

**PROCESO PARA REALIZAR RESPALDOS  
EN UN GESTOR DE BASE DE DATOS EN  
MODO CONTENEDOR**



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## 1. Objetivo

Escribir un documento para explicar el proceso de respaldos y las variantes que se pueden encontrar al trabajar con los mismos en un contenedor.

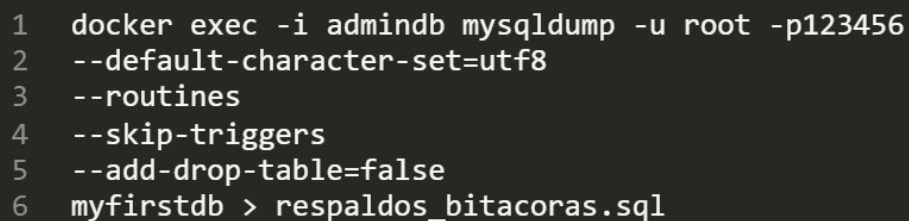
## 2. Alcance

Documento redactado para comprender la aplicación de los respaldos y restauraciones de bases de datos como contenedor, entendiendo su preconfiguración, comprensión y ejecución en aulas escolares, talleres y lugares de trabajo.

## 3. Proceso

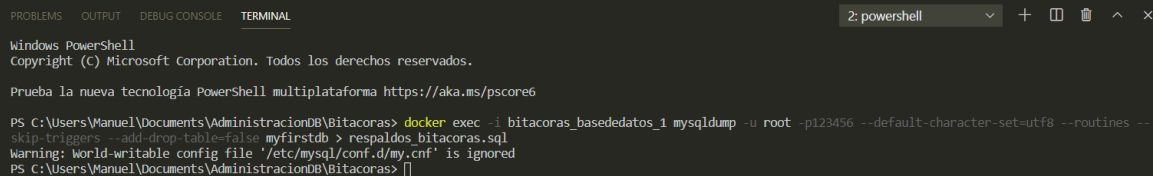
### Respaldo DUMP

Comando



```
1 docker exec -i admindb mysqldump -u root -p123456
2 --default-character-set=utf8
3 --routines
4 --skip-triggers
5 --add-drop-table=false
6 myfirstdb > respaldos_bitacoras.sql
```

### Ejecución de Comando

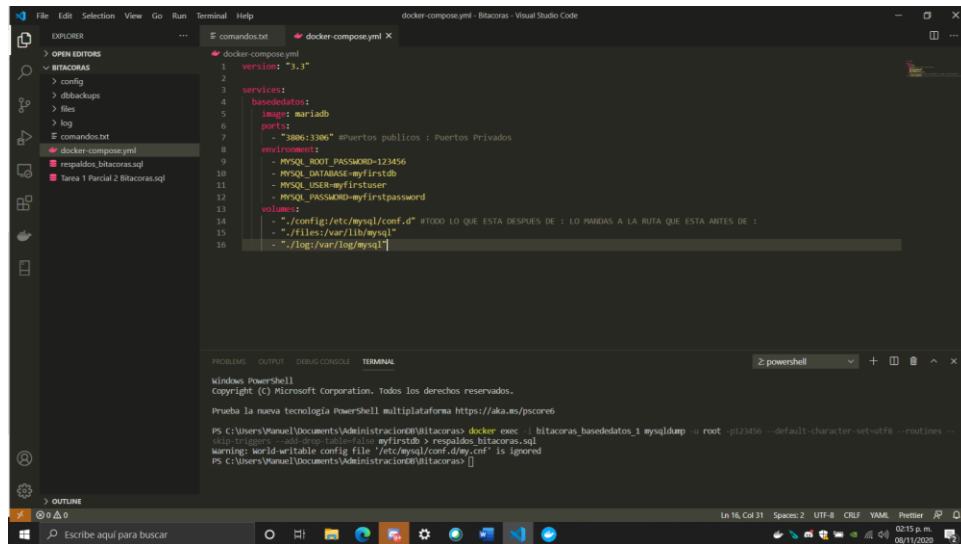


```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
2: powershell
Windows PowerShell
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PS C:\Users\Manuel\Documents\AdministracionDB\Bitacoras> docker exec -i bitacoras_basededatos_1 mysqldump -u root -p123456 --default-character-set=utf8 --routines --
skip-triggers --add-drop-table=false myfirstdb > respaldos_bitacoras.sql
Warning: World-writable config file '/etc/mysql/conf.d/my.cnf' is ignored
PS C:\Users\Manuel\Documents\AdministracionDB\Bitacoras>
```

## Evidencia de Creación de respaldo



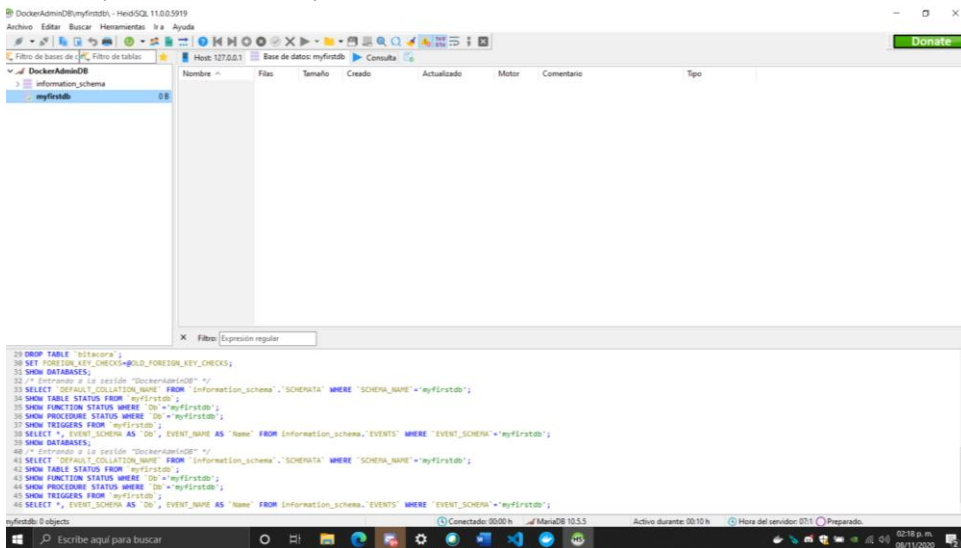
The screenshot shows the Visual Studio Code interface. The Explorer pane on the left shows a project named 'BITACORAS' with files like 'config', 'dbbackups', 'files', 'log', 'comandos.txt', 'docker-compose.yml', 'respaldos\_bitacoras.sql', and 'Tarea 1 Parcial 2 Bitacoras.sql'. The main editor shows the 'docker-compose.yml' file with the following content:

```
1 version: "3.3"
2
3 services:
4   basededatos:
5     image: mariadb
6     ports:
7       - "3306:3306" #Puertos publicos : Puertos Privados
8     environment:
9       - MYSQL_ROOT_PASSWORD=123456
10      - MYSQL_DATABASE=myfirstdb
11      - MYSQL_USER=myfirstuser
12      - MYSQL_PASSWORD=myfirstpassword
13     volumes:
14       - ./config:/etc/mysql/conf.d: STOOD LO QUE ESTA DESPUES DE : LO PASAMOS A LA RUTA QUE ESTA ANTES DE :
15       - ./files:/var/lib/mysql
16       - ./log:/var/log/mysql
```

The terminal window at the bottom shows the output of a Docker command:

```
PS C:\Users\Manuel\Documents\Administracion\Bitacoras> docker exec -i bitacoras_basededatos_1 mysqldump -u root -p123456 --default-character-set=utf8 --no-lines ...
Warning: world-writable config file '/etc/mysql/conf.d/my.cnf' is ignored
PS C:\Users\Manuel\Documents\Administracion\Bitacoras>
```

## Evidencia de Importación de respaldo



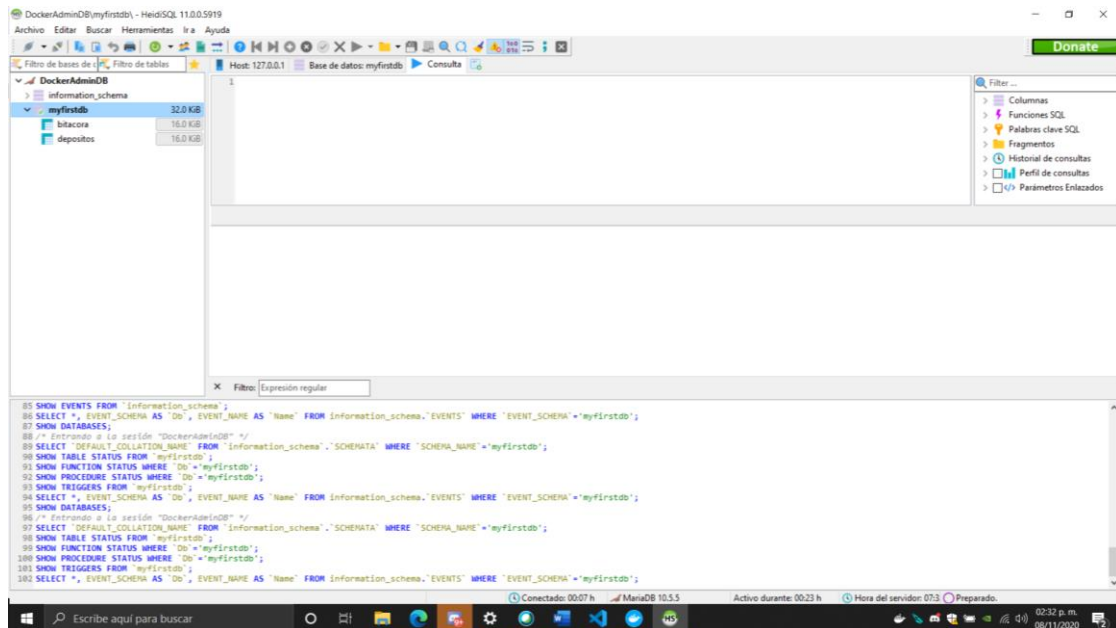
The screenshot shows the DockerAdminDB application interface. The left pane shows a tree view with 'DockerAdminDB' and 'myfirstdb'. The main pane shows a table with columns: Nombre, Fichas, Tamaño, Creado, Actualizado, Motor, Comentario, Tipo. The table is empty. Below the table, there is a section for 'Filtro: Expresión regular' with a text input field. The terminal window at the bottom shows the output of a MySQL command:

```
mysql> DROP TABLE 'bitacoras';
mysql> SET FOREIGN_KEY_CHECKS=0;
mysql> SHOW DATABASES;
mysql> SELECT 'DEFAULT_COLLATION_NAME' FROM 'information_schema'. 'SCHEMATA' WHERE 'SCHEMA_NAME'='myfirstdb';
mysql> SHOW TABLE STATUS FROM 'myfirstdb';
mysql> SHOW FUNCTION STATUS WHERE 'db'='myfirstdb';
mysql> SHOW PROCEDURE STATUS WHERE 'db'='myfirstdb';
mysql> SHOW TRIGGERS FROM 'myfirstdb';
mysql> SELECT 'EVENT_SCHEMA' AS 'db', 'EVENT_NAME' AS 'name' FROM 'information_schema'. 'EVENTS' WHERE 'EVENT_SCHEMA'='myfirstdb';
mysql> SHOW DATABASES;
mysql> SELECT 'DEFAULT_COLLATION_NAME' FROM 'information_schema'. 'SCHEMATA' WHERE 'SCHEMA_NAME'='myfirstdb';
mysql> SHOW TABLE STATUS FROM 'myfirstdb';
mysql> SHOW FUNCTION STATUS WHERE 'db'='myfirstdb';
mysql> SHOW PROCEDURE STATUS WHERE 'db'='myfirstdb';
mysql> SHOW TRIGGERS FROM 'myfirstdb';
mysql> SELECT 'EVENT_SCHEMA' AS 'db', 'EVENT_NAME' AS 'name' FROM 'information_schema'. 'EVENTS' WHERE 'EVENT_SCHEMA'='myfirstdb';
```

Se ejecuta el siguiente comando para restaurar la base de datos.

```
1 cat respaldos_bitacoras.sql | docker exec -i bitacoras_basededatos_1
2 /usr/bin/mysql -u root --password=123456 myfirstdb
```

Y finalmente, se restaura.



## Respaldo Binarios

Respaldo Binario Completo

Comando

```
1 docker exec -i bitacoras_basededatos_1 mariabackup
2 --backup --target-dir=dbbackups --user=root --password=123456
```

## Ejecución de comando

```

1 version: "3.3"
2
3 services:
4   basededatos:
5     image: mariadb
6     ports:
7       - "3306:3306" #Puertos publicos : Puertos Privados
8     environment:
9       - MYSQL_ROOT_PASSWORD=123456
10      - MYSQL_DATABASE=myfirstdb
11      - MYSQL_USER=myfirstuser
12      - MYSQL_PASSWORD=myfirstpassword
13     volumes:
14       - ".:/config/etc/mysql/conf.d" #TODO LO QUE ESTA DESPUES DE : LO PASARAS A LA RUTA QUE ESTA ANTES DE :
15       - ".:/files/var/lib/mysql"
16       - ".:/logs/var/log/mysql"
  
```

```

[00] 2020-11-08 20:07:48 Copying ./aria_log_control to /dbbackups/aria_log_control
[00] 2020-11-08 20:07:48 ...done
[00] 2020-11-08 20:07:48 waiting for log copy thread to read lun 130157
[00] 2020-11-08 20:07:49 >> log scanned up to (130157)
[00] 2020-11-08 20:07:49 Executing FLUSH NO WRITE TO BINLOG ENGINE LOCKS...
[00] 2020-11-08 20:07:49 mariabackup: The latest check point (for incremental): '130145'
mariabackup: Stopping log copying thread.[00] 2020-11-08 20:07:49 >> log scanned up to (130157)
[00] 2020-11-08 20:07:49 >> log scanned up to (130157)
[00] 2020-11-08 20:07:49 Executing BACKUP STAGE END
[00] 2020-11-08 20:07:49 All tables unlocked
[00] 2020-11-08 20:07:49 Copying ib_buffer_pool to /dbbackups/ib_buffer_pool
[00] 2020-11-08 20:07:49 ...done
[00] 2020-11-08 20:07:49 Backup created in directory '/dbbackups/'
[00] 2020-11-08 20:07:49 Writing backup-my.cnf
[00] 2020-11-08 20:07:49 ...done
[00] 2020-11-08 20:07:49 Writing xtrabackup_info
[00] 2020-11-08 20:07:49 ...done
[00] 2020-11-08 20:07:49 Redo log (from LSN 130145 to 130157) was copied.
[00] 2020-11-08 20:07:49 completed OK!
  
```

1 docker cp bitacoras\_basededatos\_1:/dbbackups dbbackups

## Evidencia de creación de respaldo

```

11 - MYSQL_USER=myfirstuser
12 - MYSQL_PASSWORD=myfirstpassword
13 volumes:
14   - ".:/config/etc/mysql/conf.d" #TODO LO QUE ESTA DESPUES DE : LO PASARAS A LA RUTA QUE ESTA ANTES DE :
15   - ".:/files/var/lib/mysql"
  
```

```

[00] 2020-11-08 20:07:49 >> log scanned up to (130157)
[00] 2020-11-08 20:07:49 Executing BACKUP STAGE END
[00] 2020-11-08 20:07:49 All tables unlocked
[00] 2020-11-08 20:07:49 Copying ib_buffer_pool to /dbbackups/ib_buffer_pool
[00] 2020-11-08 20:07:49 ...done
[00] 2020-11-08 20:07:49 Backup created in directory '/dbbackups/'
[00] 2020-11-08 20:07:49 Writing backup-my.cnf
[00] 2020-11-08 20:07:49 ...done
[00] 2020-11-08 20:07:49 Writing xtrabackup_info
[00] 2020-11-08 20:07:49 ...done
[00] 2020-11-08 20:07:49 Redo log (from LSN 130145 to 130157) was copied.
[00] 2020-11-08 20:07:49 completed OK!
PS C:\Users\Manuel\Documents\AdministradorDB\Bitacoras> docker cp bitacoras_basededatos_1:/dbbackups dbbackups
PS C:\Users\Manuel\Documents\AdministradorDB\Bitacoras>
  
```

## Respaldo Binario Incremental

### Comando

```
1 docker exec -i bitacoras_basededatos_1 mariabackup --backup
2 --target-dir=inc --incremental-basedir=dbbackups
3 --user=root --password=123456
```

### Ejecución de comando

```

[0] 2020-11-08 20:59:09 ...done
[0] 2020-11-08 20:59:09 Copying ./performance_schema/db.opt to ./inc/performance_schema/db.opt
[0] 2020-11-08 20:59:09 ...done
[0] 2020-11-08 20:59:09 Finished backing up non-InnoDB tables and files
[0] 2020-11-08 20:59:09 Copying ./aria_log.00000001 to ./inc/aria_log.00000001
[0] 2020-11-08 20:59:09 ...done
[0] 2020-11-08 20:59:10 >>> log scanned up to (130169)
[0] 2020-11-08 20:59:10 Encoding PLUS+IO WRITE IO BLDOS ENGINE LOGS...
[0] 2020-11-08 20:59:10 mariabackup: the latest check point (for incremental): '13015/'
mariabackup: Stopping log copying thread.[0] 2020-11-08 20:59:10 >>> log scanned up to (130169)
[0] 2020-11-08 20:59:10 >>> log scanned up to (130169)
[0] 2020-11-08 20:59:10 Encoding BACKUP SLOG LOG
[0] 2020-11-08 20:59:10 All tables selected
[0] 2020-11-08 20:59:10 Copying ib_buffer_pool to ./inc/ib_buffer_pool
[0] 2020-11-08 20:59:10 ...done
[0] 2020-11-08 20:59:10 Backup created in directory './inc/'
[0] 2020-11-08 20:59:10 Writing backup-my.cnf
[0] 2020-11-08 20:59:10 ...done
[0] 2020-11-08 20:59:10 Writing xtrabackup_info
[0] 2020-11-08 20:59:10 ...done
[0] 2020-11-08 20:59:10 redo log (from 130157 to 130169) was copied.
[0] 2020-11-08 20:59:10 completed OK!
PS C:\Users\Manuel\Documents\Administracion\bitacoras> docker cp bitacoras_basededatos_1/inc/ inc/
error: No such container path: bitacoras_basededatos_1/inc/
PS C:\Users\Manuel\Documents\Administracion\bitacoras> docker cp bitacoras_basededatos_1/inc/ inc/
PS C:\Users\Manuel\Documents\Administracion\bitacoras>
  
```

### Evidencia de creación de respaldo

```

[0] 2020-11-08 20:59:09 ...done
[0] 2020-11-08 20:59:09 Copying ./performance_schema/db.opt to ./inc/performance_schema/db.opt
[0] 2020-11-08 20:59:09 ...done
[0] 2020-11-08 20:59:09 Finished backing up non-InnoDB tables and files
[0] 2020-11-08 20:59:09 Copying ./aria_log.00000001 to ./inc/aria_log.00000001
[0] 2020-11-08 20:59:09 ...done
[0] 2020-11-08 20:59:10 >>> log scanned up to (130169)
[0] 2020-11-08 20:59:10 Encoding PLUS+IO WRITE IO BLDOS ENGINE LOGS...
[0] 2020-11-08 20:59:10 mariabackup: the latest check point (for incremental): '13015/'
mariabackup: Stopping log copying thread.[0] 2020-11-08 20:59:10 >>> log scanned up to (130169)
[0] 2020-11-08 20:59:10 >>> log scanned up to (130169)
[0] 2020-11-08 20:59:10 Encoding BACKUP SLOG LOG
[0] 2020-11-08 20:59:10 All tables selected
[0] 2020-11-08 20:59:10 Copying ib_buffer_pool to ./inc/ib_buffer_pool
[0] 2020-11-08 20:59:10 ...done
[0] 2020-11-08 20:59:10 Backup created in directory './inc/'
[0] 2020-11-08 20:59:10 Writing backup-my.cnf
[0] 2020-11-08 20:59:10 ...done
[0] 2020-11-08 20:59:10 Writing xtrabackup_info
[0] 2020-11-08 20:59:10 ...done
[0] 2020-11-08 20:59:10 redo log (from 130157 to 130169) was copied.
[0] 2020-11-08 20:59:10 completed OK!
PS C:\Users\Manuel\Documents\Administracion\bitacoras> docker cp bitacoras_basededatos_1/inc/ inc/
error: No such container path: bitacoras_basededatos_1/inc/
PS C:\Users\Manuel\Documents\Administracion\bitacoras> docker cp bitacoras_basededatos_1/inc/ inc/
PS C:\Users\Manuel\Documents\Administracion\bitacoras>
  
```

## Proceso anti contingencia



```
1 docker exec -i bitacoras_basededatos_1 mariabackup
2 --prepare --target-dir=/dbbackups/ --incremental-dir=/inc1/
```



```
1 docker exec -i bitacoras_basededatos_1 mariabackup
2 --prepare --target-dir=/dbbackups/
```



```
1 docker exec -i bitacoras_basededatos_1 mariabackup
2 --copy-back --target-dir=/dbbackups/
```

The screenshot shows the Visual Studio Code interface. On the left, the Explorer pane shows a project structure with folders like 'BITACORAS', 'config', 'myconf', 'dbbackups', 'dbbackupsincremental', 'files', 'inc', 'inc1', 'inc2', 'log', and 'comandos.txt'. The 'docker-compose.yml' file is open in the editor. The terminal window shows the output of the command 'docker exec -i bitacoras\_basededatos\_1 mariabackup --prepare --target-dir=/dbbackups/'. The output indicates that the backup is successful, showing the InnoDB configuration for recovery, the data file path, and the log group home directory.

```
docker-compose.yml - Bitacoras - Visual Studio Code
# comandos.txt
1 version: "3.3"
2
3 services:
4   - bitacoras_basededatos_1

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
t: powershell

Windows PowerShell
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PS C:\Users\Manuel\Documents\AdministracionDB\Bitacoras> docker exec -i bitacoras_basededatos_1 mariabackup --prepare --target-dir=/dbbackups/
mariabackup based on MariaDB server 10.5.5-MariaDB debian-linux-gnu (x86_64)
[00] 2020-11-09 19:39:52 id to /dbbackups/
[00] 2020-11-09 19:39:52 This target seems to be not prepared yet.
[00] 2020-11-09 19:39:52 mariabackup: using the following InnoDB configuration for recovery:
[00] 2020-11-09 19:39:52 InnoDB: data home dir = .
[00] 2020-11-09 19:39:52 InnoDB: data file path = ibdata1:129:autoextend
[00] 2020-11-09 19:39:52 InnoDB: log_group_home_dir = .
[00] 2020-11-09 19:39:52 InnoDB: Using Linux native AIO
[00] 2020-11-09 19:39:52 Starting InnoDB instance for recovery.
[00] 2020-11-09 19:39:52 mariabackup: Using 104857600 bytes for buffer pool (set by --use-memory parameter)
[00] 2020-11-09 19:39:52 [note] InnoDB: Uses event mutexes.
[00] 2020-11-09 19:39:52 [note] InnoDB: Compressed tables use zlib 1.2.11.
[00] 2020-11-09 19:39:52 [note] InnoDB: Number of pools: 1
[00] 2020-11-09 19:39:52 [note] InnoDB: Using SSE4.2 crc32 instructions.
[00] 2020-11-09 19:39:52 [note] InnoDB: Completed initialization of buffer pool
[00] 2020-11-09 19:39:52 [note] InnoDB: If the mysqld execution user is authorized, page cleaner thread priority can be changed. See the man page of setpriority().
[00] 2020-11-09 19:39:52 [note] InnoDB: Starting crash recovery from checkpoint 150-130145
[00] 2020-11-09 19:39:52 Last binlog file , position 0
[00] 2020-11-09 19:39:52 completed OK!
PS C:\Users\Manuel\Documents\AdministracionDB\Bitacoras>
```



## 5. Conclusiones

Retadora, extenuante y eficaz.