

# Tarea para ASGBD04

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# Servidor activo y aceptando conexiones

Saber si el servidor está activo y aceptando conexiones (ping)

Habría que saber si estamos en un entorno linux o windows.

## En linux

Referencias:

<https://dev.mysql.com/doc/refman/8.0/en/connecting.html>

Con un comando ps podríamos ver que procesos están corriendo, y localizar el de mysql. En concreto:

```
ps -ef | grep mysql
```

Con un netstat -tlnp podemos ver los puertos a la escucha, y en principio por defecto estaría en el 3306

Si no acepta conexiones desde fuera, es posible que el firewall (ufw u otro) esté capando esas conexiones, y habría que permitir las (o "a las bravas", en entorno académico, deshabilitar el firewall).

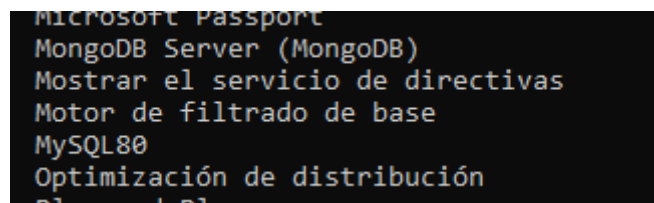
## En windows

Referencias:

<https://dev.mysql.com/doc/mysql-windows-excerpt/8.0/en/windows-testing.html>

<https://phoenixnap.com/kb/connect-to-mysql-windows-command-line>

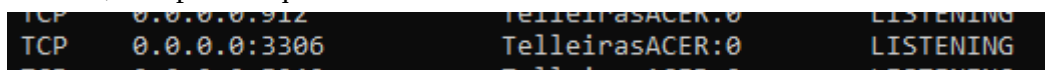
Comando net start:



```
Microsoft Passport
MongoDB Server (MongoDB)
Mostrar el servicio de directivas
Motor de filtrado de base
MySQL80
Optimización de distribución
Plug and Play
```

Si no estuviera, en services.msc podría configurar el arranque del servicio.

Con un netstat -a, compruebo que está escuchando:

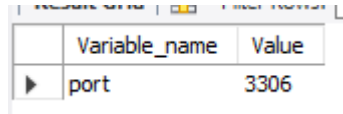


```
TCP 0.0.0.0:3306 TelleirasACER:0 LISTENING
TCP 0.0.0.0:5040 TelleirasACER:0 LISTENING
```

## En ambos:

Con una instalación, podemos comprobar que puerto está configurado con:

```
SHOW GLOBAL VARIABLES LIKE 'PORT';
```



	Variable_name	Value
▶	port	3306

También:

```
telnet localhost 3306
```

Empíricamente, se puede realizar la conexión con cualquiera de las siguientes:

```
mysql --host=localhost --user=myname --password mydb
```

```
mysql -h localhost -u myname -p mydb
```

También permite especificar puerto:

```
mysql --host=remote.example.com --port=13306
```

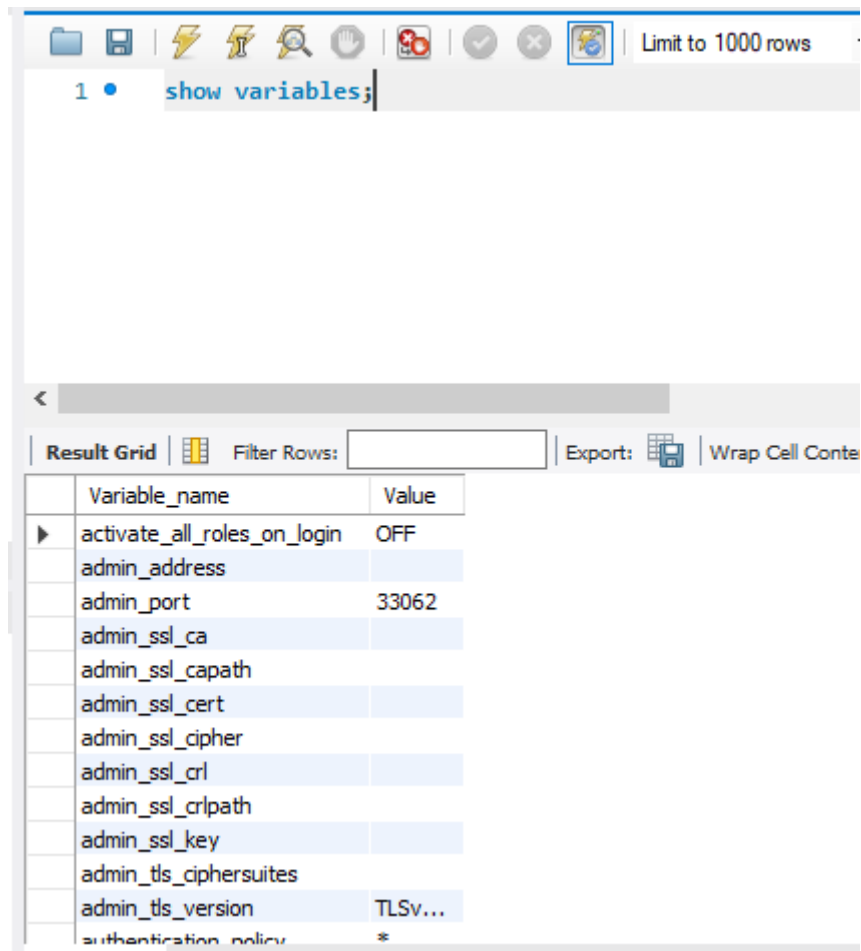
# Variables de estado y slow query log

Muestra las variables de estado del servidor

Referencia:

<https://dev.mysql.com/doc/refman/8.0/en/show-variables.html>

Show variables;



The screenshot shows a MySQL client window with a toolbar at the top. The command 'show variables;' is entered in the query area. Below the query area, there is a 'Result Grid' section with a table of variables and their values. The table has two columns: 'Variable\_name' and 'Value'. The variables listed include 'activate\_all\_roles\_on\_login', 'admin\_address', 'admin\_port', 'admin\_ssl\_ca', 'admin\_ssl\_capath', 'admin\_ssl\_cert', 'admin\_ssl\_cipher', 'admin\_ssl\_crl', 'admin\_ssl\_crlpath', 'admin\_ssl\_key', 'admin\_tls\_ciphersuites', 'admin\_tls\_version', and 'authentication\_policy'.

Variable_name	Value
activate_all_roles_on_login	OFF
admin_address	
admin_port	33062
admin_ssl_ca	
admin_ssl_capath	
admin_ssl_cert	
admin_ssl_cipher	
admin_ssl_crl	
admin_ssl_crlpath	
admin_ssl_key	
admin_tls_ciphersuites	
admin_tls_version	TLSv...
authentication_policy	*

Comprueba si está habilitado SLOW QUERY LOG.

slow_query_log	ON
----------------	----

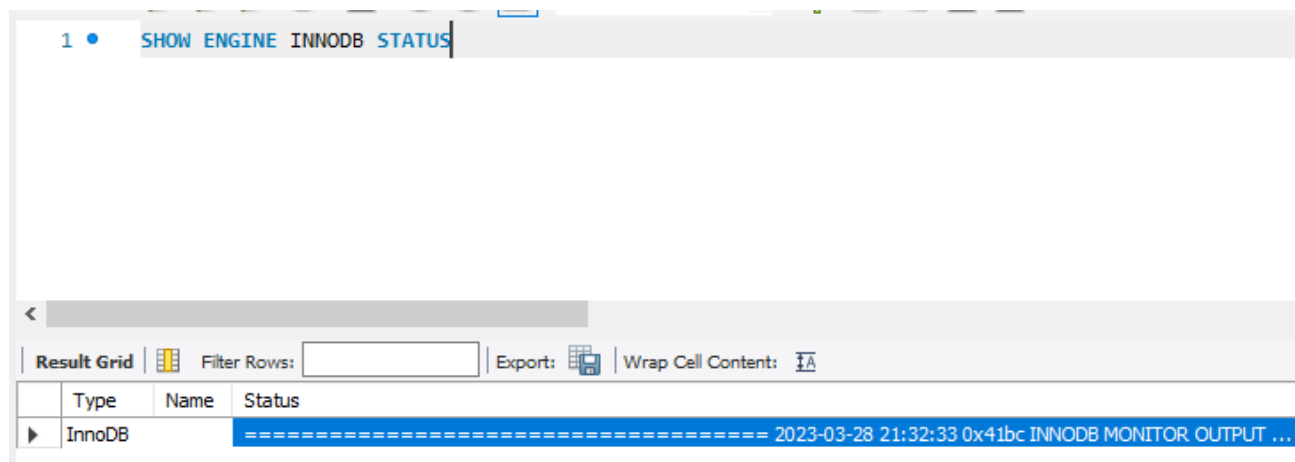
# Estado del motor Innodb

Muestra la información de estado del motor Innodb.

Referencia:

<https://dev.mysql.com/doc/refman/8.0/en/show-engine.html>

SHOW ENGINE INNODB STATUS;



```
'InnoDB', ", "\n=====\n2023-03-28 21:32:33 0x41bc
INNODB MONITOR OUTPUT\n=====\nPer second
averages calculated from the last 42 seconds\n-----\nBACKGROUND THREAD\
n-----\nsrv_master_thread loops: 5 srv_active, 0 srv_shutdown, 23074 srv_idle\
nsrv_master_thread log flush and writes: 0\n-----\nSEMAPHORES\n-----\nOS WAIT
ARRAY INFO: reservation count 301\nOS WAIT ARRAY INFO: signal count 295\nRW-shared
spins 0, rounds 0, OS waits 0\nRW-excl spins 0, rounds 0, OS waits 0\nRW-sx spins 0, rounds 0,
OS waits 0\nSpin rounds per wait: 0.00 RW-shared, 0.00 RW-excl, 0.00 RW-sx\n-----\
nTRANSACTIONS\n-----\nTrx id counter 22889\nPurge done for trx's n:o < 22889 undo n:o
< 0 state: running but idle\nHistory list length 0\nLIST OF TRANSACTIONS FOR EACH
SESSION:\n---TRANSACTION 284114484875144, not started\n0 lock struct(s), heap size 1128, 0
row lock(s)\n---TRANSACTION 284114484874368, not started\n0 lock struct(s), heap size 1128, 0
row lock(s)\n---TRANSACTION 284114484873592, not started\n0 lock struct(s), heap size 1128, 0
row lock(s)\n---TRANSACTION 284114484872816, not started\n0 lock struct(s), heap size 1128, 0
row lock(s)\n-----\nFILE I/O\n-----\nI/O thread 0 state: wait Windows aio (insert buffer
thread)\nI/O thread 1 state: wait Windows aio (log thread)\nI/O thread 2 state: wait Windows aio
(read thread)\nI/O thread 3 state: wait Windows aio (read thread)\nI/O thread 4 state: wait Windows
aio (read thread)\nI/O thread 5 state: wait Windows aio (read thread)\nI/O thread 6 state: wait
Windows aio (write thread)\nI/O thread 7 state: wait Windows aio (write thread)\nI/O thread 8 state:
wait Windows aio (write thread)\nI/O thread 9 state: wait Windows aio (write thread)\nPending
normal aio reads: [0, 0, 0, 0] , aio writes: [0, 0, 0, 0] ,\n ibuf aio reads:, log i/o's:, sync i/o's:\
nPending flushes (fsync) log: 0; buffer pool: 0\n1913 OS file reads, 843 OS file writes, 349 OS
```

```

fsyncs\n0.00 reads/s, 0 avg bytes/read, 0.00 writes/s, 0.00 fsyncs/s\n-----\n
nINSERT BUFFER AND ADAPTIVE HASH INDEX\n-----\nIbuf: size
1, free list len 0, seg size 2, 0 merges\nmerged operations:\n insert 0, delete mark 0, delete 0\
ndiscarded operations:\n insert 0, delete mark 0, delete 0\nHash table size 2267, node heap has 0
buffer(s)\nHash table size 2267, node heap has 0 buffer(s)\nHash table size 2267, node heap has 0
buffer(s)\nHash table size 2267, node heap has 0 buffer(s)\nHash table size 2267, node heap has 0
buffer(s)\nHash table size 2267, node heap has 2 buffer(s)\n0.00 hash searches/s, 0.00 non-hash
searches/s\n---\nLOG\n---\nLog sequence number      29125919\nLog buffer assigned up to
29125919\nLog buffer completed up to  29125919\nLog written up to      29125919\nLog
flushed up to      29125919\nAdded dirty pages up to    29125919\nPages flushed up to
29125919\nLast checkpoint at      29125919\n212 log i/o's done, 0.00 log i/o's/second\
n-----\nBUFFER POOL AND MEMORY\n-----\nTotal large memory
allocated 0\nDictionary memory allocated 438749\nBuffer pool size  512\nFree buffers    0\
nDatabase pages    510\nOld database pages 0\nModified db pages  0\nPending reads    0\
nPending writes: LRU 0, flush list 0, single page 0\nPages made young 0, not young 0\n0.00
youngs/s, 0.00 non-youngs/s\nPages read 1886, created 173, written 479\n0.00 reads/s, 0.00
creates/s, 0.00 writes/s\nNo buffer pool page gets since the last printout\nPages read ahead 0.00/s,
evicted without access 0.00/s, Random read ahead 0.00/s\nLRU len: 510, unzip_LRU len: 0\nI/O
sum[0]:cur[0], unzip sum[0]:cur[0]\n-----\nROW OPERATIONS\n-----\n0 queries
inside InnoDB, 0 queries in queue\n0 read views open inside InnoDB\nProcess ID=4660, Main
thread ID=5824 , state=sleeping\nNumber of rows inserted 41, updated 0, deleted 0, read 4\n0.00
inserts/s, 0.00 updates/s, 0.00 deletes/s, 0.00 reads/s\nNumber of system rows inserted 94, updated
564, deleted 102, read 6874\n0.00 inserts/s, 0.00 updates/s, 0.00 deletes/s, 0.00 reads/s\
n-----\nEND OF INNODB MONITOR OUTPUT\
n=====n'

```

## Información de los flujos

Muestra la información de los flujos que están en ejecución, pero para más de 100 caracteres. No uses mysqladmin.

Referencia:

<https://dev.mysql.com/doc/refman/8.0/en/show-processlist.html>

Para ver más de 100 caracteres:

SHOW FULL PROCESSLIST

1 SHOW FULL PROCESSLIST

<

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

	Id	User	Host	db	Command	Time	State	Info
▶	5	event_scheduler	localhost	NULL	Daemon	253888	Waiting on empty queue	NULL
	8	root	localhost:59624	NULL	Sleep	381		NULL
	9	root	localhost:59625	baloncesto	Query	0	init	SHOW FULL PROCESSLIST

# Índices

Añade un índice a la columna 'apellidos' de la tabla jugadores.

Referencias:

<https://dev.mysql.com/doc/refman/8.0/en/create-index.html>

<https://popsql.com/learn-sql/mysql/how-to-create-an-index-in-mysql>

[https://www.w3schools.com/mysql/mysql\\_create\\_index.asp](https://www.w3schools.com/mysql/mysql_create_index.asp)

```
CREATE INDEX idx_lastname ON jugadores (apellido);
```

Muestra los índices que existen para la tabla 'Jugadores'.

Referencias:

<https://dev.mysql.com/doc/refman/8.0/en/show-index.html>

<https://www.mysqltutorial.org/mysql-index/mysql-show-indexes/>

```
SHOW INDEXES FROM jugadores;
```

```
1 • SHOW INDEXES FROM jugadores;
```

	Table	Non_unique	Key_name	Seq_in_index	Column_name	Collation	Cardinality	Sub_part	Packed	Null	Index_type
▶	jugadores	0	PRIMARY	1	codalumno	A	28	NULL	NULL		BTREE
	jugadores	1	clase	1	clase	A	4	NULL	NULL		BTREE
	jugadores	1	puesto	1	puesto	A	5	NULL	NULL		BTREE
	jugadores	1	idx_lastname	1	apellido	A	28	NULL	NULL		BTREE



# Comando explain y optimización de índice

Utiliza el comando EXPLAIN para analizar la siguiente consulta.

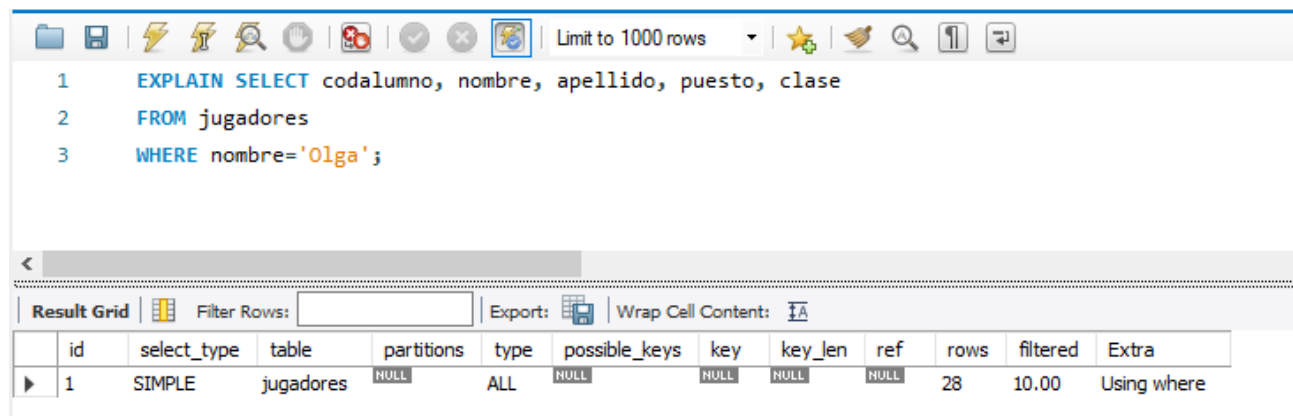
SELECT codalumno, nombre, apellido, puesto, clase

FROM jugadores

WHERE nombre='Olga';

Referencia:

<https://dev.mysql.com/doc/refman/8.0/en/using-explain.html>



The screenshot shows a MySQL client window with a toolbar at the top. The SQL query entered is:

```
1 EXPLAIN SELECT codalumno, nombre, apellido, puesto, clase
2 FROM jugadores
3 WHERE nombre='Olga';
```

Below the query, the 'Result Grid' is displayed. It has a toolbar with 'Filter Rows', 'Export', and 'Wrap Cell Content' options. The grid contains the following data:

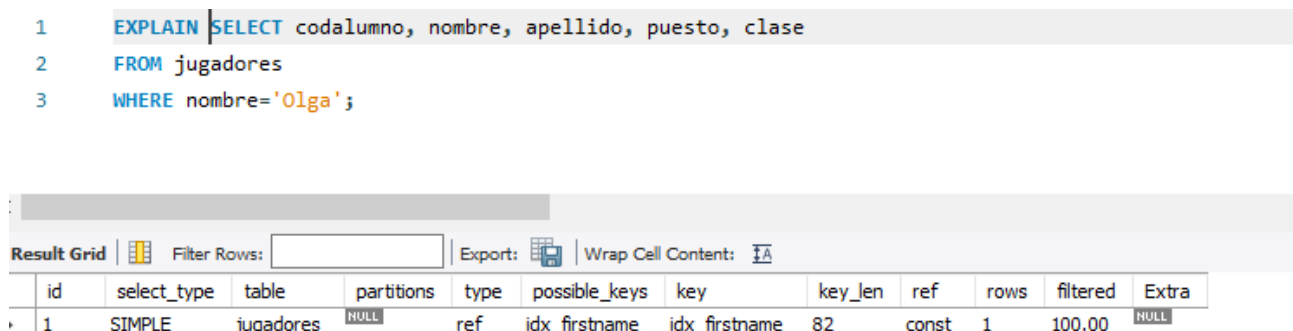
	id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
▶	1	SIMPLE	jugadores	NULL	ALL	NULL	NULL	NULL	NULL	28	10.00	Using where

Después optimízala creando el índice adecuado y comprueba la mejora obtenida.

Referencia:

[https://www.w3schools.com/mysql/mysql\\_create\\_index.asp](https://www.w3schools.com/mysql/mysql_create_index.asp)

CREATE INDEX idx\_firstname ON jugadores (nombre);



The screenshot shows the same MySQL client window after creating the index. The SQL query is the same:

```
1 EXPLAIN SELECT codalumno, nombre, apellido, puesto, clase
2 FROM jugadores
3 WHERE nombre='Olga';
```

The 'Result Grid' now shows a different result, indicating that the index is being used:

	id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
▶	1	SIMPLE	jugadores	NULL	ref	idx_firstname	idx_firstname	82	const	1	100.00	NULL