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Week-2 video activity

Activity 3.1 DISTINCT and AS

1. **Find all genres of books; includes duplicates.**

   SELECT genre FROM books;

2. **Find all genres of books; do not include duplicates.**

   SELECT DISTINCT genre FROM books;

3. **Find all Horror books, in your result rename the title column as book title.**

   SELECT id, title AS booktitle FROM books WHERE genre = 'Horror';

Challenge: Find the languages of all editions of 'It' do not include duplicates.

SELECT DISTINCT lang FROM books, editions WHERE books.id = editions.bookid AND title = 'It';

Activity 3.2 a-Aggregate Queries

1. **SELECT MAX(pagecount) FROM books;**

   Max

   1349

   (1 row)

2. **SELECT MAX(pagecount) FROM books WHERE genre = 'Drama';**

   max

   288

   (1 row)

3. **SELECT title, MAX(pagecount) FROM books WHERE genre = 'Drama';**

   ERROR: column "books.title" must appear in the GROUP BY clause or be used in an aggregate function

Activity 3.2 b-Aggregates: Average & Max

1. **Give an example instance of books where these two queries have different answers:**
   SELECT AVG(pagecount) FROM books;

   Example

books.pagecount
100
200
300
100

   Answer: 175

   SELECT AVG(DISTINCT pagecount) FROM books;

   Example

books.pagecount
100
200
300

   Answer: 200

2. **Can you find an instance of books where these queries have different answers?**

   No, the instance of books could not be found where these queries have different answers.

   From the above example, the queries return the same answers

   SELECT MAX(pagecount) FROM books;

   300

   SELECT MAX(DISTINCT pagecount) FROM books;

   300

Activity 3.3 a- Inserts

1.Write a query to add a tuple for book you like to the book relation and run that query on the book database

INSERT into books values (16,'A saint in the board room',572,'Drama',19,172);

Activity 3.3 b- Default values

1.Add a default value for age

ALTER TABLE authors ALTER COLUMN age SET DEFAULT 43;

2.Insert an author without an age

INSERT INTO authors values(91,'Ben Martin');

3.Write a query to return the author you just inserted in 2

SELECT * FROM authors WHERE id =91;

or

SELECT * FROM authors WHERE age = 43;

Activity 3.4- NULL values

1.Update the tuple you inserted in activity 3.3 to set their age to null

UPDATE authors SET age = NULL WHERE age = 43;

2.Write a query to find authors with a null age

SELECT * FROM authors WHERE age IS NULL;

3.Write a query to find the average age of authors? How do the null values affect this average?

SELECT ROUND(avg(age)) FROM authors;

The NULL values are not included in the average. The database will average all rows for which age is not null. Hence this query is the same as saying select average age from authors where age is not null.

Activity 4.1- Relational Algebra σ: (Select)

1.Find all books with pagecount > 1000

$\sigma_{pagecount > 1000} books$

Equivalent SQL:

SELECT * FROM books WHERE pagecount > 1000;

Activity 4.2- Relational Algebra π: (project)

1.Find all names of books with pagecount > 1000

$\pi_{name}(\sigma_{pagecount > 1000} books)$

Equivalent SQL:

SELECT name FROM books WHERE pagecount > 1000;

Activity 4.3- Relational Algebra ⋈: (Join)

1.Find the name of authors with "long" books(pagecount>1000)

$\pi_{name}(authors \bowtie_{authorid=id} (\sigma_{pagecount > 1000} books))$

Equivalent SQL:

SELECT name FROM authors A JOIN books B ON B.authorid = A.id WHERE pagecount>1000;