2ndQuadrant®
PostgreSQL

PostgreSQL y yo

Álvaro Herrera
PostgreSQL developer – 2ndQuadrant Inc.
UbuCon LA, agosto 2019

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Sobre 2ndQuadrant

- Empresa de servicios y soporte a PostgreSQL
- Auspiciador de la comunidad PostgreSQL
- Desarrolladores de características principales de PostgreSQL
- https://www.2ndQuadrant.com/

Sobre Álvaro Herrera

- Desarrollador de PostgreSQL desde 2002
- Committer de PostgreSQL desde 2005

Qué es PostgreSQL

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- Sistema de almacenamiento y manipulación de datos
- Interoperable con otros DBMS: lenguaje SQL estándar
- Confiable, consistente, robusto (ACID)
- Potente, flexible, extensible
- Excelente rendimiento, escalable a hardware muy grande

Características principales

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- Gran soporte de lenguaje SQL
  - Transacciones, savepoints
  - INNER JOIN, OUTER JOIN
  - UNION, INTERSECT, EXCEPT
  - subconsultas
  - agrupamiento, agregación
  - INFORMATION_SCHEMA
  - WITH RECURSIVE
  - Window functions (LAG, LEAD, ...)
  - disparadores (triggers)
  - SQL/XML, SQL/JSON

Características principales (cont.)

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- Extensiones
  - Tipos de datos, métodos de índice, métodos de tabla
  - *background workers*
- resistencia a fallas frente a cortes abruptos de energía (WAL)
- Replicación binaria, replicación lógica
- “hot standby”
- Respaldos en caliente, respaldos continuos
- *Foreign Data Wrappers*

Herramientas de gestión

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- Consolas de administración
  - https://OmniDB.org
- Orquestación
  - Patroni, de Zalando: https://github.com/zalando/patroni
- Monitoreo
  - Icinga, Zabbix, Prometheus, etc
- Alta disponibilidad, balanceo de carga

Licencia

- The PostgreSQL License
  - MIT, BSD
- Úsela todo lo que quiera
- No copyleft
  - Derivados comerciales permitidos

PostgreSQL Global Development Group

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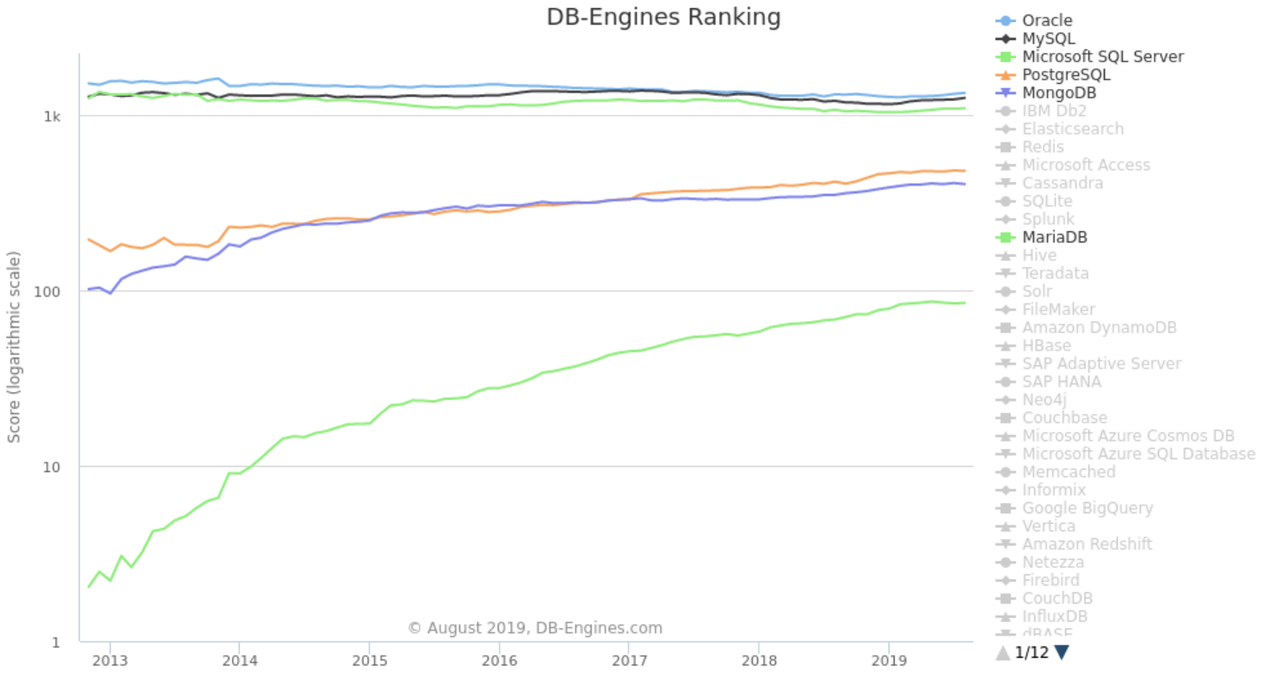
DB-Engines Ranking - Trend Popularity

The DB-Engines Ranking ranks database management systems according to their popularity.

Read more about the method of calculating the scores.

Rank	Trend	System	Score	Change
1		Oracle	1560	+ 27
2		MySQL	1342	+ 47
3		SQL Server	1278	- 40
4		PostgreSQL	174	- 3
5		MS Access	161	- 8
6		DB2	155	- 4

ranking table
August 2019



Click at a system in the legend
to hide or show its trend line

- Mi propia historia
- Erase una vez ...
- ... un joven estudiante de ingeniería

Does this table exist?

From: Alvaro Herrera <alvherre(at)protecne(dot)cl>
To: pgsql-general(at)postgresql(dot)org
Subject: Does this table exist?
Date: 2000-11-02 20:44:48
Message-ID: Pine.LNX.4.21.0011021737270.5619-100000@aguila.protecne.cl (view raw or whole thread)
Thread: 2000-11-02 20:44:48 from Alvaro Herrera <alvherre(at)protecne(dot)
Lists: pgsql-general

Hi

I'm Alvaro Herrera, from Chile, South America, where I study CS
(mostly). I'm new to PostgreSQL and to SQL in general.

That's for my introduction.

Now, I'm building a database to hold customer data that needs to be
organized in a one-table-per-customer manner. No, I don't think there's
another way to do this, as these tables are potentially very big not in
the sense that I have too many customers, but in that I need to hold
very large amounts of data for each

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From: Alvaro Herrera <alvherre(at)atentus(dot)com>
To: <pgsql-general(at)postgresql(dot)org>
Subject: Database corruption?
Date: 2001-10-22 05:13:43
Message-ID: Pine.LNX.4.33L2.0110220136050.13022-100000@aguila.protecne.cl (view raw or whole thread)
Thread: **2001-10-22 05:13:43 from Alvaro Herrera <alvherre(at)atentus(dot)c**
Lists: pgsql-general

```
Hello:

I didn't think I would live to see a corrupted database, but I now
have.
I don't know how it happened; it looks like some table got corrupted
during VACUUM and now the database won't start. The serverlog shows:
```

Un nombre en un commit

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```
commit 087771ae4025238af8547819b01bb699c27fa593
Author:     Tom Lane <tgl@sss.pgh.pa.us>
AuthorDate: Tue Oct 23 02:20:15 2001 +0000
CommitDate: Tue Oct 23 02:20:15 2001 +0000

    Add error checking to PageRepairFragmentation to ensure that it can
    never overwrite adjacent pages with copied data, even if page header
    and/or item pointers are already corrupt.  Change inspired by trouble
    report from Alvaro Herrera.
```

Una aventura inesperada

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- Entretenciones de nerd:
  - leer mensajes de commit
- En ese tiempo era CVS
  - Leer changelog era un parto
  - (comparado con Git)
  - mucho mejor que guardar 2^7 copias versionando en el nombre de archivo

Un desafío en un commit

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```
commit 565639cde0787f32e20e0b51591a7ad0a07c2aff
Author:     Tom Lane <tgl@sss.pgh.pa.us>
AuthorDate: Fri Jan 12 01:22:21 2001 +0000
CommitDate: Fri Jan 12 01:22:21 2001 +0000

    Preserve constraints and column defaults during CLUSTER.
    Wish they were all this easy ...
```

Un desafío en un commit (2)

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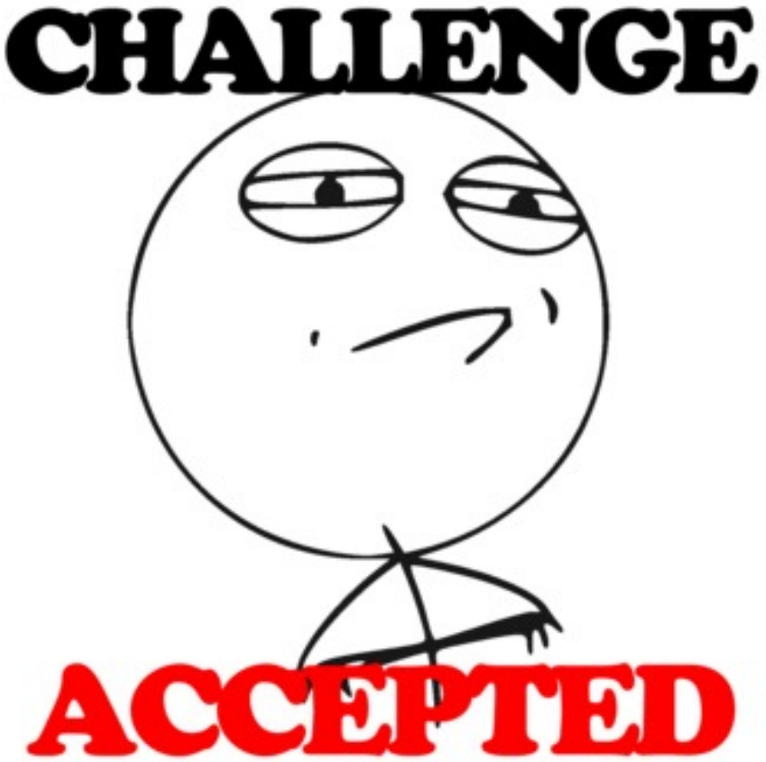
```
commit 565639cde0787f32e20e0b51591a7ad0a07c2aff
Author:     Tom Lane <tgl@sss.pgh.pa.us>
AuthorDate: Fri Jan 12 01:22:21 2001 +0000
CommitDate: Fri Jan 12 01:22:21 2001 +0000

    Preserve constraints and column defaults during CLUSTER.
```

Wish they were all this easy ...


CHALLENGE
ACCEPTED

¿Cómo llegué a este punto?

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- Inglés
- Curiosidad
- Persistencia, dedicación, determinación

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From: Tom Lane <tgl(at)sss(dot)pgh(dot)pa(dot)us>
To: Alvaro Herrera <alvherre(at)atentus(dot)com>
Cc: pgsql-patches(at)postgresql(dot)org
Subject: Re: CLUSTER not lose indexes
Date: 2002-07-05 03:44:08
Message-ID: 7952.1025840648@sss.pgh.pa.us (view raw or whole thread)
Thread: 2002-07-05 03:44:08 from Tom Lane <tgl(at)sss(dot)pgh(dot)pa(dot)
Lists: pgsql-hackers | pgsql-patches

Alvaro Herrera <alvherre(at)atentus(dot)com> writes:
> There are (of course) things I don't understand. For example,

However, some parts of your patch will probably still be needed when
someone gets around to making that happen, so I won't object for now.

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From:	Bruce Momjian <pgman(at)candle(dot)pha(dot)pa(dot)us>
To:	Alvaro Herrera <alvherre(at)atentus(dot)com>
Cc:	pgsql-patches(at)postgresql(dot)org
Subject:	Re: CLUSTER not lose indexes
Date:	2002-07-05 05:06:38
Message-ID:	200207050506.g6556cZ06097@candle.pha.pa.us (view raw or whole thread)
Thread:	**2002-07-05 05:06:38 from Bruce Momjian <pgman(at)candle(dot)pha**
Lists:	pgsql-hackers pgsql-patches

```
Alvaro Herrera wrote:
> Hackers:
>

I think Tom was suggesting that you may want to continue work on
CLUSTER
and make use of relfilenode.  After the cluster, you can just update
```

CLUSTER

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```
commit 7dc40a2be053a11544c708f576f2bb2858f14aa9
Author:     Bruce Momjian <bruce@momjian.us>
AuthorDate: Sat Aug 10 20:43:46 2002 +0000
CommitDate: Sat Aug 10 20:43:46 2002 +0000

    Major improvement in CLUSTER which preserves table characteristics using
    relfilenode.

    I sent the CLUSTER patch a few days ago and I think it was missed.  I
    append it again, this time including the regression test files.  For the
    committer, please note that you have to cvs add the files as they don't
    exist.  Maybe add to the parallel and serial schedules also, but I don't
    know such stuff.

    Alvaro Herrera (<alvherre[a]atentus.com>)
```

La tesis

- Esto se convirtió en mi tema de tesis
- Lo más difícil:
  - conseguir profesor auspiciante
- Tres proyectos:
  - Cluster
  - re-indexamiento de btrees
  - Savepoints

Savepoints

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```
commit 573a71a5da70d6e2503c8f53e3b4f26b3b6d738d
Author:     Tom Lane <tgl@sss.pgh.pa.us>
AuthorDate: Thu Jul 1 00:52:04 2004 +0000
CommitDate: Thu Jul 1 00:52:04 2004 +0000

    Nested transactions.  There is still much left to do, especially on the
    performance front, but with feature freeze upon us I think it's time to
    drive a stake in the ground and say that this will be in 7.5.

    Alvaro Herrera, with some help from Tom Lane.
```

...

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- Afortunadamente, Savepoints quedó incompleto
- Bruce Momjian me ofreció $$ de Fujitsu para completarlo

PostgreSQL contributor.
Authored: autovacuum, background workers, BRIN indexes, commit timestamps, savepoints, shared row locking, some partitioning features.
Co-authored: DDL-event triggers, XMLTABLE, crosstabview, pluggable storage.
Solid sixteen years writing new PostgreSQL features, my code appears in all supported major releases and is used in millions of servers around the world.
Your database is corrupt? I can fix it.

Steve Jobs / Think Different

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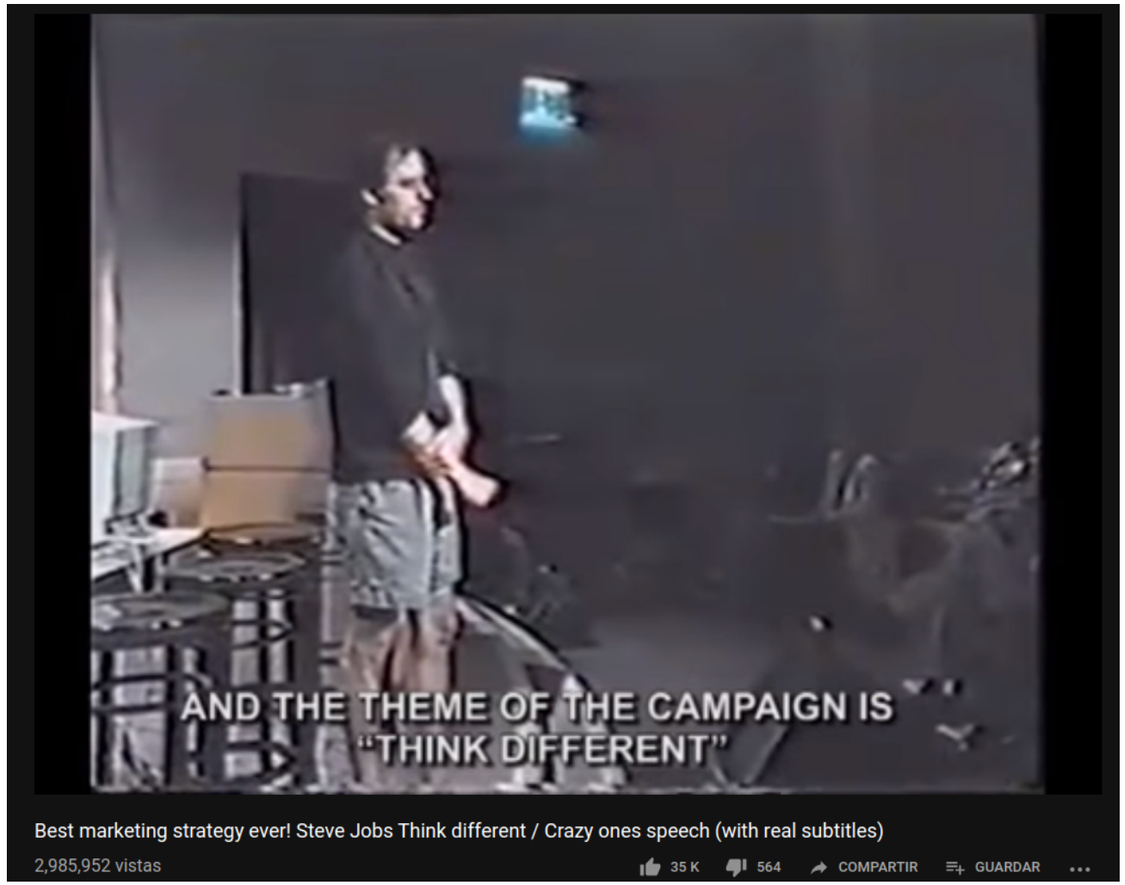
Best marketing strategy ever! Steve Jobs Think different / Crazy ones speech



https://www.youtube.com/watch?v=keCwRdbwNQY

Grano de arena

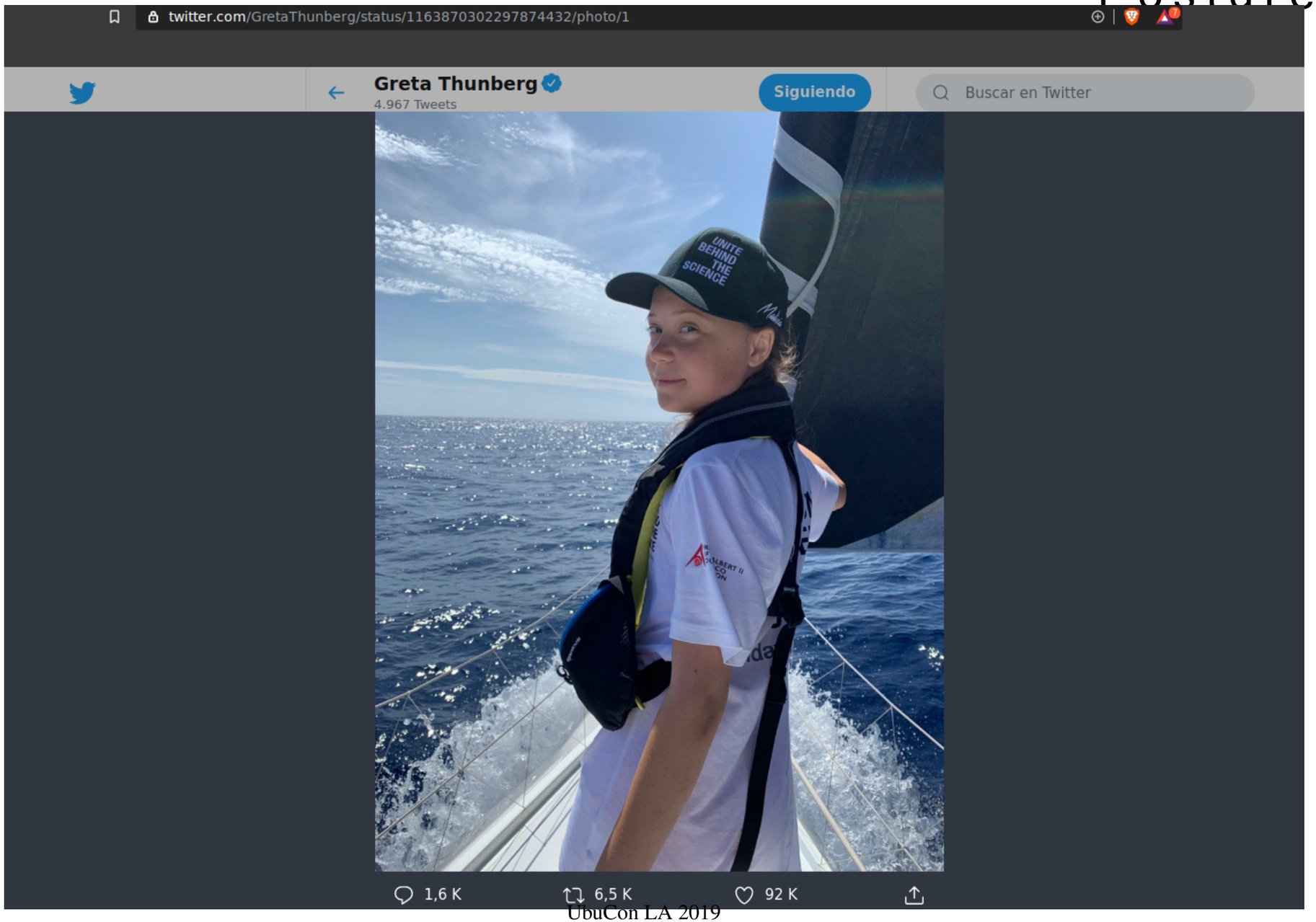
- Si cada uno aporta un granito de arena ...

Grano de arena

- Si cada uno aporta un granito de arena ...
- Seis mil quinientos millones de granos de arena ...

Grano de arena

- Si cada uno aporta un granito de arena ...
- Seis mil quinientos millones de granos de arena ...
- Cada grano son 170 pL
- Caben en un balde


twitter.com/GretaThunberg/status/1163870302297874432/photo/1
Greta Thunberg
4.967 Tweets
Siguiendo
Buscar en Twitter
UNITE BEHIND THE SCIENCE
1,6 K
6,5 K
92 K

¡Postgres Day Santiago!

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https://pgday.cl/2019/