

# Dokumentowe bazy danych – MongoDB

## ćwiczenie 1

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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

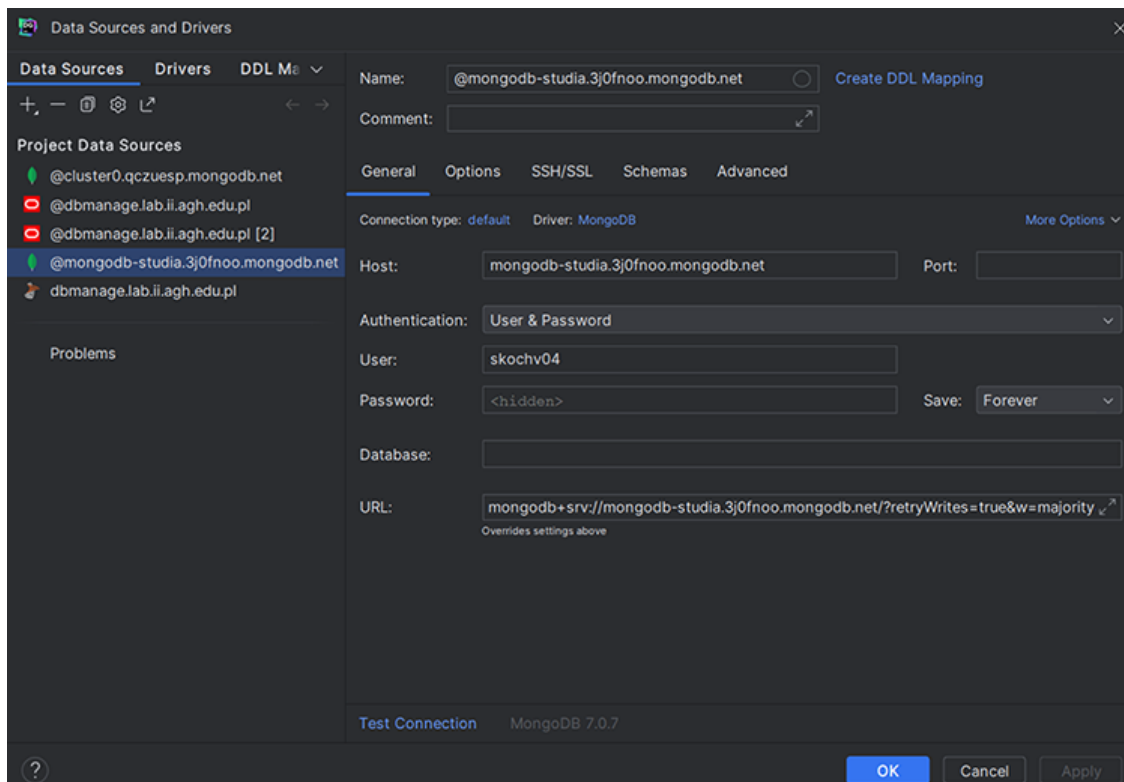
- Połączenie z bazą danych za pomocą konsoli mongosh

```
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-rnaf1l-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/>

Używając komendy `mongoexport` importujemy dane do zdalnej bazy danych MongoDB Atlas

```
PS C:\Users\wikto> mongoexport --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`

```
SELECT * FROM sample_weatherdata.data;
```

	_id	airTemperature	callLetters	dataSource	dewPoint	elevation
1	5553a998e4b02cf7151190b8	{"value": -3.1, "quality": "1"}	VCSZ	4	{"value": 999.9, "quality": "9"}	9999
2	5553a998e4b02cf7151190b9	{"value": -4.7, "quality": "1"}	VC81	4	{"value": 999.9, "quality": "9"}	9999
3	5553a998e4b02cf7151190ba	{"value": 4.4, "quality": "1"}	PLAT	4	{"value": 3.5, "quality": "1"}	9999
4	5553a998e4b02cf7151190bb	{"value": 7.5, "quality": "1"}	TFRB	4	{"value": 999.9, "quality": "9"}	9999
5	5553a998e4b02cf7151190bc	{"value": 0.4, "quality": "1"}	TFBY	4	{"value": 999.9, "quality": "9"}	9999
6	5553a998e4b02cf7151190bd	{"value": 3.1, "quality": "1"}	TFWB	4	{"value": 999.9, "quality": "9"}	9999
7	5553a998e4b02cf7151190be	{"value": -26.7, "quality": "1"}	EMIO	4	{"value": -29.8, "quality": "1"}	9999
8	5553a998e4b02cf7151190bf	{"value": -5.1, "quality": "1"}	SCGB	4	{"value": 999.9, "quality": "9"}	9999
9	5553a998e4b02cf7151190c0	{"value": 6.3, "quality": "1"}	PLAT	4	{"value": 999.9, "quality": "9"}	9999
10	5553a998e4b02cf7151190c1	{"value": 6.6, "quality": "1"}	OWXP	4	{"value": 4.4, "quality": "1"}	9999
11	5553a998e4b02cf7151190c2	{"value": 2, "quality": "1"}	LAQU	4	{"value": -2, "quality": "1"}	9999
12	5553a998e4b02cf7151190c3	{"value": 7.1, "quality": "1"}	PLAT	4	{"value": 999.9, "quality": "9"}	9999
13	5553a998e4b02cf7151190c4	{"value": 999.9, "quality": "9"}	FNUI	4	{"value": 999.9, "quality": "9"}	9999
14	5553a998e4b02cf7151190c5	{"value": -4.5, "quality": "1"}	VCNP	4	{"value": 999.9, "quality": "9"}	9999
15	5553a998e4b02cf7151190c6	{"value": 17.2, "quality": "1"}	SINL	4	{"value": 16.5, "quality": "1"}	9999
16	5553a998e4b02cf7151190c7	{"value": 0.9, "quality": "1"}	UUQR	4	{"value": -4.3, "quality": "1"}	9999
17	5553a998e4b02cf7151190c8	{"value": 5.4, "quality": "1"}	PLAT	4	{"value": 999.9, "quality": "9"}	9999
18	5553a998e4b02cf7151190c9	{"value": 4.8, "quality": "1"}	PLAT	4	{"value": 4.6, "quality": "1"}	9999
19	5553a998e4b02cf7151190ca	{"value": 17, "quality": "1"}	UYOK	4	{"value": 999.9, "quality": "9"}	9999
20	5553a998e4b02cf7151190cb	{"value": 999.9, "quality": "9"}	CG26	4	{"value": 999.9, "quality": "9"}	9999

Przykładowe dane z kolekcji `sample_training.companies`

```
SELECT * FROM sample_training.companies 5s
```

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": "US"}	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
2	52cdef7c4bab8bd675297d8e	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
3	52cdef7c4bab8bd675297d8f	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
4	52cdef7c4bab8bd675297d94	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
5	52cdef7c4bab8bd675297d95	{"price_amount": new NumberInt("29000000"), "price_currency_code": "US"}	["price_amount": new NumberInt("29000000"), "price_currency_code": "U"]	
6	52cdef7c4bab8bd675297d97	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
7	52cdef7c4bab8bd675297d98	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
8	52cdef7c4bab8bd675297d9e	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
9	52cdef7c4bab8bd675297da0	<null>	["price_amount": new NumberInt("280000000"), "price_currency_code": "U"]	
10	52cdef7c4bab8bd675297da1	{"price_amount": new NumberInt("150000000"), "price_currency_code": "U"}	["price_amount": new NumberInt("150000000"), "price_currency_code": "U"]	
11	52cdef7c4bab8bd675297da2	<null>	["price_amount": new NumberInt("215000000"), "price_currency_code": "U"]	
12	52cdef7c4bab8bd675297da3	<null>	["price_amount": new NumberInt("1000000000"), "price_currency_code": "U"]	Yahoo
13	52cdef7c4bab8bd675297da4	{"price_amount": new NumberInt("100000000"), "price_currency_code": "U"}	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
14	52cdef7c4bab8bd675297da5	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
15	52cdef7c4bab8bd675297da6	{"price_amount": new NumberInt("102000000"), "price_currency_code": "U"}	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
16	52cdef7c4bab8bd675297da7	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	Clearspring, Clearspring Technolog
17	52cdef7c4bab8bd675297da8	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
18	52cdef7c4bab8bd675297daa	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
19	52cdef7c4bab8bd675297dac	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	
20	52cdef7c4bab8bd675297dae	<null>	["price_amount": null, "price_currency_code": "USD", "term_code": "ca"]	

id kolekcji:

_id
52cdef7c4bab8bd675297d8a
52cdef7c4bab8bd675297d8e
52cdef7c4bab8bd675297d8f
52cdef7c4bab8bd675297d94
52cdef7c4bab8bd675297d95
52cdef7c4bab8bd675297d97
52cdef7c4bab8bd675297d98
52cdef7c4bab8bd675297d9e
52cdef7c4bab8bd675297da0
52cdef7c4bab8bd675297da1
52cdef7c4bab8bd675297da2
52cdef7c4bab8bd675297da3
52cdef7c4bab8bd675297da4
52cdef7c4bab8bd675297da5
52cdef7c4bab8bd675297da6
52cdef7c4bab8bd675297da7
52cdef7c4bab8bd675297da8
52cdef7c4bab8bd675297daa
52cdef7c4bab8bd675297dac
52cdef7c4bab8bd675297dae

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 typu listy różnego rodzaju elementów/struktur danych

```
{
  "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"
        }
      }
    ]
  ]
}
```

Po analizie całej konkretnej kolekcji możemy powiedzieć, że przechowywane są w niej różnego rodzaju dane co pozwala dokładnie opisać co przechowuje dany obiekt

Analizując `sample_geospatial.shipwrecks` także zauważamy, że przedstawione dane przechowywane są w sposób przejrzysty, czytelny, a także bardzo szczegółowy.

```
✓ SELECT * FROM sample_geospatial.shipwrecks
```

	_id	chart	coordinates	depth	feature_type	gp_quality	history	latdec	londec	quasou	recr
1	578f6fa2df35c7fbdbaed8c4	US, U1, graph, DNC	H1409860 [-79.9081268, 9.3547792]		Wrecks - Visible			9.3547792	-79.9081268		
2	578f6fa2df35c7fbdbaed8c5	US, U1, graph, DNC	H1409860 [-79.9357223, 9.3340302]		Wrecks - Visible			9.3340302	-79.9357223		
3	578f6fa2df35c7fbdbaed8c6	US, U1, graph, DNC	H1409860 [-79.9074173, 9.3560572]		Wrecks - Submerged, dangerous			9.3560572	-79.9074173	depth unknown	
4	578f6fa2df35c7fbdbaed8c7	US, U1, graph, DNC	H1409860 [-79.9137115, 9.3390503]		Wrecks - Visible			9.3390503	-79.9137115		
5	578f6fa2df35c7fbdbaed8c8	US, U1, graph, DNC	H1409860 [-79.9103851, 9.3418808]		Wrecks - Submerged, dangerous			9.3418808	-79.9103851	depth unknown	
6	578f6fa2df35c7fbdbaed8c9	US, U1, graph, DNC	H1409860 [-79.9361496, 9.3314219]		Wrecks - Submerged, dangerous			9.3314219	-79.9361496	depth unknown	
7	578f6fa2df35c7fbdbaed8ca	US, US, reprt, L-1083/14	[-79.940556, 9.3641392]		Wrecks - Visible			9.3641392	-79.940556		
8	578f6fa2df35c7fbdbaed8cb	US, US, reprt, L-1-2015	[-79.9005833, 9.3723889]	2.2	Wrecks - Submerged, dangerous			9.3723889	-79.9005833		
9	578f6fa2df35c7fbdbaed8cc	US, US, reprt, L-1-2015	[-79.9005, 9.3751667]	4	Wrecks - Submerged, dangerous			9.3751667	-79.9005		
10	578f6fa2df35c7fbdbaed8cd	US, US, reprt, L-1-2015	[-79.9081389, 9.3601389]		Wrecks - Visible			9.3601389	-79.9081389		
11	578f6fa2df35c7fbdbaed8ce	US, U1, graph, DNC	H1409860 [-79.9469681, 9.3729954]		Wrecks - Visible			9.3729954	-79.9469681		
12	578f6fa2df35c7fbdbaed8cf	US, US, reprt, L-1-2015	[-79.9089722, 9.3560556]	2.5	Wrecks - Submerged, dangerous			9.3560556	-79.9089722		
13	578f6fa2df35c7fbdbaed8d0	US, US, reprt, L-1-2015	[-79.9084167, 9.3549722]		Wrecks - Visible			9.3549722	-79.9084167		
14	578f6fa2df35c7fbdbaed8d1	US, US, reprt, L-781/15	[-79.9196389, 9.4007778]	15.1	Wrecks - Submerged, dangerous			9.4007778	-79.9196389		
15	578f6fa2df35c7fbdbaed8d2	US, US, reprt, L-781/15	[-79.93025, 9.4171667]	30.3	Wrecks - Submerged, nondangerous			9.4171667	-79.93025		
16	578f6fa2df35c7fbdbaed8d3	US, US, reprt, L-781/15	[-79.9283333, 9.4187222]	32	Wrecks - Submerged, nondangerous			9.4187222	-79.9283333		
17	578f6fa2df35c7fbdbaed8d4	US, US, reprt, DD-26697	[-79.9229861, 9.3958694]	12.3	Wrecks - Submerged, dangerous			9.3958694	-79.9229861		
18	578f6fa2df35c7fbdbaed8d5	US, US, reprt, DD-26697	[-79.909247, 9.394889]	12.1	Wrecks - Submerged, dangerous			9.394889	-79.909247		
19	578f6fa2df35c7fbdbaed8d6	US, US, reprt, L-1218/15	[-79.0378342, 9.5690002]		Wrecks - Visible			9.5690002	-79.0378342		
20	578f6fa2df35c7fbdbaed8d7	US, US, reprt, L-1218/15	[-78.8790131, 9.5574865]		Wrecks - Visible			9.5574865	-78.8790131		

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\bussiness.json
```

yelp.business.json:

_id	attributes	business_id	categories
66142d7c6ffc23b386423696	{}	ZW2WeP2Hp20tqQRG1NFkoQ	["Home Services", "Heating and Air Conditioning/HVAC"]
66142d7c6ffc23b386423697	{"By Appointment Only": true}	vcNAW1LM4dR7D2nwwJ7nCA	["Doctors", "Health & Medical"]
66142d7c6ffc23b386423698	{}	ZlhAvs_6ryi4_efZ1SpMbg	["Veterinarians", "Pets"]
66142d7c6ffc23b386423699	{"Wi-Fi": "free"}	95p9Xg358BezJyk1wq2zyg	["Libraries", "Public Services & Government"]
66142d7c6ffc23b38642369a	{}	oLctHIA1Axsq0uu4dM6Vw	["Television Stations", "Mass Media"]
66142d7c6ffc23b38642369b	{"Accepts Credit Cards": true, "Wi-Fi": "free", "Price Range": new NumberIn	XrzTYVrJAjs0YVhFI9vKq	["Hotels & Travel", "Bed & Breakfast", "Event Planning & Services", "Hotel
66142d7c6ffc23b38642369c	{"Take-out": true, "Has TV": false, "Outdoor Seating": false, "Attire": "ca	RgDg-K9S5YD_BaxMcKifkg	["Chinese", "Restaurants"]
66142d7c6ffc23b38642369d	{"Take-out": true, "Wi-Fi": "free", "Takes Reservations": false, "Delivery"	LRKJF43s9-3j69Lgx4z0Dg	["Food", "Ice Cream & Frozen Yogurt", "Fast Food", "Restaurants"]
66142d7c6ffc23b38642369e	{"Take-out": true, "Good For": {"dessert": false, "latenight": false, "lunc	uGykseH5sYxAMWoN6YUQA	["American (Traditional)", "Restaurants"]
66142d7c6ffc23b38642369f	{"Take-out": true, "Good For": {"dessert": false, "latenight": false, "lunc	JWUE5GmE0-sH1FuwJgKB1Q	["Restaurants"]
66142d7c6ffc23b3864236a0	{"Alcohol": "full_bar", "Noise Level": "loud", "Music": {}, "Attire": "casu	wZTYL7GcutanZAnJUTGMA	["Bars", "American (Traditional)", "Nightlife", "Lounges", "Restaurants"]
66142d7c6ffc23b3864236a1	{}	9brW55Vzyi3ItboHWfoepg	["Auto Repair", "Automotive", "Auto Parts & Supplies", "Car Dealers"]
66142d7c6ffc23b3864236a2	{"Good for Kids": true}	1tkella-da08LbM6mH6_9A	["Active Life", "Bowling"]
66142d7c6ffc23b3864236a3	{"Accepts Credit Cards": true, "Price Range": new NumberInt("2")}	YjoSdr8uJsIebsQP6c18w	["Pet Services", "Pets"]
66142d7c6ffc23b3864236a4	{"Take-out": true, "Good For": {"dessert": false, "latenight": false, "lunc	z0c8LbjViUZajbV7M0aUCQ	["Pizza", "Restaurants"]
66142d7c6ffc23b3864236a5	{"Take-out": true, "Wi-Fi": "free", "Good For": {"dessert": false, "latenig	rdAdANPN0cvUtoFgcaY9KA	["American (Traditional)", "Restaurants"]
66142d7c6ffc23b3864236a6	{"Take-out": true, "Caters": true, "Attire": "casual", "Good For": {"desser	HxPpZSV6Q1eARuiahrr6A	["Event Planning & Services", "Party & Event Planning", "Caterers"]
66142d7c6ffc23b3864236a7	{"Good for Kids": true}	368m5-RtrrYwF4hPM_0M1g	["Active Life", "Arts & Entertainment", "Stadiums & Arenas"]
66142d7c6ffc23b3864236a8	{"Accepts Credit Cards": true, "Wi-Fi": "free", "Price Range": new NumberIn	rKntd_M2kWDW8sqKYzetKA	["Hotels & Travel", "Event Planning & Services", "Venues & Event Spaces",
66142d7c6ffc23b3864236a9	{"Take-out": true, "Takes Reservations": false, "Delivery": true, "Outdoor	KtqNU4pL023583DyAMGxyg	["Sandwiches", "Pizza", "Chicken Wings", "Restaurants"]

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
66153cebbba66ac47ca309b0f	{country: "Poland", city: "Gdansk", address: "Wielkiego	["freshplanet@gmail.com", "+48 729 14 25"]	FreshPlanet
66153cebbba66ac47ca309b10	{country: "Ukraine", city: "Zhytomyr", address: "Gonty	["rud_factory@gmail.com", "+38 (097) 226 47 85"]	RUD
66153cebbba66ac47ca309b11	{country: "Germany", city: "Munich", address: "Marienpl	["family4family@gmail.com"]	Family for family
66153cebbba66ac47ca309b12	{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", "addre	[{"product_name": "Ice cream 100%", "qty": new Numb	2024-04-06T00:00:00.000Z
2	66164b27de8d5964b879decd	{ "firstname": "Agatha", "lastname": "Black", "addre	[{"product_name": "Ice cream Banana", "qty": new Nu	2024-04-07T00:00:00.000Z
3	66164b27de8d5964b879dece	{ "firstname": "Viktoria", "lastname": "Secret", "ad	[{"product_name": "Ice cream 100%", "qty": new Numb	2024-04-10T00:00:00.000Z
4	66164b27de8d5964b879decf	{ "firstname": "Andrew", "lastname": "Beer", "adres	[{"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
66164205de8d5964b879dec0	yougurt	false	{"name": "FreshPlanet", "city": "Gdansk", "contact": "freshplanet"}	4.5	Yougurt Strawberry	76
66164205de8d5964b879dec1	icecream	false	{"name": "RUD", "city": "Zhytomyr", "contact": "rud@gmail.com"}	2.8	Ice cream 100%	29
66164205de8d5964b879dec2	icecream	false	{"name": "RUD", "city": "Zhytomyr", "contact": "rud@gmail.com"}	2.8	Ice cream Banana	16
66164205de8d5964b879dec3	cheese	true	{"name": "Family for family", "city": "Munich", "contact": "famil"}	8.8	Cheese Gauda Munich	0
66164205de8d5964b879dec4	cheese	false	{"name": "FreshPlanet", "city": "Gdansk", "contact": "freshplanet"}	6.8	Cheese Gauda Poland	8
66164205de8d5964b879dec5	cocktail	false	{"name": "Family for family", "city": "Munich", "contact": "famil"}	3.5	Cocktaile chokolate biscuit	7
66164205de8d5964b879dec6	icecream	true	{"name": "FreshPlanet", "city": "Gdansk", "contact": "freshplanet"}	4	Ice cream Forest Day	18
66164205de8d5964b879dec7	cocktail	false	{"name": "FreshPlanet", "city": "Gdansk", "contact": "freshplanet"}	5.5	Cocktail strawberry summer	10
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 zagnieżdzone 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 chokolade 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 chokolade 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": "Gdansk", "address": "Wielkie	[ "freshplanet@gmail.com", "+48 729 14 25" ]	FreshPlanet	<unset>
2	66153f52ba66ac47ca309b18	{ "country": "Ukraine", "city": "Zhytomyr", "address": "Gont	[ "rud_factory@gmail.com", "+38 (097) 226 47 85" ]	RUD	<unset>
3	66153f52ba66ac47ca309b19	{ "country": "Germany", "city": "Munich", "address": "Marien	[ "family4family@gmail.com" ]	Family for family	<unset>
4	66166c03de8d5964b879ded6	{ "country": "Poland", "city": "Wroclaw", "address": "Berska street, 34	[ "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"})
```

	_id	address	contact	name	additional_info
1	66153f52ba66ac47ca309b17	{ "country": "Poland", "city": "Gdan	["freshplanet@gmail.com", "+48 729 14 25"]	FreshPlanet	<unset>
2	66166c83de8d5964b879ded6	{ "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 przesłać wyniki prac

Punktacja:

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