

Parte I - MongoDB
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Gestión de Base de Datos



Creación del usuario

```
admin> db.createUser ({user:"pavlo",pwd:"messi",roles: [{role: "root",db:"admin"}]})
{ ok: 1 }
admin>
```

Conexión con el usuario

```
admin> exit
pavlo@pablomartin:~$ mongosh -u pavlo
Enter password: *****
Current Mongosh Log ID: 662532ac034ce3e252c934dc
Connecting to:      mongodb://<credentials>@127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.2.4
Using MongoDB:      7.0.8
Using Mongosh:      2.2.4

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

-----
  The server generated these startup warnings when booting
  2024-04-21T16:59:47.176+02:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
  2024-04-21T16:59:47.296+02:00: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted
  2024-04-21T16:59:47.296+02:00: /sys/kernel/mm/transparent_hugepage/enabled is 'always'. We suggest setting it to 'never' in this binary version
  2024-04-21T16:59:47.296+02:00: vm.max_map_count is too low
  -----
test>
```

Importar json a MongoDB

```
pavlo@pablomartin:~/Proyecto-MongoDB$ mongoimport --db Proyecto-MongoDB --collection libros --type json --file libros.json --jsonArray
2024-04-21T22:57:43.529+0200    connected to: mongodb://localhost/
2024-04-21T22:57:43.544+0200    92 document(s) imported successfully, 0 document(s) failed to import.
```

Modificaciones

Inserción

-Insertar un libro del año 1943.

```
Proyecto-MongoDB> db.libros.find({ "year": 1943 })

Proyecto-MongoDB> db.libros.insertOne({
...   "title": "El principito",
...   "author": "Antoine de Saint-Exupéry",
...   "country": "France",
...   "language": "French",
...   "pages": 96,
...   "year": 1943
... })
{
  acknowledged: true,
  insertedId: ObjectId('662581701fe90b8e49c934dd')
}
```

-Insertar tres libros con un InsertMany

```
Proyecto-MongoDB> db.libros.insertMany([
...   {
...     "author": "J.R.R. Tolkien",
...     "country": "United Kingdom",
...     "language": "English",
...     "pages": 1178,
...     "title": "The Lord of the Rings",
...     "year": 1954
...   },
...   {
...     "author": "Leo Tolstoy",
...     "country": "Russia",
...     "language": "Russian",
...     "pages": 1225,
...     "title": "War and Peace",
...     "year": 1869
...   },
...   {
...     "author": "F. Scott Fitzgerald",
...     "country": "United States",
...     "language": "English",
...     "pages": 180,
...     "title": "The Great Gatsby",
...     "year": 1925
...   }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('6625821a1fe90b8e49c934de'),
    '1': ObjectId('6625821a1fe90b8e49c934df'),
    '2': ObjectId('6625821a1fe90b8e49c934e0')
  }
}
```

Borrar

-Eliminar un documento que tenga como título "Fairy Tales"

```
Proyecto-MongoDB> db.libros.find({ "title": "Fairy tales" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e00'),
    author: 'Hans Christian Andersen',
    country: 'Denmark',
    language: 'Danish',
    pages: 784,
    title: 'Fairy tales',
    year: 1836,
    genres: [ 'Fiction', 'Children's Literature', 'Fantasy' ]
  }
]
Proyecto-MongoDB> db.libros.deleteOne({ "title": "Fairy tales" })
{ acknowledged: true, deletedCount: 1 }
Proyecto-MongoDB> db.libros.find({ "title": "Fairy tales" })
```

-Eliminar todos los libros de España.

```
Proyecto-MongoDB> db.libros.find({ "country": "Spain" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e0a'),
    author: 'Miguel de Cervantes',
    country: 'Spain',
    language: 'Spanish',
    pages: 1056,
    title: 'Don Quijote De La Mancha',
    year: 1610,
    genres: [ 'Fiction', 'Satire', 'Adventure' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e18'),
    author: 'Federico García Lorca',
    country: 'Spain',
    language: 'Spanish',
    pages: 484,
    title: 'Gypsy Ballads',
    year: 1928,
    genres: [ 'Poetry', 'Romanticism', 'Spanish Literature' ]
  }
]
Proyecto-MongoDB> db.libros.deleteMany({ "country": "Spain" })
{ acknowledged: true, deletedCount: 2 }
Proyecto-MongoDB> db.libros.find({ "country": "Spain" })
```

Actualizar

-Cambiar el número de páginas a un libro hecho por “George Eliot”

```
Proyecto-MongoDB> db.libros.find({ "author": "George Eliot" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e13'),
    author: 'George Eliot',
    country: 'United Kingdom',
    language: 'English',
    pages: 663,
    title: 'Middlemarch',
    year: 1871,
    genres: [ 'Fiction', 'Realist', 'Historical' ]
  }
]
Proyecto-MongoDB> db.libros.updateOne({ "author": "George Eliot" }, { $set: { "pages": 900 } })
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
Proyecto-MongoDB> db.libros.find({ "author": "George Eliot" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e13'),
    author: 'George Eliot',
    country: 'United Kingdom',
    language: 'English',
    pages: 900,
    title: 'Middlemarch',
    year: 1871,
    genres: [ 'Fiction', 'Realist', 'Historical' ]
  }
]
```

-Cambiar el idioma de todos los libros en la colección libros que estén en español de "Spanish" a "Español"

```
Proyecto-MongoDB> db.libros.find({ "language": "Spanish" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e04'),
    author: 'Jorge Luis Borges',
    country: 'Argentina',
    language: 'Spanish',
    pages: 224,
    title: 'Ficciones',
    year: 1965,
    genres: [ 'Fiction', 'Magical Realism', 'Short Stories' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e17'),
    author: 'Gabriel García Márquez',
    country: 'Colombia',
    language: 'Spanish',
    pages: 417,
    title: 'One Hundred Years of Solitude',
    year: 1967,
    genres: [ 'Fiction', 'Magical Realism', 'Family Saga' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e41'),
    author: 'Juan Rulfo',
    country: 'Mexico',
    language: 'Spanish',
    pages: 238,
    title: 'Pedro Páramo',
    year: 1955,
    genres: [ 'Fiction', 'Magical Realism', 'Classic' ]
  }
]
```

```

Proyecto-MongoDB> db.libros.updateMany({ "language": "Spanish" }, { $set: { "language": "Español" } })
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 3,
  modifiedCount: 3,
  upsertedCount: 0
}
Proyecto-MongoDB> db.libros.find({ "language": "Spanish" })
Proyecto-MongoDB> db.libros.find({ "language": "Español" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e04'),
    author: 'Jorge Luis Borges',
    country: 'Argentina',
    language: 'Español',
    pages: 224,
    title: 'Ficciones',
    year: 1965,
    genres: [ 'Fiction', 'Magical Realism', 'Short Stories' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e17'),
    author: 'Gabriel García Márquez',
    country: 'Colombia',
    language: 'Español',
    pages: 417,
    title: 'One Hundred Years of Solitude',
    year: 1967,
    genres: [ 'Fiction', 'Magical Realism', 'Family Saga' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e41'),
    author: 'Juan Rulfo',
    country: 'Mexico',
    language: 'Español',
    pages: 238,
    title: 'Pedro Páramo',
    year: 1955,
    genres: [ 'Fiction', 'Magical Realism', 'Classic' ]
  }
]

```

-Reemplazar el libro "The Old Man and the Sea" de Ernest Hemingway con un libro ficticio titulado "The Young Man and the Lake".

```

Proyecto-MongoDB> db.books.replaceOne(
...   { "title": "The Old Man and the Sea" },
...   {
...     "author": "Ernest Hemingway",
...     "country": "United States",
...     "language": "English",
...     "pages": 150,
...     "title": "The Young Man and the Lake",
...     "year": 1952,
...     "genres": ["Fiction", "Adventure"]
...   }
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 0,
  modifiedCount: 0,
  upsertedCount: 0
}

```

Consultas

Consultas sencillas

1. Obtener todos los libros escritos en árabe:

```
Proyecto-MongoDB> db.libros.find({ "language": "Arabic" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0dfe'),
    author: 'Unknown',
    country: 'India/Iran/Iraq/Egypt/Tajikistan',
    language: 'Arabic',
    pages: 288,
    title: 'One Thousand and One Nights',
    year: 1200,
    genres: [ 'Fiction', 'Folk Tales', 'Adventure' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e30'),
    author: 'Naguib Mahfouz',
    country: 'Egypt',
    language: 'Arabic',
    pages: 355,
    title: 'Palace Walk',
    year: 1956,
    genres: [ 'Fiction', 'Historical', 'Egyptian Literature' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e4e'),
    author: 'Tayeb Salih',
    country: 'Sudan',
    language: 'Arabic',
    pages: 139,
    title: 'Season of Migration to the North',
    year: 1966,
    genres: [ 'Fiction', 'Postcolonial', 'Psychological' ]
  }
]
```

2. Encontrar libros publicados en un año específico:

```
Proyecto-MongoDB> db.libros.find({ "year": 1857 })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e19'),
    author: 'Gustave Flaubert',
    country: 'France',
    language: 'French',
    pages: 528,
    title: 'Madame Bovary',
    year: 1857,
    genres: [ 'Fiction', 'Realist', 'Romance' ]
  }
]
```

3. Buscar libros con más de 1300 páginas:

```
Proyecto-MongoDB> db.libros.find({ "pages": { $gt: 1300 } })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e32'),
    author: 'Murasaki Shikibu',
    country: 'Japan',
    language: 'Japanese',
    pages: 1360,
    title: 'The Tale of Genji',
    year: 1006,
    genres: [ 'Fiction', 'Romance', 'Classic' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e50'),
    author: 'Marcel Proust',
    country: 'France',
    language: 'French',
    pages: 2408,
    title: 'In Search of Lost Time',
    year: 1913,
    genres: [ 'Fiction', 'Modernist', 'Philosophical' ]
  }
]
```


4. Encontrar libros publicados después de 1970, ordenados por año de publicación de forma descendente:

```
Proyecto-MongoDB> db.libros.find({ "year": { $gt: 1960 } }).sort({ "year": -1 })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e52'),
    author: 'José Saramago',
    country: 'Portugal',
    language: 'Portuguese',
    pages: 352,
    title: 'Blindness',
    year: 1995,
    genres: [ 'Fiction', 'Dystopian', 'Philosophical' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e33'),
    author: 'Toni Morrison',
    country: 'United States',
    language: 'English',
    pages: 321,
    title: 'Beloved',
    year: 1987,
    genres: [ 'Fiction', 'Historical', 'Horror' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e3d'),
    author: 'Salman Rushdie',
    country: 'United Kingdom, India',
    language: 'English',
    pages: 533,
    title: "Midnight's Children",
    year: 1981,
    genres: [ 'Fiction', 'Magic Realism', 'Postcolonial' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e34'),
    author: 'Elsa Morante',
    country: 'Italy',
    language: 'Italian',
    pages: 600,
    title: 'History',
    year: 1974,
    genres: [ 'Fiction', 'Historical', 'Epic' ]
  },
]
```

5. Buscar libros escritos por un autor específico en un país determinado:

```
Proyecto-MongoDB> db.libros.find({ "author": "Gabriel García Márquez", "country": "Colombia" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e17'),
    author: 'Gabriel García Márquez',
    country: 'Colombia',
    language: 'Español',
    pages: 417,
    title: 'One Hundred Years of Solitude',
    year: 1967,
    genres: [ 'Fiction', 'Magical Realism', 'Family Saga' ]
  }
]
```

Consultas con arrays

1. Consulta para encontrar todos los libros escritos en inglés y que pertenecen al género "Fiction":

```
Proyecto-MongoDB> db.libros.find({ "language": "English", "genres": "Fiction" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0dfd'),
    author: 'Chinua Achebe',
    country: 'Nigeria',
    language: 'English',
    pages: 209,
    title: 'Things Fall Apart',
    year: 1958,
    genres: [ 'Fiction', 'Classic', 'Cultural' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e03'),
    author: 'Jane Austen',
    country: 'United Kingdom',
    language: 'English',
    pages: 226,
    title: 'Pride and Prejudice',
    year: 1813,
    genres: [ 'Fiction', 'Romance', 'Classic' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e08'),
    author: 'Emily Brontë',
    country: 'United Kingdom',
    language: 'English',
    pages: 342,
    title: 'Wuthering Heights',
    year: 1847,
    genres: [ 'Fiction', 'Gothic', 'Romance' ]
  },
]
```

2. Consulta para encontrar todos los libros escritos en inglés o francés y que contengan tanto el género "Realist" como el género "Historical":

```
Proyecto-MongoDB> db.libros.find({ $or: [{ "language": "English" }, { "language": "French" }], "genres": { $all: ["Realist", "Historical"] } })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e13'),
    author: 'George Eliot',
    country: 'United Kingdom',
    language: 'English',
    pages: 900,
    title: 'Middlemarch',
    year: 1871,
    genres: [ 'Fiction', 'Realist', 'Historical' ]
  }
]
```

3. Consulta para encontrar todos los libros escritos antes del año 1900 y que pertenecen al género "Classic":

```
Proyecto-MongoDB> db.libros.find({ "year": { $lt: 1900 }, "genres": "Classic" })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e03'),
    author: 'Jane Austen',
    country: 'United Kingdom',
    language: 'English',
    pages: 226,
    title: 'Pride and Prejudice',
    year: 1813,
    genres: [ 'Fiction', 'Romance', 'Classic' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e06'),
    author: 'Giovanni Boccaccio',
    country: 'Italy',
    language: 'Italian',
    pages: 1024,
    title: 'The Decameron',
    year: 1351,
    genres: [ 'Fiction', 'Classic', 'Short Stories' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e0c'),
    author: 'Geoffrey Chaucer',
    country: 'England',
    language: 'English',
    pages: 544,
    title: 'The Canterbury Tales',
    year: 1450,
    genres: [ 'Fiction', 'Poetry', 'Classic' ]
  },
]
```

Consultas de datos embebidos

1. Consulta para encontrar todos los libros escritos por el apellido Tolstoy:

```
Proyecto-MongoDB> db.libros.find({ "author": { "$regex": "Tolstoy" } })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e3f'),
    author: 'Leo Tolstoy',
    country: 'Russia',
    language: 'Russian',
    pages: 864,
    title: 'War and Peace',
    year: 1867,
    genres: [ 'Fiction', 'Historical', 'Epic' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e42'),
    author: 'Leo Tolstoy',
    country: 'Russia',
    language: 'Russian',
    pages: 1072,
    title: 'The Death of Ivan Ilyich',
    year: 1886,
    genres: [ 'Fiction', 'Philosophical' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e43'),
    author: 'Leo Tolstoy',
    country: 'Russia',
    language: 'Russian',
    pages: 600,
    title: 'Anna Karenina',
    year: 1877,
    genres: [ 'Fiction', 'Realist', 'Romance' ]
  },
  {
    _id: ObjectId('6625821a1fe90b8e49c934df'),
    author: 'Leo Tolstoy',
    country: 'Russia',
    language: 'Russian',
    pages: 1225,
    title: 'War and Peace',
    year: 1869
  }
]
```

2. Consulta para encontrar todos los libros de género "Philosophical" con más de 500 páginas:

```
Proyecto-MongoDB> db.libros.find({ "genres": "Philosophical", "pages": { "$gt": 500 } })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e12'),
    author: 'Fyodor Dostoevsky',
    country: 'Russia',
    language: 'Russian',
    pages: 551,
    title: 'Crime and Punishment',
    year: 1866,
    genres: [ 'Fiction', 'Psychological Thriller', 'Philosophical' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e42'),
    author: 'Leo Tolstoy',
    country: 'Russia',
    language: 'Russian',
    pages: 1072,
    title: 'The Death of Ivan Ilyich',
    year: 1886,
    genres: [ 'Fiction', 'Philosophical' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e50'),
    author: 'Marcel Proust',
    country: 'France',
    language: 'French',
    pages: 2408,
    title: 'In Search of Lost Time',
    year: 1913,
    genres: [ 'Fiction', 'Modernist', 'Philosophical' ]
  }
]
```

3. Consulta para encontrar todos los libros escritos en francés o árabe:

```
Proyecto-MongoDB> db.libros.find({ "language": { "$in": ["French", "Arabic"] } })
[
  {
    _id: ObjectId('66257dc7bb512ac0c56f0dfe'),
    author: 'Unknown',
    country: 'India/Iran/Iraq/Egypt/Tajikistan',
    language: 'Arabic',
    pages: 288,
    title: 'One Thousand and One Nights',
    year: 1200,
    genres: [ 'Fiction', 'Folk Tales', 'Adventure' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e01'),
    author: 'Honoré de Balzac',
    country: 'France',
    language: 'French',
    pages: 443,
    title: 'Le Père Goriot',
    year: 1835,
    genres: [ 'Fiction', 'Literary Realism', 'Drama' ]
  },
  {
    _id: ObjectId('66257dc7bb512ac0c56f0e09'),
    author: 'Albert Camus',
    country: 'Algeria, French Empire',
    language: 'French',
    pages: 185,
    title: 'The Stranger',
    year: 1942,
    genres: [ 'Fiction', 'Philosophical', 'Existential' ]
  },
]
```

Consultas de agrupación

Consulta para agrupar los libros por país de origen del autor y contar cuántos libros hay por país:

```
Proyecto-MongoDB> db.libros.aggregate([
...   { $group: { _id: "$country", total_books: { $sum: 1 } } }
... ])
[
  { _id: 'Saxe-Weimar', total_books: 1 },
  { _id: 'Mexico', total_books: 1 },
  { _id: 'Brazil', total_books: 1 },
  { _id: 'Argentina', total_books: 1 },
  { _id: 'France', total_books: 9 },
  { _id: 'Russia', total_books: 7 },
  { _id: 'France/Belgium', total_books: 1 },
  { _id: 'India/Iran/Iraq/Egypt/Tajikistan', total_books: 1 },
  { _id: 'Algeria, French Empire', total_books: 1 },
  { _id: 'Egypt', total_books: 1 },
  { _id: 'Roman Empire', total_books: 2 },
  { _id: 'Italy', total_books: 5 },
  { _id: 'Achaemenid Empire', total_books: 1 },
  { _id: 'United States', total_books: 9 },
  { _id: 'Persia, Persian Empire', total_books: 1 },
  { _id: 'Portugal', total_books: 2 },
  { _id: 'England', total_books: 3 },
  { _id: 'Sweden', total_books: 1 },
  { _id: 'Iceland', total_books: 2 },
  { _id: 'Russia/United States', total_books: 1 }
]
```