



FAKULTA ELEKTROTECHNICKÁ

České vysoké učení technické v Praze

B4M36DS2 – Database Systems 2

Practical Class 6

Redis: indexing, search, persistence

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CourseWare Wiki

<https://cw.fel.cvut.cz/wiki/courses/b4m36ds2/start>

Example 1: Storing Location Data

HSET **location:1** name "Eiffel Tower" lon 48.8584 lat 2.2945

HSET **location:2** name "Statue of Liberty" lon -74.0445 lat 40.6892

Example 2: Storing and Retrieving Geospatial Data

GEOADD locations 48.8584 2.2945 "**location:1**"

GEOADD locations -74.0445 40.6892 "**location:2**"

GEODIST locations **location:1 location:2** km

Example 3: Storing and Retrieving Geospatial Data

HSET **location:Palermo** name "Palermo" country "Italy"

HSET **location:Catania** name "Catania" country "Italy"

GEOADD locations 13.361389 38.115556 "**location:Palermo**"

15.087269 37.502669 "**location:Catania**"

GEODIST locations **location:Palermo** **location:Catania** km

GEOSEARCH locations FROMLONLAT 13 38 BYRADIUS 100 km ASC

1) "location:Palermo"

Alice Brown is traveling by car.

Her route is Rome (3 days) -> Venice (2 days) -> Milan (3 days).

Insert this information and define distances between all visited cities.

Rome (Roma): Latitude 41.8919° N, Longitude 12.5113° E

Venice (Venezia): Latitude 45.4371° N, Longitude 12.3327° E

Milan (Milano): Latitude 45.4643° N, Longitude 9.1895° E

Example 1: Basic Transaction

MULTI

SET key1 "Hello"

SET key2 "World"

EXEC

Example 2: Transaction with error before EXEC (syntactic error)

MULTI

INCR counter

LPUSH mylist

INCR counter

EXEC

Example 3: Transaction with Conditional Execution (WATCH)

```
SET mykey 10  
WATCH mykey  
GET mykey  
MULTI  
INCR mykey  
EXEC
```

Example 4: Discarding a Transaction

```
MULTI  
SET key1 "Hello"  
DISCARD
```

Example 5: Error after EXEC

```
SET mykey 10  
MULTI  
INCR mykey  
LPOP mykey  
EXEC
```

Example: The Bank account has a number and balance.

Write Redis transaction to transfer money from one account to another one.

MULTI

```
HGET sender_account_number balance
```

```
HGET receiver_account_number balance
```

```
HSET sender_account_number balance (current_balance - amount)
```

```
HSET receiver_account_number balance (current_balance + amount)
```

EXEC

Insert information about **movies**

(id, title, plot, release year, genre, rating, votes)

Create an index

Search all movies that contain the term "war"

1) (integer) 1

2) "username:movie:11002"

3) 1) "title"

2) "Star Wars: Episode V - The Empire Strikes Back"

3) "release_year"

4) "1980"

5) "rating"

6) "8.7"

Insert information about **books**

(title, author, genre, publication_year)

Search all books that

- 1) contain "Fiction" in the genre field
- 2) published in the 20th century

- 1) (integer) 1
- 2) "book:1"
- 3) 1) "title"
 - 2) "To Kill a Mockingbird"
 - 3) "author"
 - 4) "Harper Lee"
 - 5) "genre"
 - 6) "Fiction"
 - 7) "publication_year"
 - 8) "1960"

Insert some data about **restaurants** into Redis
(name, location, cuisine)

Search:

- 1) all restaurants that serve "French" cuisine
- 2) all restaurants within a 1000 km radius of a given point
(48.8584 latitude and 2.2945 longitude)
- 3) count the number of restaurants for each type of cuisine

Exercise 8 – Aggregation

Insert some data about **books** into Redis

HSET book:1 title "Book A" author "Author 1" genre "Fiction" price 10 rating 4.5
HSET book:2 title "Book B" author "Author 2" genre "Horror" price 15 rating 4.0
HSET book:3 title "Book C" author "Author 1" genre "Fiction" price 12 rating 4.7
HSET book:4 title "Book D" author "Author 3" genre "Fiction" price 8 rating 3.9
HSET book:5 title "Book E" author "Author 2" genre "Horror" price 20 rating 4.8

- 1) Count the number of books for each genre
- 2) Count the number of books for each author
- 3) Count the number of fiction books for each author
- 4) Count the number of books for each combination of author and genre

Exercise 9 – Aggregation

- 1) Calculate the total price of all books.
- 2) Calculate the average rating of all books.
- 3) Find the minimum and maximum prices for all books.
- 4) Count the number of books in each genre.
- 5) Calculate the average rating and count of books for each author.
- 6) Find books with a rating greater than 4 and sort them by author.
- 7) Define books in the “Fiction” genre with a price greater than or equal to 10.

Information about students and their journeys is stored in JSON.

Insert it into Redis. Search:

- 1) Find all users who have visited 'Roma'.
- 2) Find all users who have visited 'Italy'.
- 3) Find all users who have travelled in the year 2016.
- 4) Find all users with the name 'Alice Brown'.
- 5) Count the number of users who have visited 'Italy'.