

CSE 180 - Midterm II Review



Dev

November 9 2023, Section 6? 7?

Aggregates

- COUNT, SUM, MAX, MIN, AVG

```
SELECT COUNT(*) FROM Subscribers;
```

```
SELECT COUNT(DISTINCT subscriberPhone) FROM Subscriptions;
```

```
SELECT COUNT(*) FROM Subscriptions WHERE subscriptionMode='D';
```

```
SELECT MAX(subscriptionInterval) FROM subscriptions;
```

```
SELECT AVG(rate) FROM SubscriptionKinds;
```

GROUP BY

- With a GROUP BY, any field in SELECT must be in the GROUP BY
- All other fields can only be aggregates
- GROUP BY usually eliminates duplicates
- NULLs are **NOT** ignored

```
SELECT subscriptionMode, COUNT(*), AVG(rate)
FROM SubscriptionKinds
GROUP BY subscriptionMode;
```


HAVING

- Condition for the GROUP BY
- WHERE cannot be used here

```
SELECT articleAuthor, COUNT(*) AS NumArticles
FROM articles
GROUP BY articleAuthor
HAVING COUNT(*) > 1;
```

INSERT, UPDATE, and DELETE

```
INSERT INTO <table>  
VALUES()
```

```
DELETE FROM <table>  
WHERE <condition>
```

```
INSERT INTO <table>  
SELECT ...
```

```
UPDATE <table>  
SET <values>  
WHERE <condition>
```


TRANSACTIONS

- Atomicity
- Consistency
- Isolation
- Durability

ISOLATION LEVELS

Table 13.1. Transaction Isolation Levels

Isolation Level	Dirty Read	Nonrepeatable Read	Phantom Read	Serialization Anomaly
Read uncommitted	Allowed, but not in PG	Possible	Possible	Possible
Read committed	Not possible	Possible	Possible	Possible
Repeatable read	Not possible	Not possible	Allowed, but not in PG	Possible
Serializable	Not possible	Not possible	Not possible	Not possible

Views

```
CREATE VIEW <name> AS  
SELECT...
```

- Short-hand/encapsulation:
- Re-use:
- Authorization:
- Logical data independence:
- What happens when a view is deleted?
- Can you update a view?
- What is a materialized view?

Indexes

- Why?
- How are queries impacted if indexes are dropped?
- Why not index everything?
- Advantages of indexing keys?

```
CREATE INDEX <name> ON Table(fields);
```

Constraints

- Actions on foreign key

- RESTRICT

- CASCADE

- SET NULL

NOT NULL

UNIQUE

FOREIGN KEY(key)

REFERENCES Table(name)

ON DELETE SET NULL

ON UPDATE CASCADE

CHECK

- CHECK (attribute <comparison> value)
- What is the difference between CHECK and FOREIGN KEY?