

NoSQL

02-27-2020

SQL vs NoSQL

<https://www.guru99.com/sql-vs-nosql.html>

SQL	NOSQL
relational	non-relational
static predefined schema	dynamic schema
not good for hierarchical data	good for hierarchical data
best suited for complex queries	not so good for complex queries
verticly Scalable	horizontally scalable
table	collection
record	document

Among all the NoSQL databases, MongoDB is the most popular.

Airbnb sample data

<https://docs.atlas.mongodb.com/sample-data/sample-airbnb/>

To connect to this MongoDB, you need to either on the campus network or connect via UCDavis VPN.

```
library(tidyverse)
```

```
## -- Attaching packages ----- tidyverse 1.3.0 --
```

```
## v ggplot2 3.2.1    v purrr   0.3.3
## v tibble  2.1.3    v dplyr   0.8.4
## v tidyr   1.0.2    v stringr 1.4.0
## v readr   1.3.1    v forcats 0.4.0
```

```
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(mongolite)
```

```
m <- mongo("airbnb", db = "data", url = "mongodb://mongouser:secret@alan.ucdavis.edu/data")
```

```
m$count()
```

```
## [1] 5555
```

Query Documents <https://docs.mongodb.com/manual/tutorial/query-documents/>

```
# find the first document
m$find("{ }", limit = 1)
```

```
##                               listing_url                               name
## 1 https://www.airbnb.com/rooms/10006546 Ribeira Charming Duplex
##
## 1 Fantastic duplex apartment with three bedrooms, located in the historic area of Porto, Ribeira (Cul
##
## 1 Privileged views of the Douro River and Ribeira square, our apartment offers the perfect conditions
##
## 1 Fantastic duplex apartment with three bedrooms, located in the historic area of Porto, Ribeira (Cul
##
## 1 In the neighborhood of the river, you can find several restaurants as varied flavors, but without
##
## 1 Lose yourself in the narrow streets and staircases zone, have lunch in pubs and typical restaurants
##
## 1 Transport: • Metro station and S. Bento railway 5min; • Bus stop a 50 meters; • Lift Guindais (Fun
##
## 1 We are always available to help guests. The house is fully available to guests. We are always ready
##
##                               interaction                               house_rules
## 1 Cot - 10 € / night Dog - € 7,5 / night Make the house your home...
##   property_type      room_type bed_type minimum_nights maximum_nights
## 1      House Entire home/apt Real Bed              2              30
##   cancellation_policy      last_scraped calendar_last_scraped
## 1      moderate 2019-02-15 21:00:00 2019-02-15 21:00:00
##   first_review      last_review accommodates bedrooms beds
## 1 2016-01-02 21:00:00 2019-01-19 21:00:00              8              3              5
##   number_of_reviews bathrooms
## 1              51              1
##
## 1 TV, Cable TV, Wifi, Kitchen, Paid parking off premises, Smoking allowed, Pets allowed, Buzzer/wire
##   price security_deposit cleaning_fee extra_people guests_included
## 1      80              200              35              15              6
##   images.thumbnail_url images.medium_url
## 1
##
##                               images.picture_url
## 1 https://a0.muscache.com/im/pictures/e83e702f-ef49-40fb-8fa0-6512d7e26e9b.jpg?aki_policy=large
##   images.xl_picture_url host.host_id                               host.host_url
## 1                               51399391 https://www.airbnb.com/users/show/51399391
##   host.host_name                               host.host_location
## 1 Ana&Gonçalo Porto, Porto District, Portugal
##
## 1 Gostamos de passear, de viajar, de conhecer pessoas e locais novos, gostamos de desporto e animais
##   host.host_response_time
## 1              within an hour
##
##                               host.host_thumbnail_url
## 1 https://a0.muscache.com/im/pictures/fab79f25-2e10-4f0f-9711-663cb69dc7d8.jpg?aki_policy=profile_sm
##
##                               host.host_picture_url
## 1 https://a0.muscache.com/im/pictures/fab79f25-2e10-4f0f-9711-663cb69dc7d8.jpg?aki_policy=profile_x_l
```

```

## host.host_neighbourhood host.host_response_rate host.host_is_superhost
## 1 100 FALSE
## host.host_has_profile_pic host.host_identity_verified
## 1 TRUE TRUE
## host.host_listings_count host.host_total_listings_count
## 1 3 3
## host.host_verifications
## 1 email, phone, reviews, jumio, offline_government_id, government_id
## address.street address.suburb
## 1 Porto, Porto, Portugal
## address.government_area address.market
## 1 Cedofeita, Ildefonso, Sé, Miragaia, Nicolau, Vitória Porto
## address.country address.country_code address.location.type
## 1 Portugal PT Point
## address.location.coordinates address.location.is_location_exact
## 1 -8.61308, 41.14130 FALSE
## availability.availability_30 availability.availability_60
## 1 28 47
## availability.availability_90 availability.availability_365
## 1 74 239
## review_scores.review_scores_accuracy review_scores.review_scores_cleanliness
## 1 9 9
## review_scores.review_scores_checkin review_scores.review_scores_communication
## 1 10 10
## review_scores.review_scores_location review_scores.review_scores_value
## 1 10 9
## review_scores.review_scores_rating
## 1 89
##
## 1 58663741, 62413197, 68310569, 69693942, 71451096, 73191268, 77438107, 89637734, 96574146, 10844499

```

```

# filter fileds
m$find("{ }", fields = '{"name": true}')

```

```

## _id name
## 1 10006546 Ribeira Charming Duplex
## 2 10009999 Horto flat with small garden
## 3 1001265 Ocean View Waikiki Marina w/prkg
## 4 10021707 Private Room in Bushwick
## 5 10030955 Apt Linda Vista Lagoa - Rio
## 6 1003530 New York City - Upper West Side Apt
## 7 10038496 Copacabana Apartment Posto 6
## 8 10047964 Charming Flat in Downtown Moda
## 9 10051164 Catete's Colonial Big House Room B
## 10 10057447 Modern Spacious 1 Bedroom Loft
## 11 10057826 Deluxe Loft Suite
## 12 10059244 Ligne verte - à 15 min de métro du centre ville.
## 13 10059872 Soho Cozy, Spacious and Convenient
## 14 10066928 3 chambres au coeur du Plateau
## 15 10069642 Ótimo Apto proximo Parque Olimpico
## 16 10082307 Double Room en-suite (307)
## 17 10082422 Nice room in Barcelona Center
## 18 10083468 Be Happy in Porto
## 19 10084023 City center private room with bed

```

```

## 20 10091713   Surry Hills Studio - Your Perfect Base in Sydney
## 21 10092679           Cozy house at Beyoğlu
## 22 10096773           Easy 1 Bedroom in Chelsea
## 23 10108388 Sydney Hyde Park City Apartment (checkin from 6am)
## 24 10109896           THE Place to See Sydney's FIREWORKS
## 25 10112159           Downtown Oporto Inn (room cleaning)
## 26 10115921           GOLF ROYAL RESIDENCE TAXİM(1+1):3
## 27 10116256           GOLF ROYAL RESIDENCE SUİTES(2+1)-2
## 28 10116578           Apartamento zona sul do RJ
## 29 10117617           A Casa Alegre é um apartamento T1.
## 30 10120414           The LES Apartment
## 31 10133350           2 bedroom Upper east side
## 32 10133554           Double and triple rooms Blue mosque
## 33 10138784           Room Close to LGA and 35 mins to Times Square
## 34 10140368           A bedroom far away from home
## 35 10141950           Big, Bright & Convenient Sheung Wan
## 36 10166883           Large railroad style 3 bedroom apt in Manhattan!
## 37 10166986           Resort-like living in Williamsburg
## 38 1016739           Private Room (2) in Guest House at Coogee Beach
## 39 10184012           Apto semi mobiliado
## 40 10186755           Roof double bed private room
## 41 1019168           Cozy Nest, heart of the Plateau
## 42 10199760           Uygun nezih daire
## 43 10201975           Ipanema: moderno apê 2BR + garagem
## 44 10209136           Friendly Apartment, 10m from Manly
## 45 10213499           Great studio opp. Narrabeen Lake
## 46 10215858           Cozy Queen Guest Room&My
## 47 10220130           Cozy aptartment in Recreio (near Olympic Venues)
## 48 1022200           Kailua-Kona, Kona Coast II 2b condo
## 49 10227000 LAHAINA, MAUI! RESORT/CONDO BEACHFRONT!! SLEEPS 4!
## 50 10228731           Quarto inteiro na Tijuca
## [ reached 'max' / getopt("max.print") -- omitted 5505 rows ]

```

```

# filter keys
m$find('{"price": {"$lt": 20}}', fields = '{"name": true, "price": true}')

```

##	_id	name	price
## 1	10716793	DOUBLE ROOM for 1 or 2 ppl	15
## 2	13261391	Habitación doble al lado de La Pedrera	18
## 3	13521222	Rumo	17
## 4	13579065	**YOUR ROOM IN OPORTO**	14
## 5	14758068	Room on spacious appartment	9
## 6	15095488	Bonita habitacion centrica-Sagrada Familia	18
## 7	15284591	COMFORTABLE AND IN THE CENTER.	18
## 8	15320378	Hab. individual en Barcelona / Single room in Bcn	15
## 9	15353532	Nice room in artistic apartment, very central	15
## 10	16479542	PRIVATE ROOM WITH WIFI	18
## 11	17083946	Arc del Triomf - Big double room in authentic flat	19
## 12	17573977	Bright room in sagrada familia	15
## 13	17651165	Single room: ideally for student or 1 traveler	19
## 14	18121163	Heart of the City-Cozy Room Private Sunny Balcony!	14
## 15	18219254	Cozy room in Sagrada Familia	15
## 16	18925556	H MERIDIANA 1	19
## 17	19172215	Brand new Poble Sec design flat next to Montjuïc	15

```

## 18 19741944          Habitación individual.      14
## 19 19865003          Single room Barcelona center 17
## 20 19904358          Good room                  13
## 21 20307844          Single Room Near the City Centre 17
## 22 20611485          Cómoda Habitación L'Eixample, Gracia 10
## 23 20669488          Cozy double room in Barcelona close to beach 17
## 24 21056118          Cosy interior room for 2! I CA 15
## 25 21563508          Stylish 1 bed flat with balcony in Montjuïc 15
## 26 22042206          Spacious bright single bedroom 15
## 27 23003772 (C)Private double Bedroom next to metro. Free WiFi 15
## 28 23003982          Bright room at the other side of the river 16
## 29 23509818          affordable living           16
## 30 23763097          Private Room's "Gaya" (Nº2) Low-Cost 15
## 31 23766166          Private Room's "Gaya" (Nº3) Low-Cost 15
## 32 23803557          Habitación cerca a Sagrada Familia 18
## 33 24333246          C4 Big Room in Oporto ( near Casa da Música) 17
## [ reached 'max' / getMaxOption("max.print") -- omitted 30 rows ]

```

Check for all the operators: <https://docs.mongodb.com/manual/reference/operator/query-comparison/#query-selectors-comparison>

```

m$find({'price': {'$lt': 50}, 'bedrooms': {'$gte': 3}},
  fields = {'name': true, 'price': true, 'bedrooms': true}
)

```

```

##      _id      name bedrooms price
## 1  10677883    Great location in Barcelona      4    31
## 2  12400621    Elegant suite in historic center      5    42
## 3  13252758    Vacances de reve à Espinho (Porto)      3    45
## 4  18617060    Private Sunny Room in Bushwick      3    30
## 5  19760228    Apartment Salva - 3 bedroom in Poble Sec      3    46
## 6  20045679    House Near Espinho/Santa Maria Feira      3    30
## 7  20744948    Cheap Large Bedroom w/WorkDesk- 10min to JFK/Mall      3    45
## 8  21883829    Terraço      4    40
## 9  22610083    Logement parfait pour étudiants proche du metro      3    25
## 10 24074680    Espaço Palmeiras      3    40
## 11 26664547    Charmy 3 bedrooms apartment in Sarrià-Sant Gervasi      3    35
## 12 27745034    Beste Lage im Herzen Barcelonas Playa Espanya*****      3    45
## 13 28653236    3-Bedroom Apartment With Big Terrace      3    41
## 14 28858231    Fiona      3    47
## 15 29148942    Old times by the sea      3    45
## 16 29341373    The Candle apartment (3 bedrooms), Appt Bougie,RC.      3    46
## 17 32037744    Ideal apartment for families. With gorgeous views      3    40
## 18 46626      Charming MtlHomestay Accommodation!      4    47
## 19 571382      Porto Leça Beach Flat in Matosinhos      3    39
## 20 7349008      The Porto Concierge Mesquita Lodge      3    40

```

```

# sort
m$find({'bedrooms': {'$gte': 4}},
  fields = {'name': true, 'price': true},
  sort = {'price': -1},
  limit = 5
)

```

##	_id	name	price
## 1	13997910	Apartamento de luxo em Copacabana - 4 quartos	11190
## 2	12509339	Barra da Tijuca beach house	5595
## 3	13695744	Casa MARAVILHOSA, 5 suites OLIMPIADAS RIO 2016	5595
## 4	2271702	LUXURY HOUSE IN BARRA DA TIJUCA	5502
## 5	28045781	Four Deluxe Apartments The First Ottoman Suits	4761

Query nested fields

```
m$find({'address.country_code': 'US'},
  fields = {'name': true, 'address.country': 1})
```

##	_id	name	country
## 1	1001265	Ocean View Waikiki Marina w/prkg	United States
## 2	10021707	Private Room in Bushwick	United States
## 3	1003530	New York City - Upper West Side Apt	United States
## 4	10057826	Deluxe Loft Suite	United States
## 5	10096773	Easy 1 Bedroom in Chelsea	United States
## 6	10120414	The LES Apartment	United States
## 7	10133350	2 bedroom Upper east side	United States
## 8	10138784	Room Close to LGA and 35 mins to Times Square	United States
## 9	10140368	A bedroom far away from home	United States
## 10	10166883	Large railroad style 3 bedroom apt in Manhattan!	United States
## 11	10166986	Resort-like living in Williamsburg	United States
## 12	1022200	Kailua-Kona, Kona Coast II 2b condo	United States
## 13	10227000	LAHAINA, MAUI! RESORT/CONDO BEACHFRONT!! SLEEPS 4!	United States
## 14	10266175	Makaha Valley Paradise with OceanView	United States
## 15	10280433	~Ao Lele~ Flying Cloud	United States
## 16	102995	UWS Brownstone Near Central Park	United States
## 17	103161	Cozy Art Top Floor Apt in PRIME Williamsburg!	United States
## 18	10317142	Private OceanFront - Bathtub Beach. Spacious House	United States
## 19	10332161	A large sunny bedroom	United States
## 20	10392282	Banyan Bungalow	United States
## 21	1042446	March 2019 availability! Oceanview on Sugar Beach!	United States
## 22	10527243	Tropical Jungle Oasis	United States
## 23	10542174	Luxury 1-Bdrm in Downtown Brooklyn	United States
## 24	10545815	Whole Apt. in East Williamsburg	United States
## 25	10548991	Jubilee By The Sea (Ocean Views)	United States
## 26	10573225	Charming Spacious Park Slope Studio	United States
## 27	10578580	Panoramic Ocean View Studio in Quiet Setting	United States
## 28	10612199	Serene luxury in Harlem	United States
## 29	1067052	Nani La 'Ao (A Beautiful Day) Upstairs Suite	United States
## 30	1068505	Relaxing and Roomy in Crown Heights	United States
## 31	1069531	Asia House, Garden Room, Princeville	United States
## 32	10752737	HUGE Bedroom in Lower East Side	United States
## 33	10812136	well lit East Williamsburg apt.	United States
##	[reached 'max' / getOption("max.print") -- omitted 1189 rows]		

Query an array

```
# find all documents where amenities contain both Oven and Refrigerator
m$find({'amenities': {'$all': ["Oven", "Refrigerator"]}},
       fields = '{"name": true, "amenities": true}')
```

```
##          _id                                     name
## 1  10006546                                Ribeira Charming Duplex
## 2  10038496                                Copacabana Apartment Posto 6
## 3  10108388 Sydney Hyde Park City Apartment (checkin from 6am)
## 4  10166883 Large railroad style 3 bedroom apt in Manhattan!
## 5   1019168                                Cozy Nest, heart of the Plateau
## 6  10240767                                Cozy double bed room
## 7  10264100                                Your spot in Copacabana
## 8  10280433                                ~Ao Lele~ Flying Cloud
## 9   103161                                Cozy Art Top Floor Apt in PRIME Williamsburg!
## 10 10411341                                Beautiful flat with services
## 11 10423504                                Bondi Beach Dreaming 3-Bed House
## 12 10458796                                Homely Room in 5-Star New Condo@MTR
## 13 10527243                                Tropical Jungle Oasis
## 14 10570041                                Jardim Botânico Gourmet 2 bdroom
## 15 10573225                                Charming Spacious Park Slope Studio
## 16 10628126                                Ribeira Smart Flat
## 17 10635276                                GREAT Apartment at Barra da Tijuca
## 18 10751153                                Renovated Classic Design Studio with Sun Room
## 19 10816768                                Spacious 2 Bedroom: Soho/Escalator
## 20 10857454                                Artist Garden Duplex Ft. Greene - 2.5 Bedroom
## 21 1089542                                Private Cozy Bedroom in Brooklyn
## 22 10908640                                Quarto de Casal em Ipanema
## 23 1095174                                Makai Hideaway
## 24 11007542                                Spacious room Kadıköy Yeldeğirmeni
## 25 1101035                                Sunny 1 or 2 BR apt in Boerum Hill
## 26 11097962                                Home, Sweet, Harlem. Welcome!
## 27 11108923 Amazing NEW Food Lover Balcony, close to FIRA, MWC
## 28 1112838                                Spacious and quiet duplex apartment in Poble Sec
## 29 11131495                                Charming apartment in Santa Teresa
## 30 11136898                                1 or 2 rooms with private terrace in shared flat
## 31 11157167                                Cozy Chinatown studio apartment
## 32 11207193                                302 Kanai A Nalu Ocean front/view
## 33 11223389                                Large Duplex in Midtown East with backyard!
##
## 1
## 2
## 3
## 4
## 5
## 6
## 7
## 8
## 9
## 10
## 11
## 12
```

```

## 13
## 14     TV, Cable TV, Wifi, Air conditioning, Pool, Kitchen, Free parking on premises, Pets allowed, G
## 15
## 16
## 17
## 18             TV, Cable TV, Wifi, Air conditioning, Kitchen, Paid parking
## 19
## 20
## 21
## 22
## 23
## 24
## 25
## 26
## 27
## 28 TV, Cable TV, Internet, Wifi, Air conditioning, Kitchen, Paid parking off premises, Buzzer/wireless
## 29
## 30             TV, Internet, Wifi, Air conditioning, Wheelchair accessible, Kitchen, Paid parking
## 31
## 32             TV, Cable TV, Internet, Wifi, Air conditioning, Pool, Kitchen, Free parking
## 33
## [ reached 'max' / getopt("max.print") -- omitted 1345 rows ]

```

```

# find all documents where amenities contain Oven or Refrigerator or both
m$find('{"amenities": {"$in": ["Oven", "Refrigerator"]}}',
      fields = '{"name": true, "amenities": true}')

```

```

##           _id                               name
## 1  10006546                      Ribeira Charming Duplex
## 2   1001265                Ocean View Waikiki Marina w/prkg
## 3   10038496                Copacabana Apartment Posto 6
## 4   10083468                      Be Happy in Porto
## 5   10084023                City center private room with bed
## 6   10092679                Cozy house at Beyoğlu
## 7   10108388 Sydney Hyde Park City Apartment (checkin from 6am)
## 8   10166883    Large railroad style 3 bedroom apt in Manhattan!
## 9    1019168                      Cozy Nest, heart of the Plateau
## 10  10240767                Cozy double bed room
## 11  10264100                      Your spot in Copacabana
## 12  10280433                      ~Ao Lele~ Flying Cloud
## 13   103161                Cozy Art Top Floor Apt in PRIME Williamsburg!
## 14  10411341                      Beautiful flat with services
## 15  10416859 Studio convenient to CBD, beaches, street parking.
## 16  10423504                Bondi Beach Dreaming 3-Bed House
## 17  10458796                Homely Room in 5-Star New Condo@MTR
## 18  10487917                      Heroísmo IV
## 19  10519173                Condomínio Praia Barra da Tijuca
## 20  10527243                Tropical Jungle Oasis
## 21  10570041                Jardim Botânico Gourmet 2 bdroom
## 22  10573225                Charming Spacious Park Slope Studio
## 23  10628126                      Ribeira Smart Flat
## 24   1063491                Charming Apartment,perfect Location
## 25  10635276                GREAT Apartment at Barra da Tijuca
## 26  10664888                PORTO DOWNTOWN FLATS-RIBEIRA STUDIO

```



```

## 27 1067052      Nani La 'Ao (A Beautiful Day) Upstairs Suite
## 28 10742116 Nişantaşı, safe, quality area.Very close to metro.
## 29 10751153      Renovated Classic Design Studio with Sun Room
## 30 10816768      Spacious 2 Bedroom: Soho/Escalator
## 31 10857454      Artist Garden Duplex Ft. Greene - 2.5 Bedroom
## 32 10887852      Cozy Hell's Kitchen Apt
## 33 1089542       Private Cozy Bedroom in Brooklyn
##
## 1
## 2
## 3
## 4
## 5
## 6
## 7
## 8
## 9
## 10
## 11
## 12
## 13
## 14
## 15      TV, Cable TV, Wifi, Air conditioning, Kitchen, Gym, Free street parking, Heating, Family.
## 16
## 17
## 18
## 19
## 20
## 21 TV, Cable TV, Wifi, Air conditioning, Pool, Kitchen, Free parking on premises, Pets allowed, Gym,
## 22
## 23
## 24
## 25
## 26
## 27
## 28
## 29      TV, Cable TV, Wifi, Air conditioning, Kitchen, Paid parking
## 30
## 31
## 32
## 33
## [ reached 'max' / getopt("max.print") -- omitted 1884 rows ]

```

Regular expressions

```
m$find('{"name": {"$regex": "sea", "$options": "i"}}', fields = '{"name": true}')
```

```

##      _id
## 1 10096773
## 2 10448594
## 3 10548991
## 4 11510109

```

5 11914814
 ## 6 1223747
 ## 7 12507567
 ## 8 12893035
 ## 9 1310141
 ## 10 13764019
 ## 11 13799611
 ## 12 14236416
 ## 13 14858544
 ## 14 14967994
 ## 15 15073600
 ## 16 15915924
 ## 17 16029413
 ## 18 16242685
 ## 19 16551368
 ## 20 16701536
 ## 21 16874685
 ## 22 1746726
 ## 23 17473607
 ## 24 17795782
 ## 25 18137446
 ## 26 19098733
 ## 27 19235160
 ## 28 19313670
 ## 29 19880329
 ## 30 20741058
 ## 31 20789773
 ## 32 2093064
 ## 33 21451259
 ## 34 22385219
 ## 35 2255549
 ## 36 22730070
 ## 37 23058133
 ## 38 2310445
 ## 39 23115177
 ## 40 23648402
 ## 41 23872995
 ## 42 24608765
 ## 43 24675658
 ## 44 24847096
 ## 45 24960623
 ## 46 25233509
 ## 47 25280061
 ## 48 256328
 ## 49 25803348
 ## 50 26630155

##	name
## 1	Easy 1 Bedroom in Chelsea
## 2	Where Castles and Art meet the Sea
## 3	Jubilee By The Sea (Ocean Views)
## 4	LightHouse with Sea View
## 5	Cruisy apartment by the sea
## 6	Artist Home by the Sea - a 4 minute walk to Beach!
## 7	Shangri'La by the Sea, Kapoho Beach

```

## 8                                     Hawaii by the Sea~Walk
## 9                                     Enjoy the summer at sea! Full studio at the beach
## 10                                    SEALONA CENTER III
## 11                                    Sea Sight Apartment Vila Chã/ Mindelo
## 12                                    the shoebox, west chelsea
## 13                                    BEST AREA IN CHELSEA. MODERN. COMPACT. HIGH LINE!!
## 14                                    Seaview Studio in Brooklyn New york.
## 15                                    Amazing apartment with sea view
## 16                                    Kona by the Sea
## 17                                    Bundeena Base Art House, Sea View with Heated Pool
## 18                                    Seaside Cottage - A sand beach is your front yard!
## 19                                    Bright Sydney CBD Studio Apt With Seaview 108B
## 20                                    Luxury 4 Seasons Lodge
## 21                                    MASSIVE ROOM IN HEART OF NYC!!! (CHELSEA/FLATIRON)
## 22                                    Chelsea NYC luxury 2 bed/2 bath, garden apt
## 23                                    Central, Spacious, Safe, Seaside Flat
## 24                                    BONDI BEACH APARTMENT - SEA VIEWS
## 25                                    Peaceful hometown with perfect sea and forest view
## 26                                    Cozy Efficiency Studio on Best West Chelsea Block!
## 27                                    Private room with a Sea view House. Old city area
## 28                                    Sea Views & Porto's City Park - Ocean Windows Flat
## 29                                    Charming Townhouse duplex in Chelsea
## 30                                    Chelsea Dream: Stunning Duplex 1,800sf Loft~6BEDS
## 31                                    Hale Ma Ke Kai (Home By Da Sea)
## 32                                    Sunny Chelsea 1 BR near High line has 3 beds
## 33                                    Close to park and sea: Light and airy family apt
## 34                                    Sea View Ancient Chinese Style Two Rooms Suite
## 35                                    New Studio in Heart of Chelsea
## 36                                    Gallery Seaside House at Porto
## 37                                    Suite with sea view
## 38                                    Super Cute Chelsea One Bedroom
## 39                                    Wonderful Seafront 4 Bedroom Apart in Copacabana
## 40                                    Flat in Moda near the sea for one or two persons.
## 41                                    Sea View Private Room with Bathroom-TF6
## 42                                    Luxury Serviced Apt with Harbour Sea View
## 43                                    Your place for Sea, Cellars & Porto! (parking inc)
## 44                                    Beautiful apt with sea view & Wifi
## 45                                    Perfect Sea View
## 46                                    Terrace, sea view at Diagonal Mar!
## 47                                    Amazing sea view villa in istanbul
## 48                                    Luxury Chelsea Townhouse at the High Line
## 49 Sealodge F9: Top floor privacy, oceanfront vistas all around, affordable rate
## 50                                    Nice apt with sea view & balcony
## [ reached 'max' / getOption("max.print") -- omitted 23 rows ]

```

Iteration

```

it <- m$iterate({'price': {'$lt': 12}})
while (TRUE) {
  x <- it$one()
  if (is.null(x)) break
  cat(x$name, "\n")
}

```

```
}
```

```
## Room on spacious apartment
## Cómoda Habitación L'Eixample, Gracia
## Private room with sunny terrace of 200m2. 6
## Near the RAMBLA, the double room at SEASIDE PORT1
```

Aggregate

The aggregation pipeline is a framework for data aggregation modeled on the concept of data processing pipelines.

In the following code, there are three stages

- filter the data
- group by and summerize
- arrange data

```
m$aggregate('[
  {"$match": {"$and": [{"bedrooms": {"$ne": null}}, {"bedrooms": {"$ne": 0}}]}},
  {"$group": { "_id": "$bedrooms", "price": { "$avg": "$price" }}},
  {"$sort": { "_id": 1}}
]')
```

```
##      _id      price
## 1      1  208.7122
## 2      2  315.5752
## 3      3  470.3396
## 4      4  646.0994
## 5      5 1120.8333
## 6      6   873.7500
## 7      7 1799.1429
## 8      8 1224.3333
## 9      9 3047.5000
## 10     10 1201.5000
## 11     15  127.0000
## 12     20  227.0000
```

User the `$project` stage to rename `_id`.

```
m$aggregate('[
  {"$match": {"$and": [{"bedrooms": {"$ne": null}}, {"bedrooms": {"$ne": 0}}]}},
  {"$group": { "_id": "$bedrooms", "price": { "$avg": "$price" }}},
  {"$project": {
    "_id": false,
    "bedrooms": "$_id",
    "price": true
  }},
  {"$sort": {"bedrooms": 1}}
]')
```

##	price	bedrooms
## 1	208.7122	1
## 2	315.5752	2
## 3	470.3396	3
## 4	646.0994	4
## 5	1120.8333	5
## 6	873.7500	6
## 7	1799.1429	7
## 8	1224.3333	8
## 9	3047.5000	9
## 10	1201.5000	10
## 11	127.0000	15
## 12	227.0000	20

Group by two variables

```
m$aggregate('[
  {"$match": {"$and": [{"bedrooms": {"$ne": null}}, {"bedrooms": {"$ne": 0}}]}},
  {"$group": {
    "_id": {"property_type": "$property_type", "bedrooms": "$bedrooms"},
    "price": { "$avg": "$price" }},
  {"$project": {
    "_id": false,
    "property_type": "$_id.property_type",
    "bedrooms": "$_id.bedrooms",
    "price": true
  }},
  {"$sort": {"property_type": 1, "bedrooms": 1}}
]')
```

##	price	property_type	bedrooms
## 1	217.70588	Aparthotel	1
## 2	256.00000	Aparthotel	2
## 3	264.00000	Aparthotel	5
## 4	201.42889	Apartment	1
## 5	299.43883	Apartment	2
## 6	484.66535	Apartment	3
## 7	578.76190	Apartment	4
## 8	742.44444	Apartment	5
## 9	264.16667	Apartment	6
## 10	1836.66667	Apartment	7
## 11	349.50000	Apartment	8
## 12	135.00000	Barn	2
## 13	260.43636	Bed and breakfast	1
## 14	2654.75000	Bed and breakfast	2
## 15	676.00000	Bed and breakfast	3
## 16	627.00000	Bed and breakfast	4
## 17	2083.00000	Bed and breakfast	10
## 18	117.50000	Boat	1
## 19	293.83333	Boutique hotel	1
## 20	381.80000	Boutique hotel	2
## 21	227.00000	Boutique hotel	20
## 22	78.66667	Bungalow	1

```
## 23 193.25000 Bungalow 2
## 24 320.00000 Bungalow 3
## 25 71.36364 Cabin 1
## 26 99.00000 Cabin 2
## 27 25.00000 Campsite 1
## 28 145.14286 Casa particular (Cuba) 1
## 29 3000.00000 Casa particular (Cuba) 2
## 30 127.00000 Castle 1
## 31 321.50000 Chalet 1
## 32 279.36765 Condominium 1
## 33 302.32432 Condominium 2
## [ reached 'max' / getOption("max.print") -- omitted 68 rows ]
```

Compute the average price per room grouped by property_type

```
m$aggregate([
  {"$match": {"$and": [{"bedrooms": {"$ne": null}}, {"bedrooms": {"$ne": 0}}]}},
  {"$project": {
    "property_type": "$property_type",
    "bedrooms": "$bedrooms",
    "price_per_room": {"$divide": ["$price", "$bedrooms"]}
  }},
  {"$group": {
    "_id": "$property_type",
    "ave_bedrooms": { "$avg": "$bedrooms" },
    "price_per_room": { "$avg": "$price_per_room" }}
  },
  {"$project": {
    "_id": false,
    "property_type": "$_id",
    "ave_bedrooms": true,
    "price_per_room": true
  }}
])
```

##	ave_bedrooms	price_per_room	property_type
## 1	1.000000	109.00000	Train
## 2	1.000000	2999.00000	Heritage hotel (India)
## 3	1.000000	68.00000	Hut
## 4	2.000000	67.50000	Barn
## 5	1.640000	770.73867	Hotel
## 6	1.200000	182.70000	Tiny house
## 7	1.253731	147.93532	Guest suite
## 8	1.317460	324.59074	Bed and breakfast
## 9	5.000000	599.80000	Houseboat
## 10	2.250000	415.15278	Farm stay
## 11	2.294118	86.00000	Cottage
## 12	1.000000	249.32258	Hostel
## 13	1.000000	129.00000	Nature lodge
## 14	1.170732	140.42683	Guesthouse
## 15	1.531250	325.88958	Serviced apartment
## 16	2.105802	144.53142	House
## 17	1.466245	185.11139	Apartment

## 18	1.524496	243.24702	Condominium
## 19	1.838095	98.72063	Townhouse
## 20	1.000000	67.00000	Earth house
## 21	1.000000	25.00000	Campsite
## 22	2.375000	162.23772	Villa
## 23	1.000000	127.00000	Castle
## 24	1.000000	117.50000	Boat
## 25	1.800000	201.05000	Resort
## 26	1.083333	69.54167	Cabin
## 27	1.125000	314.50000	Casa particular (Cuba)
## 28	1.314815	159.61276	Loft
## 29	1.363636	193.90000	Aparthotel
## 30	1.000000	321.50000	Chalet
## 31	1.500000	277.22604	Boutique hotel
## 32	1.000000	185.00000	Treehouse
## 33	1.666667	89.31944	Bungalow

[reached 'max' / getOption("max.print") -- omitted 1 rows]