https://www.mongodb.com/docs/database-tools/mongorestore/>

```
mongorestore <data-dump-folder>
```

np.

```
mongorestore samples
```

- Oczywiście, w przypadku łączenia się zdalnym serwerem należy podać parametry połączenia oraz dane logowania

Yelp Dataset

- wykorzystaj komendę `mongoimport`
- <https://www.mongodb.com/docs/database-tools/mongoimport>

```
mongoimport --db <db-name> --collection <coll-name> --type json --file <file>
```

np.

```
mongoimport --db yelp --collection business --type json --file ./yelp_academic_dataset_business.json
```

- można też wykorzystać np. narzędzie MongoDB Compass

Zapoznaj się ze strukturą przykładowych zbiorów danych/kolekcji

- W bazach danych: MongoDB Atlas Sample Dataset
  - Skomentuj struktury użyte w dokumentach dla dwóch wybranych zbiorów (takich które wydają ci się najciekawsze)
  - np. Sample Analytics Dataset i Sample Training Dataset
- W bazie Yelp

- Skomentuj struktury użyte w dokumentach bazy Yelp

Przetestuj działanie operacji

- **mongodump**
  - <https://www.mongodb.com/docs/database-tools/mongodump/>
- **mongoexport**
  - <https://www.mongodb.com/docs/database-tools/mongoexport/>

MongoDB Atlas Sample Dataset

- Używając komendy mongorestore importujemy dane do zdalnej bazy danych MongoDB Atlas:

```
PS C:\Users\wikto> mongorestore --uri "mongodb+srv://wiktord2003:Wektor12@mongodb-studio.3j0fnoo.mongodb.net/?retryWrites=true&w=majority&appName=MongoDB-Studia" --drop C:\Users\wikto\Desktop\samples
```

- Przykładowe dane z kolekcji sample\_weatherdata.data:

```
use sample_weatherdata
db.data.find()
```

	_id	airTemperature	callLetters	dataSource	dewPoint	elevation	position
1	5553a998e4b02cf7151190b8	{"value": -3.1, "quality": "1"}	VCSZ	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
2	5553a998e4b02cf7151190b9	{"value": -4.7, "quality": "1"}	VC81	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
3	5553a998e4b02cf7151190ba	{"value": 4.4, "quality": "1"}	PLAT	4	{"value": 3.5, "quality": "1"}	9999	{"type": "Point", "coordinates": ...}
4	5553a998e4b02cf7151190bb	{"value": 7.5, "quality": "1"}	TFRB	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
5	5553a998e4b02cf7151190bc	{"value": 0.4, "quality": "1"}	TFBY	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
6	5553a998e4b02cf7151190bd	{"value": 3.1, "quality": "1"}	TFWB	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
7	5553a998e4b02cf7151190be	{"value": -26.7, "quality": "1"}	EMIO	4	{"value": -29.8, "quality": "1"}	9999	{"type": "Point", "coordinates": ...}
8	5553a998e4b02cf7151190bf	{"value": -5.1, "quality": "1"}	SCGB	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
9	5553a998e4b02cf7151190c0	{"value": 6.3, "quality": "1"}	PLAT	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
10	5553a998e4b02cf7151190c1	{"value": 6.6, "quality": "1"}	OWXP	4	{"value": 4.4, "quality": "1"}	9999	{"type": "Point", "coordinates": ...}
11	5553a998e4b02cf7151190c2	{"value": 2, "quality": "1"}	LAQU	4	{"value": -2, "quality": "1"}	9999	{"type": "Point", "coordinates": ...}
12	5553a998e4b02cf7151190c3	{"value": 7.1, "quality": "1"}	PLAT	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
13	5553a998e4b02cf7151190c4	{"value": 999.9, "quality": "9"}	FNUI	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
14	5553a998e4b02cf7151190c5	{"value": -4.5, "quality": "1"}	VCNP	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}
15	5553a998e4b02cf7151190c6	{"value": 17.2, "quality": "1"}	SINL	4	{"value": 16.5, "quality": "1"}	9999	{"type": "Point", "coordinates": ...}
16	5553a998e4b02cf7151190c7	{"value": 0.9, "quality": "1"}	UUQR	4	{"value": -4.3, "quality": "1"}	9999	{"type": "Point", "coordinates": ...}
17	5553a998e4b02cf7151190c8	{"value": 5.4, "quality": "1"}	PLAT	4	{"value": 999.9, "quality": "9"}	9999	{"type": "Point", "coordinates": ...}

- Przykładowe dane z kolekcji sample\_training.companies

```
use sample_training
db.companies.find()
```

- Analizując kolekcję sample\_training.companies możemy zauważyć różnego rodzaju dane:

	_id	acquisition	acquisitions	alias_list
1	52cdef7c4bab8bd675297d8a	{"price_amount": new NumberInt("30000000"), "price_currency_code": "USD", "term_code": "1"}	[{"price_amount": null, "price_currency_code": "USD", "term_code": "1"}]	
2	52cdef7c4bab8bd675297d8e	<null>	[{"price_amount": null, "price_currency_code": "USD", "term_code": "1"}]	
3	52cdef7c4bab8bd675297d8f	<null>	[{"price_amount": null, "price_currency_code": "USD", "term_code": "1"}]	
4	52cdef7c4bab8bd675297d94	<null>	[{"price_amount": new NumberInt("15000000"), "price_currency_code": "USD", "term_code": "1"}]	
5	52cdef7c4bab8bd675297d95	{"price_amount": new NumberInt("29000000"), "price_currency_code": "USD", "term_code": "1"}	[{"price_amount": new NumberInt("29000000"), "price_currency_code": "USD", "term_code": "1"}]	
6	52cdef7c4bab8bd675297d97	<null>	[{"price_amount": null, "price_currency_code": "USD", "term_code": "1"}]	
7	52cdef7c4bab8bd675297d98	<null>	[{"price_amount": null, "price_currency_code": "USD", "term_code": "1"}]	
8	52cdef7c4bab8bd675297d9e	<null>	[{"price_amount": null, "price_currency_code": "USD", "term_code": "1"}]	
9	52cdef7c4bab8bd675297da0	<null>	[{"price_amount": new NumberInt("28000000"), "price_currency_code": "USD", "term_code": "1"}]	
10	52cdef7c4bab8bd675297da1	{"price_amount": new NumberInt("15000000"), "price_currency_code": "USD", "term_code": "1"}	[{"price_amount": new NumberInt("15000000"), "price_currency_code": "USD", "term_code": "1"}]	
11	52cdef7c4bab8bd675297da2	<null>	[{"price_amount": new NumberInt("215000000"), "price_currency_code": "USD", "term_code": "1"}]	
12	52cdef7c4bab8bd675297da3	<null>	[{"price_amount": new NumberInt("100000000"), "price_currency_code": "USD", "term_code": "1"}]	

- id kolekcji:

```
_id
52cdef7c4bab8bd675297d8a
52cdef7c4bab8bd675297d8e
52cdef7c4bab8bd675297d8f
52cdef7c4bab8bd675297d94
52cdef7c4bab8bd675297d95
```

- category\_code typu String:

category_code
web
social
network_hosting
social
web
news
music
news
games_video
web
network_hosting
web
search
advertising
messaging
advertising
advertising
games_video
games_video
web

- created\_at typu Date

created_at
2007-05-25T06:51:27.000Z
Fri May 25 21:22:15 UTC 2007
Sun May 27 03:25:32 UTC 2007
Fri Jun 01 08:42:34 UTC 2007
2007-06-01T09:28:13.000Z
Sat Jun 02 07:34:05 UTC 2007
Mon Jun 04 08:45:22 UTC 2007
Sat Jun 09 07:30:10 UTC 2007
Sat Jun 09 08:15:21 UTC 2007
Sat Jun 09 14:18:54 UTC 2007
Sat Jun 09 14:33:35 UTC 2007
Sun Nov 04 01:48:15 UTC 2007
Mon Jun 11 19:33:13 UTC 2007
Tue Jun 12 04:06:06 UTC 2007
Wed Dec 05 04:08:03 UTC 2007
Wed Jun 13 09:00:07 UTC 2007
Wed Jun 13 18:23:43 UTC 2007
Thu Jun 14 06:58:59 UTC 2007
Fri Aug 10 08:10:15 UTC 2007
Sat Jun 16 05:05:50 UTC 2007

- ```
{
  "competitions": [
    {
      "competitor": {
        "name": "Wikia",
        "permalink": "wikia"
      },
      "competitor": {
        "name": "MySpace",
        "permalink": "myspace"
      },
      "competitor": {
        "name": "Dropbox",
        "permalink": "dropbox"
      },
      "competitor": {
        "name": "Digg",
        "permalink": "digg"
      },
      "competitor": {
        "name": "MatchMine",
        "permalink": "matchmine"
      },
      "competitor": {
        "name": "Docstoc",
        "permalink": "docstoc"
      },
      "competitor": {
        "name": "Jango",
        "permalink": "jango"
      },
      "competitor": {
        "name": "Joost",
        "permalink": "joost"
      },
      "competitor": {
        "name": "Xobni",
        "permalink": "xobni"
      },
      "competitor": {
        "name": "Google",
        "permalink": "google"
      },
      "competitor": {
        "name": "Hakia",
        "permalink": "hakia"
      },
      "competitor": {
        "name": "Twingly",
        "permalink": "twingly"
      },
      "competitor": {
        "name": "Jott",
        "permalink": "jott"
      },
      "competitor": {
        "name": "Gigya",
        "permalink": "gigya"
      },
      "competitor": {
        "name": "DoubleClick",
        "permalink": "doubleclick"
      },
      "competitor": {
        "name": "Rupture",
        "permalink": "rupture"
      },
      "competitor": {
        "name": "Revver",
        "permalink": "revver"
      },
      "competitor": {
        "name": "Last.fm",
        "permalink": "last-fm"
      }
    ]
  }
}
```

- ```
{ tag_list
storage, sharing, edit, online
text, messaging, social, community, twitter, tweet, twttr, microblo...
content-discovery, find, content, stumble, toolbar
book-subscription, digital-library, netflix-for-books, sharing, doc...
<null>
iptv, web2ireland
contact-management, address-book, sync, contacts, de-duper, import,...
networking
search, portal, webmail, photos
searchengine, google, techcrunch40, natural-language
blogs, search
```

- | { deadpooled_day ▾ |  |
|--------------------|--|
| <null>             |  |
| <null>             |  |
| <null>             |  |
| <null>             |  |
| <null>             |  |
| 15                 |  |
| 9                  |  |

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- ```
use sample_geospatial
db.shipwrecks.find()
```

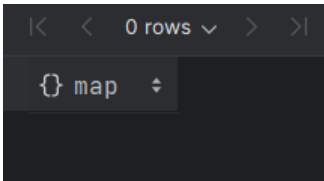
- Na przykładzie pola "quasou" widzimy, że dla niektórych dokumentów jest ono puste. W taki sposób zostaje miejsce do uzupełnienia informacji w przyszłości.

- Niektóre pola są puste dla wszystkich dokumentów.

[illegible]

- Można sprawdzić, czy oznacza to wartość "Null":

```
use sample_geospatial
db.shipwrecks.find( { "recrd": null } )
```



- Wynikiem jest zbiór pusty. Spróbujmy sprawdzić, czy nie jest to pusty string:

```
use sample_geospatial
db.shipwrecks.find( { "recrd": "" } )
```

| _id                      | chart                       | coordinates              | depth | feature_type                     | gp_quality | history | latdec    | londec      | quasou        | recd |
|--------------------------|-----------------------------|--------------------------|-------|----------------------------------|------------|---------|-----------|-------------|---------------|------|
| 578f0fa2df35c7fbdbaed8c4 | US, U1, graph, DNC H1409860 | [-79.9081268, 9.3547792] |       | Wrecks - Visible                 |            |         | 9.3547792 | -79.9081268 |               |      |
| 578f0fa2df35c7fbdbaed8c5 | US, U1, graph, DNC H1409860 | [-79.9357223, 9.3340302] |       | Wrecks - Visible                 |            |         | 9.3340302 | -79.9357223 |               |      |
| 578f0fa2df35c7fbdbaed8c6 | US, U1, graph, DNC H1409860 | [-79.9074173, 9.3560572] |       | Wrecks - Submerged, dangerous    |            |         | 9.3560572 | -79.9074173 | depth unknown |      |
| 578f0fa2df35c7fbdbaed8c7 | US, U1, graph, DNC H1409860 | [-79.9137115, 9.3390503] |       | Wrecks - Visible                 |            |         | 9.3390503 | -79.9137115 |               |      |
| 578f0fa2df35c7fbdbaed8c8 | US, U1, graph, DNC H1409860 | [-79.9103851, 9.3418808] |       | Wrecks - Submerged, dangerous    |            |         | 9.3418808 | -79.9103851 | depth unknown |      |
| 578f0fa2df35c7fbdbaed8c9 | US, U1, graph, DNC H1409860 | [-79.9361496, 9.3314219] |       | Wrecks - Submerged, dangerous    |            |         | 9.3314219 | -79.9361496 | depth unknown |      |
| 578f0fa2df35c7fbdbaed8ca | US, US, reprt, L-1083/14    | [-79.940556, 9.3641392]  |       | Wrecks - Visible                 |            |         | 9.3641392 | -79.940556  |               |      |
| 578f0fa2df35c7fbdbaed8cb | US, US, reprt, L-1-2015     | [-79.9005833, 9.3723889] | 2.2   | Wrecks - Submerged, dangerous    |            |         | 9.3723889 | -79.9005833 |               |      |
| 578f0fa2df35c7fbdbaed8cc | US, US, reprt, L-1-2015     | [-79.9005, 9.3751667]    | 4     | Wrecks - Submerged, dangerous    |            |         | 9.3751667 | -79.9005    |               |      |
| 578f0fa2df35c7fbdbaed8cd | US, US, reprt, L-1-2015     | [-79.9081389, 9.3601389] |       | Wrecks - Visible                 |            |         | 9.3601389 | -79.9081389 |               |      |
| 578f0fa2df35c7fbdbaed8ce | US, U1, graph, DNC H1409860 | [-79.9469681, 9.3729954] |       | Wrecks - Visible                 |            |         | 9.3729954 | -79.9469681 |               |      |
| 578f0fa2df35c7fbdbaed8cf | US, US, reprt, L-1-2015     | [-79.9089722, 9.3560556] | 2.5   | Wrecks - Submerged, dangerous    |            |         | 9.3560556 | -79.9089722 |               |      |
| 578f0fa2df35c7fbdbaed8d0 | US, US, reprt, L-1-2015     | [-79.9084167, 9.3549722] |       | Wrecks - Visible                 |            |         | 9.3549722 | -79.9084167 |               |      |
| 578f0fa2df35c7fbdbaed8d1 | US, US, reprt, L-781/15     | [-79.9196389, 9.4007778] | 15.1  | Wrecks - Submerged, dangerous    |            |         | 9.4007778 | -79.9196389 |               |      |
| 578f0fa2df35c7fbdbaed8d2 | US, US, reprt, L-781/15     | [-79.93025, 9.4171667]   | 30.3  | Wrecks - Submerged, nondangerous |            |         | 9.4171667 | -79.93025   |               |      |
| 578f0fa2df35c7fbdbaed8d3 | US, US, reprt, L-781/15     | [-79.9283333, 9.4187222] | 32    | Wrecks - Submerged, nondangerous |            |         | 9.4187222 | -79.9283333 |               |      |
| 578f0fa2df35c7fbdbaed8d4 | US, US, reprt, DD-26697     | [-79.9229861, 9.3958694] | 12.3  | Wrecks - Submerged, dangerous    |            |         | 9.3958694 | -79.9229861 |               |      |
| 578f0fa2df35c7fbdbaed8d5 | US, US, reprt, DD-26697     | [-79.909247, 9.394889]   | 12.1  | Wrecks - Submerged, dangerous    |            |         | 9.394889  | -79.909247  |               |      |
| 578f0fa2df35c7fbdbaed8d6 | US, US, reprt, L-1218/15    | [-79.0378342, 9.5690002] |       | Wrecks - Visible                 |            |         | 9.5690002 | -79.0378342 |               |      |
| 578f0fa2df35c7fbdbaed8d7 | US, US, reprt, L-1218/15    | [-78.8790131, 9.5574865] |       | Wrecks - Visible                 |            |         | 9.5574865 | -78.8790131 |               |      |

## Yelp

- Korzystając z mongoimport importujemy yelp.business.json

```
PS C:\Users\wikto> mongoimport --uri "mongodb+srv://wiktord2003:Wektor12@mongodb-studio.3j0fnoo.mongodb.net/?retryWrites=true&w=majority&appName=MongoDB-Studio" --collection business --type json --file C:\Users\wikto\Desktop\yelp-split\business.json
```

- yelp.business.json:

| _id                      | attributes                                                                  | business_id             | categories                                                                 |
|--------------------------|-----------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------|
| 66142d7c6ffc23b386423696 | {}                                                                          | ZW2WeP2H20tqRG1NFkoQ    | ["Home Services", "Heating & Air Conditioning/HVAC"]                       |
| 66142d7c6ffc23b386423697 | {"By Appointment Only": true}                                               | vcNAW1LM4dR7D2nwmJ7nCA  | ["Doctors", "Health & Medical"]                                            |
| 66142d7c6ffc23b386423698 | {}                                                                          | ZLhAvs_6ryi4_efZ1SpMbg  | ["Veterinarians", "Pets"]                                                  |
| 66142d7c6ffc23b386423699 | {"Wi-Fi": "free"}                                                           | 95p9Xg358BezJyk1wqzyg   | ["Libraries", "Public Services & Government"]                              |
| 66142d7c6ffc23b38642369a | {}                                                                          | oLctHIA1Axmsg0uu4dM6Vw  | ["Television Stations", "Mass Media"]                                      |
| 66142d7c6ffc23b38642369b | {"Accepts Credit Cards": true, "Wi-Fi": "free", "Price Range": new NumberIn | Xrz2YrJ3aJs8yLVhFI9vkQ  | ["Hotels & Travel", "Bed & Breakfast", "Event Planning & Services", "Hotel |
| 66142d7c6ffc23b38642369c | {"Take-out": true, "Has TV": false, "Outdoor Seating": false, "Attire": "ca | RgDg-k9S5YD_BaxMck1fkG  | ["Chinese", "Restaurants"]                                                 |
| 66142d7c6ffc23b38642369d | {"Take-out": true, "Wi-Fi": "free", "Takes Reservations": false, "Delivery" | LKJF43s9-3J69Lgx4z0Dg   | ["Food", "Ice Cream & Frozen Yogurt", "Fast Food", "Restaurants"]          |
| 66142d7c6ffc23b38642369e | {"Take-out": true, "Good For": {"dessert": false, "latenight": false, "lunc | uGykseHzYS5xAMWn6VUQA   | ["American (Traditional)", "Restaurants"]                                  |
| 66142d7c6ffc23b38642369f | {"Take-out": true, "Good For": {"dessert": false, "latenight": false, "lunc | JWUESGME0-sh1FuwJgKBLQ  | ["Restaurants"]                                                            |
| 66142d7c6ffc23b38642369a | {"Alcohol": "full_bar", "Noise Level": "loud", "Music": {}, "Attire": "casu | w2TYVL7cutanzAnJUTGMA   | ["Bars", "American (Traditional)", "Nightlife", "Lounges", "Restaurants"]  |
| 66142d7c6ffc23b38642369b | {}                                                                          | 9brW55Vzyi3ItboHwfoegp  | ["Auto Repair", "Automotive", "Auto Parts & Supplies", "Car Dealers"]      |
| 66142d7c6ffc23b38642369c | {"Good for Kids": true}                                                     | 1tkeiIa-da08LbMmHm_9A   | ["Active Life", "Bowling"]                                                 |
| 66142d7c6ffc23b38642369d | {"Accepts Credit Cards": true, "Price Range": new NumberInt("2")}           | VjoSdr8u3JslIebsQP6c1Bw | ["Pet Services", "Pets"]                                                   |
| 66142d7c6ffc23b38642369e | {"Take-out": true, "Good For": {"dessert": false, "latenight": false, "lunc | z0c8tBjV1UzajyV7M8aUCQ  | ["Pizza", "Restaurants"]                                                   |
| 66142d7c6ffc23b38642369f | {"Take-out": true, "Wi-Fi": "free", "Good For": {"dessert": false, "latenig | rdAdANPN0cvUtoFgcaY9KA  | ["American (Traditional)", "Restaurants"]                                  |
| 66142d7c6ffc23b38642369a | {"Take-out": true, "Caters": true, "Attire": "casual", "Good For": {"dessa  | HxPpZSVoQleARuiahhr6aA  | ["Event Planning & Services", "Party & Event Planning", "Caterers"]        |
| 66142d7c6ffc23b38642369b | {"Good for Kids": true}                                                     | 368m5-RtrrYWF4hPM_bMlG  | ["Active Life", "Arts & Entertainment", "Stadiums & Arenas"]               |
| 66142d7c6ffc23b38642369c | {"Accepts Credit Cards": true, "Wi-Fi": "free", "Price Range": new NumberIn | rKtMd_M2kMDW8sQKYzetKA  | ["Hotels & Travel", "Event Planning & Services", "Venues & Event Spaces",  |
| 66142d7c6ffc23b38642369d | {"Take-out": true, "Takes Reservations": false, "Delivery": true, "Outdoor  | KtQU4pL023583DYAMExyG   | ["Sandwiches", "Pizza", "Chicken Wings", "Restaurants"]                    |

- Analizując dane, widzimy, że w kolekcji business mamy pole neighborhoods - pusta lista sąsiedzi do uzupełnienia za potrzeby.

```
{ neighborhoods: [] }
{ neighborhoods: [] }
{ neighborhoods: [] }
{ neighborhoods: [] }
{ neighborhoods: [] }
```

- Dla "hours" widzimy zagnieżdżone dokumenty, co więcej, w środku tych obiektów są jeszcze inne zagnieżdżone.

```
{ hours: {} }
{ "Tuesday": { "close": "17:00", "open": "08:00" }, "Friday": { "close": "18:00", "open": "07:30" }, "Monday": { "close": "20:00", "open": "09:00" }, "Tuesday": { "close": "17:00", "open": "08:00" } }
{ }
{ }
```

- Dla "atributes" widzimy lekko różniącą się strukturę dla kolejnych dokumentów: niektóre posiadają tylko określone komponenty, niektóre - wszystkie komponenty, a niektóre w ogóle mają puste atrybuty, co nie zabrania oczywiście uzupełnić je w przyszłości.

```
{ attributes: {} }
{ "By Appointment Only": true }
{ }
{ "Wi-Fi": "free" }
{ }
{ "Accepts Credit Cards": true, "Wi-Fi": "free", "Price Range": "cheap", "Take-out": true, "Has TV": false, "Outdoor Seating": false }
{ "Take-out": true, "Wi-Fi": "free", "Takes Reservations": true }
{ "Take-out": true, "Good For": { "dessert": false, "latenight": true } }
```

- Ogólnie w yelp.business mamy dość rozbudowaną strukturę, w której pola dokumentów mają różne typy: proste (logiczne, liczbowe, tekstowe), tablicowe, zagnieżdżone dokumenty.

Użycie polecenia mongodump

```
PS C:\Users\wikto> mongodump --uri "mongodb+srv://wiktord2003:Wektor12@mongodb-studio.3j0fnoo.mongodb.net/?retryWrites=true&w=majority&appName=MongoDB-Studio" --db=sample_restaurants --collection=restaurants --out=backup_dir -v
2024-04-08T20:25:31.923+0200   dumping up to 1 collections in parallel
2024-04-08T20:25:32.017+0200   writing sample_restaurants.restaurants to backup_dir\sample_restaurants\restaurants.bson
2024-04-08T20:25:32.807+0200   done dumping sample_restaurants.restaurants (25359 documents)
```

Użycie polecenia mongoexport

```
PS C:\Users\wikto> mongoexport --uri "mongodb+srv://wiktord2003:Wektor12@mongodb-studio.3j0fnoo.mongodb.net/?retryWrites=true&w=majority&appName=MongoDB-Studio" --db=sample_training --collection=companies --out=./training-companies.json --jsonArray
2024-04-08T20:31:28.675+0200   connected to: mongodb+srv://[**REDACTED**]@mongodb-studio.3j0fnoo.mongodb.net/?retryWrites=true&w=majority&appName=MongoDB-Studio
2024-04-08T20:31:29.707+0200   [.....] sample_training.companies 0/9500 (0.0%)
2024-04-08T20:31:30.707+0200   [.....] sample_training.companies 0/9500 (0.0%)
2024-04-08T20:31:31.386+0200   [#####] sample_training.companies 9500/9500 (100.0%)
```



# Zadanie 3 - operacje CRUD, operacje wyszukiwania danych

<https://www.mongodb.com/docs/manual/crud/>

Stwórz nową bazę danych

- baza danych będzie przechowywać informacje o klientach, produktach, zamówieniach tych produktów. itp.
- w nazwie bazy danych użyj swoich inicjałów
  - np. **AB-orders**
- zaproponuj strukturę kolekcji/dokumentów (dwie, maksymalnie 3 kolekcje)
  - wykorzystaj typy proste/podstawowe, dokumenty zagnieżdżone, tablice itp.
  - wprowadź kilka przykładowych dokumentów
  - przetestuj operacje wstawiania, modyfikacji/usuwania dokumentów
  - przetestuj operacje wyszukiwania dokumentów

## Zadanie 3 - rozwiązanie

- Uworzenie bazy danych

```
use SK-orders
```

- Wstawienie danych do tabeli Suppliers

```
db.suppliers.insertMany([
  {
    name: "FreshPlanet",
    address: {country: "Poland", city: "Gdansk", address: "Wielkiego street, 34"},
    contact: ["freshplanet@gmail.com", "+48 729 14 25"]
  },
  {
    name: "RUD",
    address: {country: "Ukraine", city: "Zhytomyr", address: "Gonty street, 8"},
    contact: ["rud_factory@gmail.com", "+38 (097) 226 47 85"]
  },
  {
    name: "Family for family",
    address: {country: "Germany", city: "Munich", address: "Marienplatz street, 34"},
    contact: ["family4family@gmail.com"]
  },
  {
    name: "Mlekoraj",
    address: {country: "Poland", city: "Warsaw", address: "Pokoju, 40"},
    contact: ["mlekoraj@gmail.com", "+48 355 19 80"]
  }
])
```

|   | {_id                     | { address                                                     | { contact                                        | { name            |
|---|--------------------------|---------------------------------------------------------------|--------------------------------------------------|-------------------|
| 1 | 66153cebba66ac47ca309b0f | {"country": "Poland", "city": "Gdansk", "address": "Wielkiego | ["freshplanet@gmail.com", "+48 729 14 25"]       | FreshPlanet       |
| 2 | 66153cebba66ac47ca309b10 | {"country": "Ukraine", "city": "Zhytomyr", "address": "Gonty  | ["rud_factory@gmail.com", "+38 (097) 226 47 85"] | RUD               |
| 3 | 66153cebba66ac47ca309b11 | {"country": "Germany", "city": "Munich", "address": "Marienpl | ["family4family@gmail.com"]                      | Family for family |
| 4 | 66153cebba66ac47ca309b12 | {"country": "Poland", "city": "Warsaw", "address": "Pokoju, 4 | ["mlekoraj@gmail.com", "+48 355 19 80"]          | Mlekoraj          |

- Wstawienie danych do tabeli Products

```
db.products.insertMany([
  {
    product_name: "Yougurt Strawberry",
    category: "yougurt",
    qty: 77,
    price: 4.50,
```

```
    manufacturer: {
      name: "FreshPlanet",
      city: "Gdansk",
      contact: "freshplanet@gmail.com"
    },
    discounted: false},

{
  product_name: "Ice cream 100%",
  category: "icecream",
  qty: 29,
  price: 2.80,
  manufacturer: {
    name: "RUD",
    city: "Zhytomyr",
    contact: "rud@gmail.com"
  },
  discounted: false},

{
  product_name: "Ice cream Banana",
  category: "icecream",
  qty: 16,
  price: 2.80,
  manufacturer: {
    name: "RUD",
    city: "Zhytomyr",
    contact: "rud@gmail.com"
  },
  discounted: false},

{
  product_name: "Cheese Gauda Munich",
  category: "cheese",
  qty: 0,
  price: 8.80,
  manufacturer: {
    name: "Family for family",
    city: "Munich",
    contact: "family4family@gmail.com"
  },
  discounted: true},

{
  product_name: "Cheese Gauda Poland",
  category: "cheese",
  qty: 8,
  price: 6.80,
  manufacturer: {
    name: "FreshPlanet",
    city: "Gdansk",
    contact: "freshplanet@gmail.com"
  },
  discounted: false},

{
  product_name: "Cocktaile chokolate biscuit",
  category: "cocktail",
  qty: 7,
  price: 3.50,
  manufacturer: {
    name: "Family for family",
    city: "Munich",
    contact: "family4family@gmail.com"
  },
  discounted: false},

{
  product_name: "Ice cream Forest Day",
  category: "icecream",
  qty: 18,
  price: 4.00,
```

```

    manufacturer: {
      name: "FreshPlanet",
      city: "Gdansk",
      contact: "freshplanet@gmail.com"
    },
    discounted: true},
{
  product_name: "Cocktail strawberry summer",
  category: "cocktail",
  qty: 10,
  price: 5.50,
  manufacturer: {
    name: "FreshPlanet",
    city: "Gdansk",
    contact: "freshplanet@gmail.com"
  },
  discounted: false},
{
  product_name: "Ice cream natural pure x4",
  category: "icecream",
  qty: 18,
  price: 19.80,
  manufacturer: {
    name: "RUD",
    city: "Zhytomyr",
    contact: "rud@gmail.com"
  },
  discounted: false}
})
```

|   | id                       | category | discounted | manufacturer                                                 | price | product_name                | qty |
|---|--------------------------|----------|------------|--------------------------------------------------------------|-------|-----------------------------|-----|
| 1 | 66164205de8d5964b879dec0 | yougurt  | false      | {"name": "FreshPlanet", "city": "Gdansk", "contact": "freshp | 4.5   | Yougurt Strawberry          | 77  |
| 2 | 66164205de8d5964b879dec1 | icecream | false      | {"name": "RUD", "city": "Zhytomyr", "contact": "rud@gmail.co | 2.8   | Ice cream 100%              | 29  |
| 3 | 66164205de8d5964b879dec2 | icecream | false      | {"name": "RUD", "city": "Zhytomyr", "contact": "rud@gmail.co | 2.8   | Ice cream Banana            | 16  |
| 4 | 66164205de8d5964b879dec3 | cheese   | true       | {"name": "Family for family", "city": "Munich", "contact": " | 8.8   | Cheese Gauda Munich         | 0   |
| 5 | 66164205de8d5964b879dec4 | cheese   | false      | {"name": "FreshPlanet", "city": "Gdansk", "contact": "freshp | 6.8   | Cheese Gauda Poland         | 8   |
| 6 | 66164205de8d5964b879dec5 | cocktail | false      | {"name": "Family for family", "city": "Munich", "contact": " | 3.5   | Cocktaile chokolate biscuit | 7   |
| 7 | 66164205de8d5964b879dec6 | icecream | true       | {"name": "FreshPlanet", "city": "Gdansk", "contact": "freshp | 4     | Ice cream Forest Day        | 18  |
| 8 | 66164205de8d5964b879dec7 | cocktail | false      | {"name": "FreshPlanet", "city": "Gdansk", "contact": "freshp | 5.5   | Cocktail strawberry summer  | 10  |
| 9 | 66164205de8d5964b879dec8 | icecream | false      | {"name": "RUD", "city": "Zhytomyr", "contact": "rud@gmail.co | 19.8  | Ice cream natural pure x4   | 18  |

- Wstawienie danych do tabeli Orders

```

db.orders.insertMany([
{
  orderdate: new Date("2024-04-06"),
  customer: {
    firstname: "Simon",
    lastname: "Cherry",
    address: "Green Street",
    house: "18",
    contact: "simoncherry@gmail.com"
  },
  order_details: [{
    product_name: "Ice cream 100%",
    qty: 3,
    discount: 1
  },
  {
    product_name: "Cheese Gauda Poland",
    qty: 1,
    discount: 0.75
  },
  {
    product_name: "Cocktaile chokolate biscuit",
    qty: 2,
    discount: 1
  }
]}
],
```

```
{
  orderdate: new Date("2024-04-07"),
  customer: {
    firstname: "Agatha",
    lastname: "Black",
    address: "Cream Street",
    house: "15",
    contact: "agablack@gmail.com"
  },
  order_details: [{
    product_name: "Ice cream Banana",
    qty: 2,
    discount: 0.9
  },
  {
    product_name: "Cocktail strawberry summer",
    qty: 2,
    discount: 1
  }]
},
{
  orderdate: new Date("2024-04-10"),
  customer: {
    firstname: "Viktoria",
    lastname: "Secret",
    address: "Times Square",
    house: "10",
    contact: "vscret@gmail.com"
  },
  order_details: [{
    product_name: "Ice cream 100%",
    qty: 2,
    discount: 1
  },
  {
    product_name: "Ice cream Banana",
    qty: 2,
    discount: 1
  },
  {
    product_name: "Ice cream natural pure x4",
    qty: 1,
    discount: 0.8
  }]
},
{
  orderdate: new Date("2024-04-10"),
  customer: {
    firstname: "Andrew",
    lastname: "Beer",
    address: "Patrick Street",
    house: "8",
    contact: "beerandr@gmail.com"
  },
  order_details: [{
    product_name: "Yougurt Strawberry",
    qty: 1,
    discount: 1
  }]
}
])
```

|   | id                       | customer                                                                                                        | order_details            | orderdate |
|---|--------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------|-----------|
| 1 | 66164b27de8d5964b879decc | { "firstname": "Simon", "lastname": "Cherry", "address": [{"product_name": "Ice cream 100%", "qty": new Numb    | 2024-04-06T00:00:00.000Z |           |
| 2 | 66164b27de8d5964b879decd | { "firstname": "Agatha", "lastname": "Black", "address": [{"product_name": "Ice cream Banana", "qty": new Nu    | 2024-04-07T00:00:00.000Z |           |
| 3 | 66164b27de8d5964b879dece | { "firstname": "Viktoria", "lastname": "Secret", "address": [{"product_name": "Ice cream 100%", "qty": new Numb | 2024-04-10T00:00:00.000Z |           |
| 4 | 66164b27de8d5964b879decf | { "firstname": "Andrew", "lastname": "Beer", "address": [{"product_name": "Yougurt Strawberry", "qty": new      | 2024-04-10T00:00:00.000Z |           |

- Testowanie update

Na przykładzie tabeli products przetestowaliśmy prosty update danych

```
db.products.updateOne(
  { product_name: 'Yougurt Strawberry' },
  {
    $set: { qty: 76 },
  }
);
```

|   | _id                      | category | discounted | manufacturer                                                        | price | product_name                | qty |
|---|--------------------------|----------|------------|---------------------------------------------------------------------|-------|-----------------------------|-----|
| 1 | 66164205de8d5964b879dec0 | yougurt  | false      | {"name": "FreshPlanet", "city": "Gdansk", "contact": "freshplanet"} | 4.5   | Yougurt Strawberry          | 76  |
| 2 | 66164205de8d5964b879dec1 | icecream | false      | {"name": "RUD", "city": "Zhytomyr", "contact": "rud@gmail.com"}     | 2.8   | Ice cream 100%              | 29  |
| 3 | 66164205de8d5964b879dec2 | icecream | false      | {"name": "RUD", "city": "Zhytomyr", "contact": "rud@gmail.com"}     | 2.8   | Ice cream Banana            | 16  |
| 4 | 66164205de8d5964b879dec3 | cheese   | true       | {"name": "Family for family", "city": "Munich", "contact": "famil"} | 8.8   | Cheese Gauda Munich         | 0   |
| 5 | 66164205de8d5964b879dec4 | cheese   | false      | {"name": "FreshPlanet", "city": "Gdansk", "contact": "freshplanet"} | 6.8   | Cheese Gauda Poland         | 8   |
| 6 | 66164205de8d5964b879dec5 | cocktail | false      | {"name": "Family for family", "city": "Munich", "contact": "famil"} | 3.5   | Cocktaile chokolate biscuit | 7   |
| 7 | 66164205de8d5964b879dec6 | icecream | true       | {"name": "FreshPlanet", "city": "Gdansk", "contact": "freshplanet"} | 4     | Ice cream Forest Day        | 18  |
| 8 | 66164205de8d5964b879dec7 | cocktail | false      | {"name": "FreshPlanet", "city": "Gdansk", "contact": "freshplanet"} | 5.5   | Cocktail strawberry summer  | 10  |
| 9 | 66164205de8d5964b879dec8 | icecream | false      | {"name": "RUD", "city": "Zhytomyr", "contact": "rud@gmail.com"}     | 19.8  | Ice cream natural pure x4   | 18  |

Zauważyliśmy powielanie danych w tabeli products, więc spróbowaliśmy bardziej złożony update do zmiany danych o dostawcach.

Zmienimy nazwę pola:

```
db.products.updateMany(
  {},
  { $rename: { 'manufacturer': 'supplier_id' } }
);
```

Update zmienia zagnieżdżone powielane dane na id z kolekcji Suppliers:

```
db.products.updateOne(
  { product_name: 'Yougurt Strawberry' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b17" },
  }
);

db.products.updateOne(
  { product_name: 'Cheese Gauda Poland' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b17" },
  }
);

db.products.updateOne(
  { product_name: 'Ice cream Forest Day' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b17" },
  }
);

db.products.updateOne(
  { product_name: 'Cocktail strawberry summer' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b17" },
  }
);

db.products.updateOne(
  { product_name: 'Ice cream 100%' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b18" },
  }
);
```

```
db.products.updateOne(
  { product_name: 'Ice cream Banana' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b18" },
  }
);

db.products.updateOne(
  { product_name: 'Ice cream natural pure x4' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b18" },
  }
);

db.products.updateOne(
  { product_name: 'Cocktaile chokolate biscuit' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b19" },
  }
);

db.products.updateOne(
  { product_name: 'Cheese Gauda Munich' },
  {
    $set: { supplier_id: "66153f52ba66ac47ca309b19" },
  }
);
```

|   | { _id                    | : | { category | : | { discounted | : | { price | : | { product_name              | : | { qty | : | { supplier_id            | : |
|---|--------------------------|---|------------|---|--------------|---|---------|---|-----------------------------|---|-------|---|--------------------------|---|
| 1 | 66164205de8d5964b879dec0 |   | yougurt    |   | false        |   | 4.5     |   | Yougurt Strawberry          |   | 76    |   | 66153f52ba66ac47ca309b17 | : |
| 2 | 66164205de8d5964b879dec1 |   | icecream   |   | false        |   | 2.8     |   | Ice cream 100%              |   | 29    |   | 66153f52ba66ac47ca309b18 | : |
| 3 | 66164205de8d5964b879dec2 |   | icecream   |   | false        |   | 2.8     |   | Ice cream Banana            |   | 16    |   | 66153f52ba66ac47ca309b18 | : |
| 4 | 66164205de8d5964b879dec3 |   | cheese     |   | true         |   | 8.8     |   | Cheese Gauda Munich         |   | 0     |   | 66153f52ba66ac47ca309b19 | : |
| 5 | 66164205de8d5964b879dec4 |   | cheese     |   | false        |   | 6.8     |   | Cheese Gauda Poland         |   | 8     |   | 66153f52ba66ac47ca309b17 | : |
| 6 | 66164205de8d5964b879dec5 |   | cocktail   |   | false        |   | 3.5     |   | Cocktaile chokolate biscuit |   | 7     |   | 66153f52ba66ac47ca309b19 | : |
| 7 | 66164205de8d5964b879dec6 |   | icecream   |   | true         |   | 4       |   | Ice cream Forest Day        |   | 18    |   | 66153f52ba66ac47ca309b17 | : |
| 8 | 66164205de8d5964b879dec7 |   | cocktail   |   | false        |   | 5.5     |   | Cocktail strawberry summer  |   | 10    |   | 66153f52ba66ac47ca309b17 | : |
| 9 | 66164205de8d5964b879dec8 |   | icecream   |   | false        |   | 19.8    |   | Ice cream natural pure x4   |   | 18    |   | 66153f52ba66ac47ca309b18 | : |

- Testowanie delete

Spróbujmy usunąć ostatni dokument z kolekcji Suppliers, nie jest on używany

```
db.suppliers.deleteOne(
  { name: "Mlekoraj" }
)
```

|   | { acknowledged | : | { deletedCount | : |
|---|----------------|---|----------------|---|
| 1 | true           |   | 1              |   |

|   | { _id                    | : | { address                                                   | : | { contact                                        | : | { name            | : |
|---|--------------------------|---|-------------------------------------------------------------|---|--------------------------------------------------|---|-------------------|---|
| 1 | 66153f52ba66ac47ca309b17 |   | {"country": "Poland", "city": "Gdansk", "address": "Wielkie |   | ["freshplanet@gmail.com", "+48 729 14 25"]       |   | FreshPlanet       | : |
| 2 | 66153f52ba66ac47ca309b18 |   | {"country": "Ukraine", "city": "Zhytomyr", "address": "Gont |   | ["rud_factory@gmail.com", "+38 (097) 226 47 85"] |   | RUD               | : |
| 3 | 66153f52ba66ac47ca309b19 |   | {"country": "Germany", "city": "Munich", "address": "Marien |   | ["family4family@gmail.com"]                      |   | Family for family | : |

- Testowanie insert

Spróbujmy dodać nowy dokument do kolekcji Suppliers

```
db.suppliers.insertOne({
  name: "MicroMilk",
  address: {country: "Poland", city: "Wroclaw", address: "Berska street, 34"},
  contact: ["micromilk@gmail.com", "+48 187 12 90"],
  additional_info: "10.04-12.04.2024 - discount 15% on whole products"
})
```

Jak widać, MongoDB pozwala na dodawanie nowych pól dla pojedynczych dokumentów, i to nie prowadzi do zakłuceń lub błędów

|   | _id                      | address                                                                           | contact           | name                                              | additional_info |
|---|--------------------------|-----------------------------------------------------------------------------------|-------------------|---------------------------------------------------|-----------------|
| 1 | 66153f52ba66ac47ca309b17 | { "country": "Poland", "city": ["freshplanet@gmail.com", "+48 729 14 25"] }       | FreshPlanet       | <unset>                                           |                 |
| 2 | 66153f52ba66ac47ca309b18 | { "country": "Ukraine", "cit": ["rud_factory@gmail.com", "+38 (097) 226 47 85"] } | RUD               | <unset>                                           |                 |
| 3 | 66153f52ba66ac47ca309b19 | { "country": "Germany", "cit": ["family4family@gmail.com"] }                      | Family for family | <unset>                                           |                 |
| 4 | 66166c03de8d5964b879ded6 | { "country": "Poland", "city": ["micromilk@gmail.com", "+48 187 12 90"] }         | MicroMilk         | 10.04-12.04.2024 - discount 15% on whole products |                 |

- Testowanie find (wyszukiwanie danych)

Wszystkie dostawcy z Polski:

```
db.suppliers.find({"address.country": "Poland"})
```

|   | Q_id                     | address                              | contact                                    | name        | additional_info                                   |
|---|--------------------------|--------------------------------------|--------------------------------------------|-------------|---------------------------------------------------|
| 1 | 66153f52ba66ac47ca309b17 | { "country": "Poland", "city": "Gdan | ["freshplanet@gmail.com", "+48 729 14 25"] | FreshPlanet | <unset>                                           |
| 2 | 66166c03de8d5964b879ded6 | { "country": "Poland", "city": "Wroc | ["micromilk@gmail.com", "+48 187 12 90"]   | MicroMilk   | 10.04-12.04.2024 - discount 15% on whole products |

Wszystkie produkty z kategorii "icecream" albo "yougurt":

```
db.products.find({category: {$in: ["yougurt", "icecream"]}})
```

|   | _id                      | category | discounted | price | product_name              | qty | supplier_id              |
|---|--------------------------|----------|------------|-------|---------------------------|-----|--------------------------|
| 1 | 66164205de8d5964b879dec0 | yougurt  | false      | 4.5   | Yougurt Strawberry        | 76  | 66153f52ba66ac47ca309b17 |
| 2 | 66164205de8d5964b879dec1 | icecream | false      | 2.8   | Ice cream 100%            | 29  | 66153f52ba66ac47ca309b18 |
| 3 | 66164205de8d5964b879dec2 | icecream | false      | 2.8   | Ice cream Banana          | 16  | 66153f52ba66ac47ca309b18 |
| 4 | 66164205de8d5964b879dec6 | icecream | true       | 4     | Ice cream Forest Day      | 18  | 66153f52ba66ac47ca309b17 |
| 5 | 66164205de8d5964b879dec8 | icecream | false      | 19.8  | Ice cream natural pure x4 | 18  | 66153f52ba66ac47ca309b18 |

Dodamy drugi warunek na cenę większą od 3:

```
db.products.find({category: {$in: ["yougurt", "icecream"]}, price: {$gt: 3}})
```

|   | _id                      | category | discounted | price | product_name              | qty | supplier_id              |
|---|--------------------------|----------|------------|-------|---------------------------|-----|--------------------------|
| 1 | 66164205de8d5964b879dec0 | yougurt  | false      | 4.5   | Yougurt Strawberry        | 76  | 66153f52ba66ac47ca309b17 |
| 2 | 66164205de8d5964b879dec6 | icecream | true       | 4     | Ice cream Forest Day      | 18  | 66153f52ba66ac47ca309b17 |
| 3 | 66164205de8d5964b879dec8 | icecream | false      | 19.8  | Ice cream natural pure x4 | 18  | 66153f52ba66ac47ca309b18 |

Spróbujmy wyświetlić produkty potrzebujące uwagi menadżerów: albo skasowane, albo takie, których zostało mniej niż 10.

```
db.products.find({$or: [
  {qty: {$lt: 10}}, {discounted: "true"}
]})
```

|   | _id                      | category | discounted | price | product_name                | qty | supplier_id              |
|---|--------------------------|----------|------------|-------|-----------------------------|-----|--------------------------|
| 1 | 66164205de8d5964b879dec3 | cheese   | true       | 8.8   | Cheese Gauda Munich         | 0   | 66153f52ba66ac47ca309b19 |
| 2 | 66164205de8d5964b879dec4 | cheese   | false      | 6.8   | Cheese Gauda Poland         | 8   | 66153f52ba66ac47ca309b17 |
| 3 | 66164205de8d5964b879dec5 | cocktail | false      | 3.5   | Cocktaile chokolate biscuit | 7   | 66153f52ba66ac47ca309b19 |

Możemy poszukać zamówienie, w którym jeden z produktów miał zniżkę 75%. Wyświetlimy tylko id zamówienia i datę.

```
db.orders.find({$or: [{"order_details.discount": {$eq: 0.75}}],
  {_id: 1, orderdate: 1}})
```

|   | _id                      | orderdate                |
|---|--------------------------|--------------------------|
| 1 | 66164b27de8d5964b879decc | 2024-04-06T00:00:00.000Z |

Albo można też tak:

```
db.orders.find({$or: [{"order_details.discount": {$eq: 0.75}}]},
               {customer: 0, order_details: 0})
```

|   | _id                      | orderdate                |
|---|--------------------------|--------------------------|
| 1 | 66164b27de8d5964b879decc | 2024-04-06T00:00:00.000Z |

Ćwiczenie przeznaczone jest do wykonania podczas zajęć. Pod koniec zajęć należy przestać wyniki prac

Punktacja:

| zadanie | pkt |
|---------|-----|
| 1       | 0,1 |
| 2       | 0,2 |
| 3       | 0,7 |
| razem   | 1   |