Lesson 14- Instagram database clone

1- Introducing to Instagram database clone schema
2- Cloning Instagram database: users schema
3- Cloning Instagram database: photos schema
4- Cloning Instagram database: comments schema
5- Cloning Instagram database: likes schema
6- Cloning Instagram database: flowers schema
7- Cloning Instagram database: hashtag part 1 schema
8- Cloning Instagram database: hashtag part 2 schema
9- Cloning Instagram database: comments schema
10- Cloning Instagram database: comments schema

```
INSERT INTO users (username, created_at) VALUES ('Kenton_Kirlin', '2017-02-16 18:22:10.846'), ('Andre_Purdy85', '2017-04-02 17:11:21.417'),
('Harley_Lind18', '2017-02-21 11:12:32.574'), ('Arely_Bogan63', '2016-08-13 01:28:43.085'), ('Aniya_Hackett', '2016-12-07 01:04:39.298'),
('Travon.Waters', '2017-04-30 13:26:14.496'), ('Kasandra_Homenick', '2016-12-12 06:50:07.996'), ('Tabitha_Schamberger11', '2016-08-20 02:19:45.512'),
('Gus93', '2016-06-24 19:36:30.978'), ('Presley_McClure', '2016-08-07 16:25:48.561'), ('Justina.Gaylord27', '2017-05-04 16:32:15.577'), ('Dereck65',
'2017-01-19 01:34:14.296'), ('Alexandro35', '2017-03-29 17:09:02.344'), ('Jaclyn81', '2017-02-06 23:29:16.394'), ('Billy52', '2016-10-05 14:10:20.453'),
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('Hailee26', '2017-04-29 18:53:39.650'), ('Delpha.Kihn', '2016-08-31 02:42:30.288'), ('Rocio33', '2017-01-23 11:51:15.467'), ('Kenneth64', '2016-12-27
09:48:17.308'), ('Evelyne95', '2017-01-23 23:14:18.569'), ('Maxwell.Halvorson', '2017-04-10 02:32:43.597'), ('Tierra.Trantow', '2016-10-03
12:49:20.774'), ('Josianne.Friesen', '2016-06-07 12:47:00.703'), ('Darwin29', '2017-03-18 03:10:07.047'), ('Dario77', '2016-08-18 07:15:02.823'),
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07:56:25.835'), ('Kelsi26', '2016-06-08 17:48:08.478'), ('Rafael.Hickle2', '2016-05-19 09:51:25.779'), ('Mckenna17', '2016-07-17 17:25:44.855'),
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11:52:27.469'), ('Bethany20', '2016-06-03 23:31:53.322'), ('Frederik_Rice', '2016-07-06 21:56:28.654'), ('Willie_Leuschke', '2017-02-15 01:40:53.310'),
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INSERT INTO photos(image_url, user_id) VALUES ('http://elijah.biz', 1), ('https://shanon.org', 1), ('http://vicky.biz', 1), ('http://oleta.net', 1),
('https://jennings.biz', 1), ('https://quinn.biz', 2), ('https://selina.name', 2), ('http://malvina.org', 2), ('https://branson.biz', 2), ('https://
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saige.com', 9), ('https://reece.net', 9), ('http://vance.org', 9), ('http://ignacio.net', 9), ('http://kenny.com', 10), ('http://remington.name', 10),
('http://kurtis.info', 10), ('https://alisha.com', 11), ('https://henderson.com', 11), ('http://bonnie.info', 11), ('http://kennith.net', 11), ('http://
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13), ('https://easter.net', 13), ('http://golden.org', 13), ('https://kendall.biz', 13), ('https://glenda.info', 13), ('http://dominic.biz', 15), ('http:/
/tressie.info', 15), ('http://estevan.org', 15), ('http://zena.com', 15), ('https://abagail.com', 16), ('https://hershel.com', 16), ('http://
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18), ('http://rylan.biz', 19), ('https://noemie.com', 19), ('https://dejon.name', 20), ('https://rigoberto.net', 22), ('http://megane.biz', 23), ('http:/
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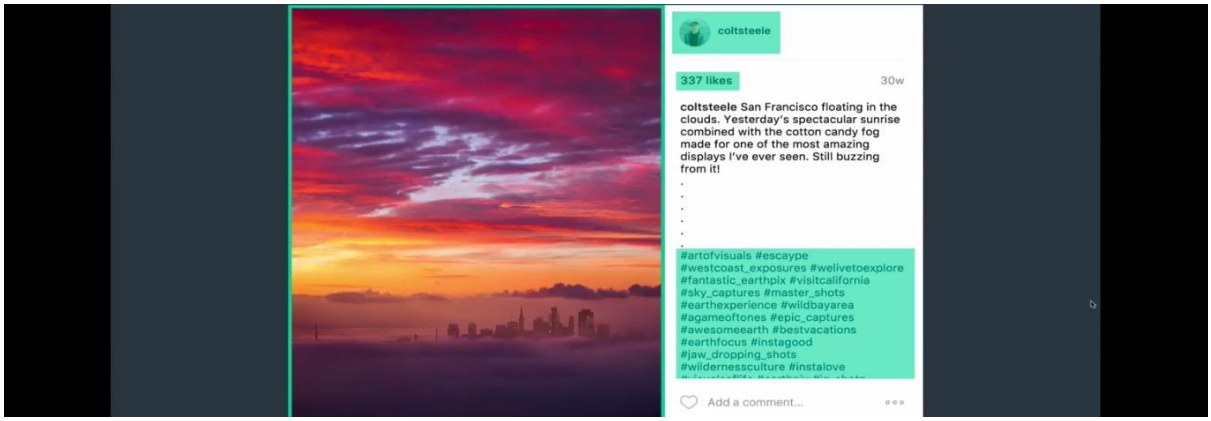
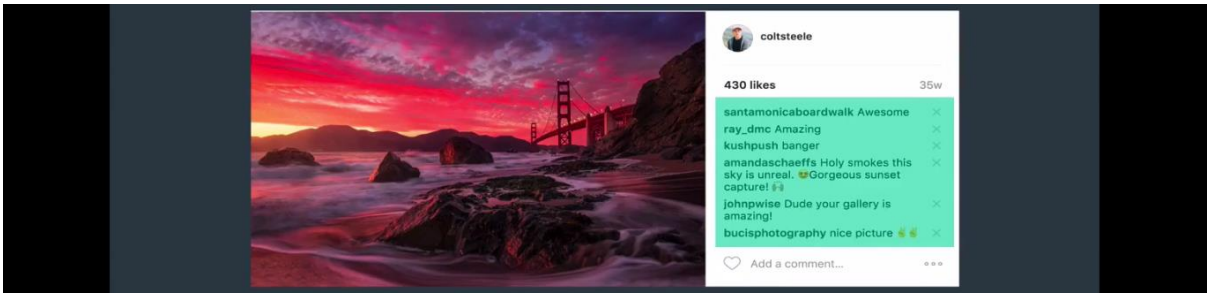
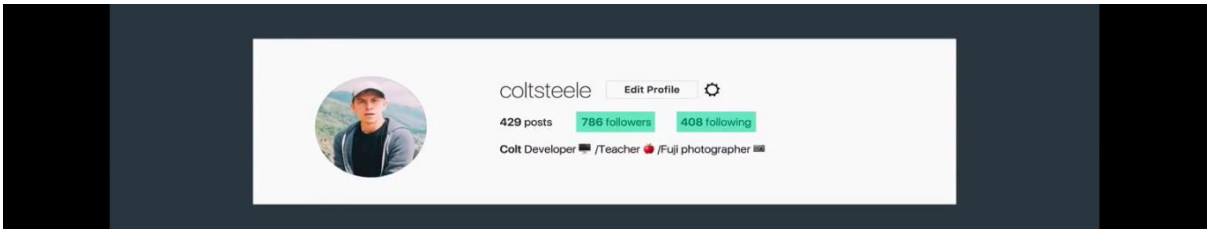
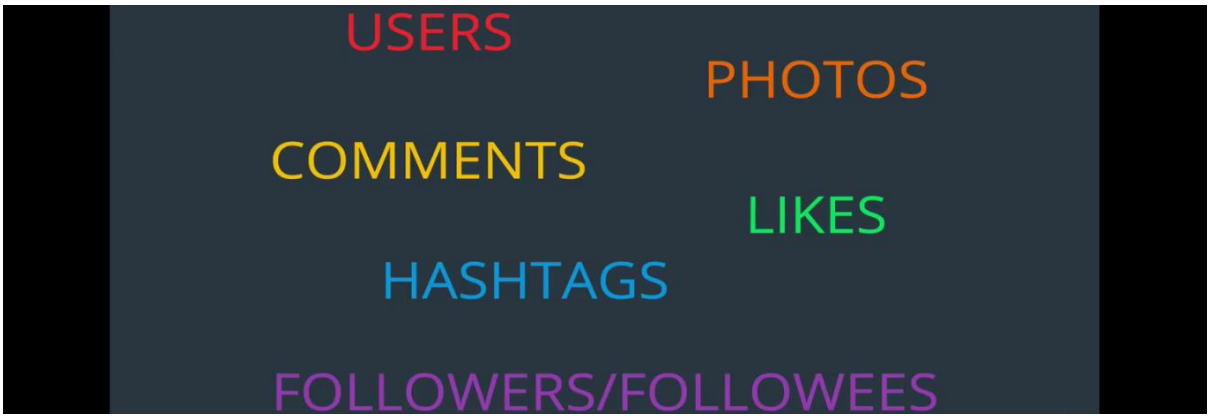
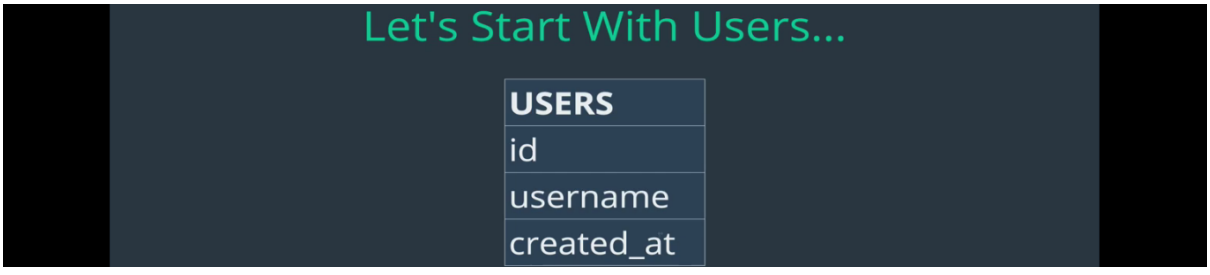


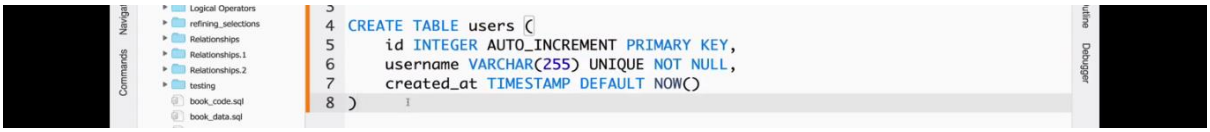

coltsteele
430 likes
35w
santamonicaboardwalk Awesome
ray_dmc Amazing
kushpush banger
amandaschaeffs Holy smokes this sky is unreal. 😍Gorgeous sunset capture! 🙌
johnpwise Dude your gallery is amazing!
bucisphotography nice picture 👏👏
Add a comment...


coltsteele
Edit Profile
429 posts
786 followers
408 following
Colt Developer /Teacher /Fuji photographer


USERS
PHOTOS
COMMENTS
LIKES
HASHTAGS
FOLLOWERS/FOLLOWEES


WRITE A SCHEMA
GIVE IT A SHOT


Let's Start With Users...
USERS
id
username
created_at


Logical Operators
refining_selections
Relationships
Relationships.1
Relationships.2
testing
book_code.sql
book_data.sql
CREATE TABLE users (
id INTEGER AUTO_INCREMENT PRIMARY KEY,
username VARCHAR(255) UNIQUE NOT NULL,
created_at TIMESTAMP DEFAULT NOW()
)

Up Next: Photos

PHOTOS
id
image_url
user_id
created_at

```sql
CREATE TABLE photos (
    id INTEGER AUTO_INCREMENT PRIMARY KEY,
    image_url VARCHAR(255) NOT NULL,
    user_id INTEGER NOT NULL,
    created_at TIMESTAMP DEFAULT NOW(),
    FOREIGN KEY(user_id) REFERENCES users(id)
);
```

```sql
INSERT INTO users (username) VALUES
('BlueTheCat'),
('CharlieBrown'),
('ColtSteele');

INSERT INTO photos (image_url, user_id) VALUES
('/alskjd76', 1),
('/lkajsd98', 2),
('/90jddlkj', 2);
```

```sql
SELECT photos.image_url, users.username
FROM photos
JOIN users
    ON photos.user_id = users.id;
```

```
+-----------+--------------+
| image_url | username     |
+-----------+--------------+
| /alskjd76 | BlueTheCat   |
| /lkajsd98 | CharlieBrown |
| /90jddlkj | CharlieBrown |
+-----------+--------------+
3 rows in set (0.00 sec)
```

Now Comments

COMMENTS
id
comment_text
user_id
photo_id
created_at

```sql
CREATE TABLE comments (
    id INTEGER AUTO_INCREMENT PRIMARY KEY,
    comment_text VARCHAR(255) NOT NULL,
    user_id INTEGER NOT NULL,
    photo_id INTEGER NOT NULL,
    created_at TIMESTAMP DEFAULT NOW(),
    FOREIGN KEY(user_id) REFERENCES users(id),
    FOREIGN KEY(photo_id) REFERENCES photos(id)
);
```

```sql
INSERT INTO comments(comment_text, user_id, photo_id) VALUES
('Meow!', 1, 2),
('Amazing Shot!', 3, 2),
('I <3 This', 2, 1);
```

What About Likes?

What About Likes?


```sql
CREATE TABLE likes (
    user_id INTEGER NOT NULL,
    photo_id INTEGER NOT NULL,
    created_at TIMESTAMP DEFAULT NOW(),
    FOREIGN KEY(user_id) REFERENCES users(id),
    FOREIGN KEY(photo_id) REFERENCES photos(id),
    PRIMARY KEY(user_id, photo_id)
);
```

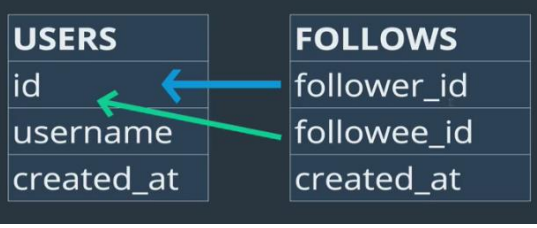
```sql
INSERT INTO likes(user_id, photo_id) VALUES
(1,1),
(2,1),
(1,2),
(1,3),
(3,3);
```

```
mysql> INSERT INTO likes(user_id, photo_id) VALUES (1,1);
ERROR 1062 (23000): Duplicate entry '1-1' for key 'PRIMARY'
```

```sql
(3,3);
-- Won't work because of primary key constraint
INSERT INTO likes(user_id, photo_id) VALUES (1,1);
```

Relationship Troubles

Relationship Troubles



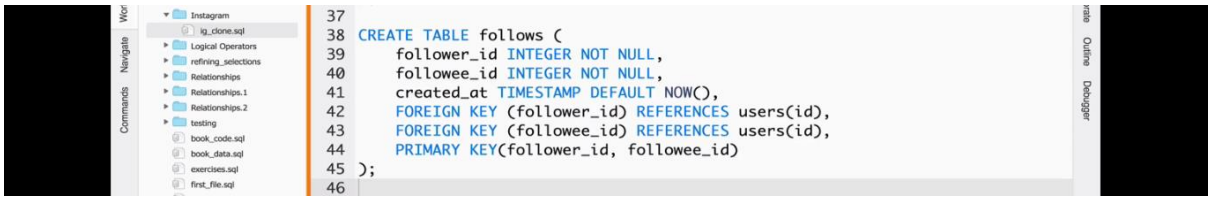
EXAMPLE TIME

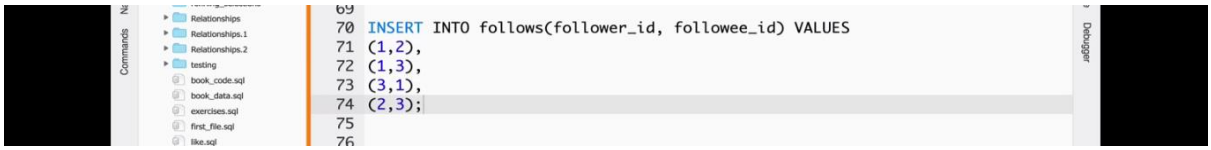
Users

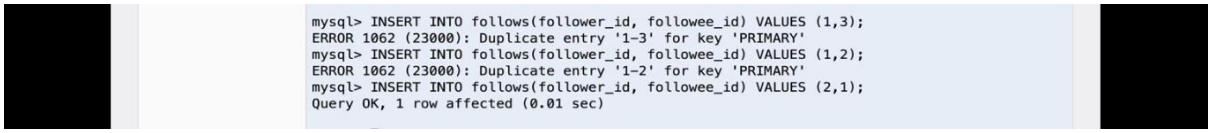
ID	USERNAME	CREATED_AT
1	Tommy	2016-10-11
2	BlueCat	2017-01-10
3	ColtSteele	2017-04-04

Follows

FOLLOWER_ID	FOLLOWEE_ID	CREATED_AT
3	2	2017-03-03
3	1	2017-04-04
2	3	2017-05-05







AND NOW...Tags!

There are 3 popular solutions to tagging

Solution 1

id	image_url	caption	tags
1	'/ksjd97123'	'My cat'	'#cat#pets#animals#cute#omg'
2	'/098fsdskj'	'My meal'	'#microwave#sadfood#gross'
3	'/87hghjkd'	'A Selfie'	'#smile#ego#cute#srrynotsrry'

Super easy to implement

Limited number of tags can be stored

Cannot store additional information

Have to be careful with searching

Solution 2

Photos

id	image_url	caption
1	'/ksjd97123'	'My cat'
2	'/098fsdskj'	'My meal'
3	'/87hghjkd'	'A Selfie'

Tags

tag_name	photo_id
'#cute'	1
'#cute'	3
'#microwave'	2
'#ego'	3
'#smile	3
'#gross'	2

Unlimited Number Of Tags

Slower Than Previous Solution

Photos

id	image_url	caption
1	'/ksjd97123'	'My cat'
2	'/098fsdskj'	'My meal'
3	'/87hghjkd'	'A Selfie'

Photo_Tags

photo_id	tag_id
1	1
1	2
2	3
2	6
3	1
3	4
3	5

Tags

id	tag_name
1	'#cute'
2	'#pets'
3	'#microwave'
4	'#ego'
5	'#smile
6	'#gross'

Unlimited Number Of Tags

Can add additional information

More work when inserting/updating

Have to worry about orphans

Then each went to his own home

Tags and other sweets

JUN 19 2005

Tagsystems: performance tests

In my previous article named "Tags: database schemas" we analysed different database schemas on how they could meet the needs of tag systems. In this article, the focus is on performance (speed). That is: if you want to build a tagsystem that performs good with about 1 million items (bookmarks for instance), then you may want to have a look at the following result of my performance tests.
In this article I tested tagging of bookmarks, but as you can tag pretty much anything, this goes for tagging systems in general.

I tested the following schemas (I keep the naming from the previous article):

- **mysqlicious**: One table. Tags are space separated in column "tags"; as introduced
- **mysqlicious fulltext**: Same schema but with mysql fulltext on the tag column; as introduced
- **scuttle**: Two tables: One for bookmarks, one for tags. Tag-table has foreign key to bookmark table; as introduced
- **toxi**: Three tables: One for bookmarks, one for tags, one for junction; as introduced

You may want to have a close watch at the details of the schemas when having a look at the sql-create-table-queries.

But let's go directly to the results. The details about the setup of this tests are mentioned at the end of this article. The x-axis depicts the number of bookmarks in the corresponding database, on the y-axis you see how much time each query took to execute.

Results

```
mysql> INSERT INTO photo_tags(photo_id, tag_id) VALUES(1,1);
ERROR 1062 (23000): Duplicate entry '1-1' for key 'PRIMARY'
mysql>
```