How did Netflix Beat blockbuster? Database Systems Part 2
Announcement

- Bonus 5 to be posted soon.
How Netflix beat Blockbuster?
Some arguments

- 2005, Blockbuster worthed $8 billion
- Netflix at the beginning: stock was a “worthless piece of crap” by WSJ
- 2010, Blockbuster filed for bankruptcy; NetFlix: 116 million in earning
- Use of emerging tech: good piece of SW, streaming, user friendly service, etc.

Further readings:
In 2011, Netflix surpassed 20 million subscribers in the United States and Canada, making it the world's leading internet subscription service for enjoying movies and TV shows.

20 million subscribers = entire population

U.S.A  Canada  Australia
NETFLIX TAKES OVER PRIME TIME

NETFLIX STREAMING REPRESENTS MORE THAN 20% OF DOWNSTREAM INTERNET TRAFFIC DURING PEAK TIMES 8 -10 PM.

(PER/IT'S BEING USED BY JUST UNDER 2% OF NETFLIX SUBSCRIBERS)

PEAK TIME DOWNSTREAM INTERNET TRAFFIC

20% NETFLIX
9.89% YouTube
2.58% iTunes

BACK IN 2000, BLOCKBUSTER DECLINED SEVERAL OFFERS TO PURCHASE NETFLIX FOR A MERE $50 MILLION. IN 2010, BLOCKBUSTER DECLARED BANKRUPTCY.
SQL Basics
Database Review

- Database
  - Organized collection of data
- Database management system
  - Control the creation and use of a database
- Record
  - Related data stored in a row
- Field
  - A named piece of data (e.g. Last name: Phillips)
Database Review

We ignore commands to create and delete database information

SQL command:
- `DROP TABLE table_name`
- Delete the table
SQL Practice

Database queries are done with a `select`

```
select attribute-list from table-list where conditions
```

An experienced person can extract just a few relevant records from a huge database.

We will practice on a database: [http://sqlzoo.net/](http://sqlzoo.net/)
SELECT * FROM Customer where Name = ‘Amy Stevens’

- Show just the record for Amy Stevens.
- This type of query is called a **selection** since it selects particular rows from the table.
SQL Example

SELECT Name, Address FROM Customer

- Show the name and address of all customers
- This type of query is called a projection since it reduces the amount of info shown
- A shadow is a projection of a person
SELECT Title FROM Movie WHERE Rating = ‘PG’

- Combined projection and selection
- Result: a list of all titles that have a PG rating
SELECT * FROM Movie WHERE Genre like '%action%'
### SQL Example

```sql
SELECT * FROM Movie WHERE Rating = 'R' order by Title
```
SELECT * FROM Movie WHERE Rating = 'R' or Rating = 'PG-13'

Conditions for selection can use Boolean operations.
The result is all contributes of PG-13 or R-rated movies.
SQL Dates

- SQL has sophisticated date and time handling
- Dates can be used in restricting selections
- Format is important

SELECT * FROM CheckedOut where DueDate >= '12/10/2007'
SQL Joins

- The real power in databases comes from combining info in 2 tables with a shared field (usually a key)
- This is called a join
- What if we want to find the Phone number and Customer Names of a Patron
- That information is not stored in the Phones table or Patrons table alone
  - Select * from each table
  - How would you solve this problem?
SQL Join

- A shared field in Phones and Patrons: CardNumber

```
Select * from Patrons, Phones where Patrons.CardNumber = Phones.CardNumber
```

- When a field is in 2 tables, you must specify the table before the field.
  `Table.FieldName`

- What would happen if you remove the where clause?
  `Select * from Patrons, Phones`
SQL Join

- Allows the full power of database queries
  - Can store information in a natural form
  - Reconnect records across tables
  - Useful when there are one-to-many relationships
    - One person, many checked out books
  - Better than building a single, huge table
- How would we get the title of checked out books? Do it by hand first
Conclusion

- SQL is a powerful tool for specifying queries
- It draws upon the logical operations used in programming to allow very precise results
- Databases are the engines of the information economy
  - Reliable, scalable, flexible data processing
SQL and Advanced SQL

http://sqlzoo.net/
Select Basics

http://sqlzoo.net/wiki/SQLZOO:SELECT_basics
Select ... Where

http://sqlzoo.net/wiki/SQLZOO:SELECT_from_WORLD_Tutorial
SELECT name, gdp/population FROM world
WHERE population>200000000
SELECT name, population/1000000 FROM world
WHERE continent like '%South America%'
SELECT name, population FROM world
WHERE name in ('France', 'Germany', 'Italy')
SELECT name FROM world
WHERE name like '%United%'
SELECT name, population, area FROM world
WHERE area > 30000000 or population > 2500000000
SELECT name, population, area FROM world
WHERE area > 3000000 xor population > 250000000
SELECT name, ROUND(population/1000000, 2), ROUND(gdp/1000000000, 2) FROM world
WHERE continent='South America'
SELECT name, ROUND(gdp/population, -3) FROM world
WHERE gdp>1000000000000000000
Join

http://sqlzoo.net/wiki/More_Join_operations
SELECT yr
FROM movie
where title like '%Citizen Kane%'
# 3
SELECT id, title, yr
FROM movie
where title like '%Star Trek%' ORDER by yr
# 4

Select title from movie where id in ('11768', '11955', '21191')
Select id from actor where name like 'Glenn Close%'
# 6
select id
from movie
where title like '%Casablanca%'
# 7
select name
from actor join casting on (id = actorid)
where movieid=11768
select name
from (movie join casting on (movie.id = casting.movieid)) join actor on (casting.actorid = actor.id)
where title = 'Alien'
select title
from (movie join casting on (movie.id = casting.movieid)) join actor on
(casting.actorid = actor.id)
where name = 'Harrison Ford'
THANKS!

Any questions?

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http://www.sci.utah.edu/~beiwang/teaching/cs1060.html
Credits

Special thanks to all the people who made and released these awesome resources for free:

- Presentation template by SlidesCarnival
- Photographs by Unsplash