

# INFORME DE LABORATORIO 09 INSTALACIÓN Y GESTION DE UNA BASE DE DATOS MONGODB

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## 1. INFORMACIÓN GENERAL

### 1.1. *Objetivos*

- Instalación y gestion de una base de datos MongoDB

### 1.2. *Equipos, materiales, programas y recursos utilizados*

- Computadora con sistema operativo Windows XP, Vista, Windows 7, Windows 8 y/o Windows 8.1.
- CPU SLAT-capable feature al menos 4GB de RAM
- Docker Desktop (Para lo cual se debe primero crear una cuenta en Docker Hub)
- Studio 3T
- Documento JSON
- ISO MongoDB

## 2. Marco Teórico

### 2.1. *Docker*

Docker se define como un proyecto de código abierto que proporciona una capa de abstracción y virtualización a nivel de sistema operativo, a través de la instalación de contenedores de software.

### 2.2. *MongoDB*

MongoDB (del inglés humongous, enorme) es un sistema de base de datos NoSQL orientado a documentos de código abierto.

En lugar de guardar los datos en tablas, tal y como se hace en las bases de datos relacionales, MongoDB guarda estructuras de datos BSON (una especificación similar a JSON) con un esquema dinámico, haciendo que la integración de los datos en ciertas aplicaciones sea más fácil y rápida.

## 3. PROCEDIMIENTO

### 3.0.1. *Paso 1: Instalar imagen de mongodb*

```
PS C:\Users\Usuario> docker pull mongo
Using default tag: latest
latest: Pulling from library/mongo
7ddbc47eeb70: Downloading [====>] 1.653MB/26.69MB
c1bbdc448b72: Download complete
8c3b70e39044: Download complete
45d437916d57: Waiting
e119fb0e0a55: Waiting
91f0b9bae1ea: Waiting
53e7c2967f11: Waiting
69a945568374: Waiting
93333bc225a7: Waiting
b9c10bd6c9bd: Waiting
7f4e3538e99c: Waiting
1164b51d180a: Waiting
a715a7d71f27: Waiting
```

Figura 1: Descargar imagen de mongoDB

```
PS C:\Users\Usuario> docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
mongo                latest              965553e202a4       5 weeks ago        363MB
microsoft/mssql-server-linux latest              314918ddaedf       11 months ago      1.35GB
mongo                4.0.4              525bd2016729       12 months ago      383MB
PS C:\Users\Usuario>
```

Figura 2: Imágenes que tenemos descargadas entre ellas mongoDB

```
PS C:\Users\Usuario> docker run -d -p 27017-27019:27017-27019 --name mongodb mongo:4.0.4
c4c4549f9020297e540adaea0aaf7be004c6d9bede56e0b7c999f0d825fee185
PS C:\Users\Usuario>
```

Figura 3: Creamos un contenedor de MongoDB

```
PS C:\Users\Usuario> docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS
c4c4549f9020        mongo:4.0.4        "docker-entrypoint.s..." 31 seconds ago      Up 29 seconds      0.0.0.0:27017-2
```

Figura 4: Comoporbamos que se halla creado el contenedor

### 3.0.2. Paso 2: Gestionar mongoDB desde mi contenedor

```
PS C:\Users\Usuario> docker exec -it mongodb bash
root@c4c4549f9020:/# mongo
MongoDB shell version v4.0.4
connecting to: mongodb://127.0.0.1:27017
Implicit session: session { "id" : UUID("3d31ae3b-e05e-43ac-9d12-a0c2f743ab4f") }
MongoDB server version: 4.0.4
Welcome to the MongoDB shell.
For interactive help, type "help".
For more comprehensive documentation, see
http://docs.mongodb.org/
Questions? Try the support group
http://groups.google.com/group/mongodb-user
Server has startup warnings:
2019-12-12T14:59:17.425+0000 I STORAGE [initandlisten]
2019-12-12T14:59:17.425+0000 I STORAGE [initandlisten] ** WARNING: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine
2019-12-12T14:59:17.425+0000 I STORAGE [initandlisten] ** See http://dochub.mongodb.org/core/prodnotes-filesystem
2019-12-12T14:59:18.445+0000 I CONTROL [initandlisten]
2019-12-12T14:59:18.445+0000 I CONTROL [initandlisten] ** WARNING: Access control is not enabled for the database.
2019-12-12T14:59:18.445+0000 I CONTROL [initandlisten] ** Read and write access to data and configuration is unrestricted.
2019-12-12T14:59:18.445+0000 I CONTROL [initandlisten]
---
Enable MongoDB's free cloud-based monitoring service, which will then receive and display metrics about your deployment (disk utilization, CPU, operation statistics, etc).
The monitoring data will be available on a MongoDB website with a unique URL accessible to you and anyone you share the URL with. MongoDB may use this information to make product improvements and to suggest MongoDB products and deployment options to you.
To enable free monitoring, run the following command: db.enableFreeMonitoring()
To permanently disable this reminder, run the following command: db.disableFreeMonitoring()
---
```

Figura 5: Ejecutamos el Shell de MongoDB

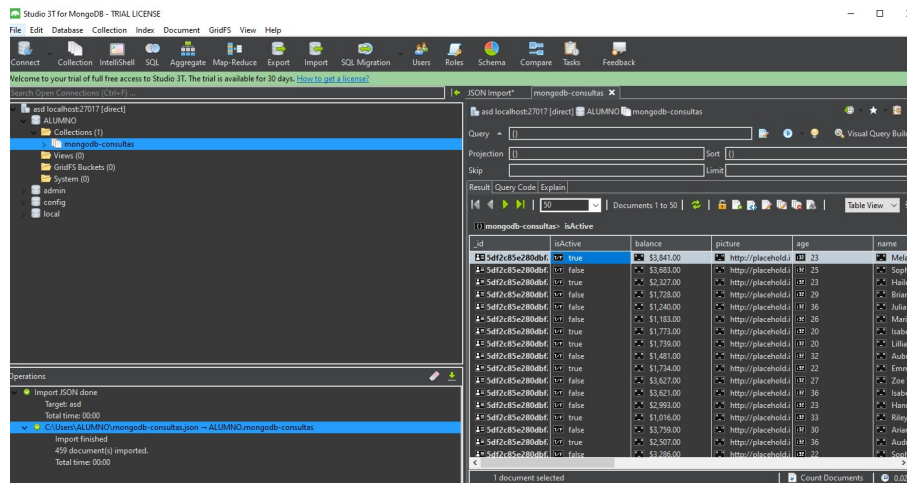


Figura 6: Para importar datos utilizaremos el software Studio 3T

### 3.0.3. Paso 3: Consultas con la base de datos MongoDB

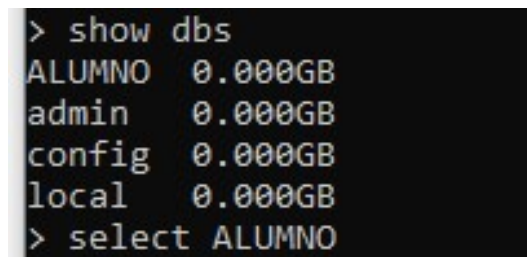


Figura 7: Mostramos las bases de datos creadas

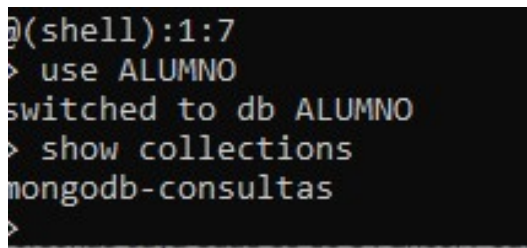


Figura 8: Usaremos la base de datos llamada Alumnos

```

config 0.000GB
local 0.000GB
> use ALUMNO
switched to db ALUMNO
> db.getCollection("mongodb-consultas").find({}).skip(359);
{ "_id" : ObjectId("5df2c85e280dbf2e624e9c87"), "isActive" : true, "balance" : "$2,353.00", "picture" : "http://placeh
d.it/32x32", "age" : 36, "name" : "Serenity Gilson", "company" : "Westmedia", "phone" : "857-489-24288", "email" : "ser
nity@westmedia.com", "address" : "36363, Austin, Broome Streets", "about" : "Enim magna Lorem deserunt id nulla. Id sum
fugiat ex incididunt officia aute ad voluptate consequat labore qui ullamco consequat et. Sit sint dolore enim aliquip
occaecat. Proident excepteur id consequat quis anim. Quis est sunt reprehenderit duis voluptate mollit amet enim fugiat
pariatur quis mollit nulla consectetur. Non pariatur non Lorem mollit exercitation nostrud ad. Fugiat dolore irure aute
ad amet.\r\n", "registered" : "1995-09-24T19:52:25 -02:00", "latitude" : -24, "tags" : [ "dolore", "fugiat", "est", "du
s", "consectetur", "ex", "deserunt" ], "friends" : [ { "id" : 1, "name" : "Brooke Adamson" }, { "id" : 2, "name" : "Ari
nna Carey" }, { "id" : 3, "name" : "Khloe Warren" } ], "gender" : "male", "randomArrayItem" : "student" }
{ "_id" : ObjectId("5df2c85e280dbf2e624e9c88"), "isActive" : false, "balance" : "$2,748.00", "picture" : "http://placeh
d.it/32x32", "age" : 34, "name" : "Autumn Webster", "company" : "Entcast", "phone" : "886-592-32351", "email" : "autum
@entcast.com", "address" : "15595, Bridgeport, Lafayette Street", "about" : "Cillum quis duis elit reprehenderit conseq
at adipisicing enim ullamco commodo ex et culpa magna aute. Consectetur reprehenderit est est culpa officia officia vel
t. Reprehenderit ipsum duis pariatur nisi elit veniam id cillum sint. Sit enim duis aliquip aute cillum exercitation pa
latur veniam officia incididunt elit commodo commodo non. Labore mollit et irure dolor ullamco et pariatur eu exercitat
on. Do consequat officia cillum ipsum cillum in. Incidunt est commodo irure cillum veniam elit occaecat.\r\n", "regis
tered" : "2006-08-17T21:54:05 -02:00", "latitude" : -16, "tags" : [ "aliqua", "duis", "nulla", "qui", "sunt", "labore",
"enim" ], "friends" : [ { "id" : 1, "name" : "Katherine Oldman" }, { "id" : 2, "name" : "Morgan Hamphrey" }, { "id" : 3,
"name" : "Jasmine Milton" } ], "gender" : "female", "randomArrayItem" : "student" }
{ "_id" : ObjectId("5df2c85e280dbf2e624e9c89"), "isActive" : false, "balance" : "$3,871.00", "picture" : "http://placeh
d.it/32x32", "age" : 30, "name" : "Sarah Gustman", "company" : "iSkyvaco", "phone" : "899-453-37275", "email" : "sarah
@skyvaco.com", "address" : "27705, Buffalo, Greene Street", "about" : "Fugiat culpa ipsum ut nisi in ullamco dolor nost
ud occaecat consequat. Proident Lorem commodo cupidatat ex deserunt commodo. In ex aliquip ea nulla laboris occaecat al
qua nostrud pariatur mollit ad sunt dolor veniam. Dolor pariatur qui dolore sunt. Id deserunt sint ullamco fugiat ad ve
it tempor. Velit ipsum labore aliqua in id aliquip quis consequat. Est excepteur eiusmod sint fugiat veniam incididunt

```

Figura 9: Ingresamos el siguiente comando: `db.getCollection( 'mongodb-consultas' ).find().skip(359)`

```

C:\Program Files\MongoDB\Server\3.6\bin>mongo
> use mongodb-consultas
switched to db mongodb-consultas
> db.getCollection("mongodb-consultas").find({}).skip(359).pretty();
{
  "_id" : ObjectId("5df2c85e280dbf2e624e9c87"),
  "isActive" : true,
  "balance" : "$2,353.00",
  "picture" : "http://placehold.it/32x32",
  "age" : 36,
  "name" : "Serenity Gilson",
  "company" : "Westmedia",
  "phone" : "857-489-24288",
  "email" : "serenity@westmedia.com",
  "address" : "36363, Austin, Broome Streets",
  "about" : "Enim magna Lorem deserunt id nulla. Id sunt fugiat ex incididunt officia aute ad voluptate consequat labore qui ullamco consequat et. Sit sint dolore enim aliquip occaecat. Proident excepteur id consequat quis anim. Quis est sunt reprehenderit duis voluptate mollit amet enim fugiat pariatur quis mollit nulla consectetur. Non pariatur non Lorem mollit exercitation nostrud ad. Fugiat dolore irure aute ad amet.\r\n",
  "registered" : "1995-09-24T19:52:25 -02:00",
  "latitude" : -24,
  "tags" : [
    "dolore",
    "fugiat",
    "est",
    "duis",
    "consectetur",
    "ex",
    "deserunt"
  ],
  "friends" : [
    {
      "id" : 1,
      "name" : "Brooke Adamson"
    },
    {
      "id" : 2,
      "name" : "Arianna Carey"
    },
    {
      "id" : 3,
      "name" : "Khloe Warren"
    }
  ],
  "gender" : "male",
  "randomArrayItem" : "student"
},
{
  "_id" : ObjectId("5df2c85e280dbf2e624e9c88"),
  "isActive" : false,
  "balance" : "$2,748.00",
  "picture" : "http://placehold.it/32x32",
  "age" : 34,
  "name" : "Autumn Webster",
  "company" : "Entcast",
  "phone" : "886-592-32351",
  "email" : "autumn@entcast.com",
  "address" : "15595, Bridgeport, Lafayette Street",
  "about" : "Cillum quis duis elit reprehenderit consequat adipisicing enim ullamco commodo ex et culpa magna aute. Consectetur reprehenderit est est culpa officia officia velit. Reprehenderit ipsum duis pariatur nisi elit veniam id cillum sint. Sit enim duis aliquip aute cillum exercitation pariatur veniam officia incididunt elit commodo commodo non. Labore mollit et irure dolor ullamco et pariatur eu exercitation. Do consequat officia cillum ipsum cillum in. Incidunt est commodo irure cillum veniam elit occaecat.\r\n",
  "registered" : "2006-08-17T21:54:05 -02:00",
  "latitude" : -16,
  "tags" : [
    "aliqua",
    "duis",
    "nulla",
    "qui",
    "sunt",
    "labore",
    "enim"
  ],
  "friends" : [
    {
      "id" : 1,
      "name" : "Katherine Oldman"
    },
    {
      "id" : 2,
      "name" : "Morgan Hamphrey"
    },
    {
      "id" : 3,
      "name" : "Jasmine Milton"
    }
  ],
  "gender" : "female",
  "randomArrayItem" : "student"
},
{
  "_id" : ObjectId("5df2c85e280dbf2e624e9c89"),
  "isActive" : false,
  "balance" : "$3,871.00",
  "picture" : "http://placehold.it/32x32",
  "age" : 30,
  "name" : "Sarah Gustman",
  "company" : "iSkyvaco",
  "phone" : "899-453-37275",
  "email" : "sarah@skyvaco.com",
  "address" : "27705, Buffalo, Greene Street",
  "about" : "Fugiat culpa ipsum ut nisi in ullamco dolor nostrud occaecat consequat. Proident Lorem commodo cupidatat ex deserunt commodo. In ex aliquip ea nulla laboris occaecat aliqua nostrud pariatur mollit ad sunt dolor veniam. Dolor pariatur qui dolore sunt. Id deserunt sint ullamco fugiat ad velit tempor. Velit ipsum labore aliqua in id aliquip quis consequat. Est excepteur eiusmod sint fugiat veniam incididunt

```

Figura 10: Ingresamos el siguiente comando: `db.getCollection( 'mongodb-consultas' ).find().skip(359).pretty()`



herramienta valiosísima que permitirá almacenar grandes cantidades de datos y extraer conocimiento de ellos de forma eficiente, tan necesario hoy en día debido al fenómeno BigData. No en vano, los puestos profesionales de informáticos que poseen conocimientos sobre alguna de estas tecnologías se están comenzando a demandar ampliamente