



CockroachDB

No brown M&Ms

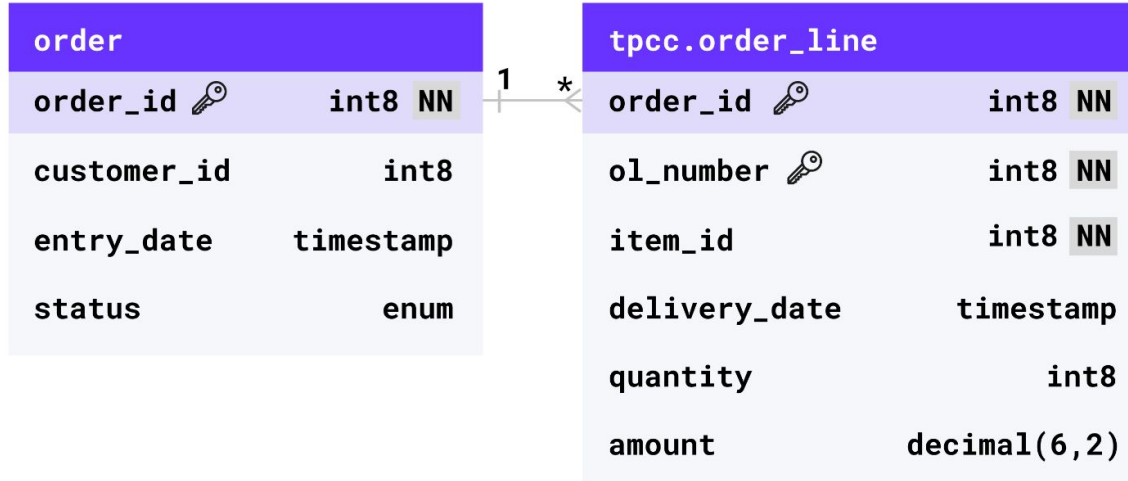
On foreign keys, isolation levels and Van Halen

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Foreign key constraints



Foreign key



Foreign key constraint

```
ALTER TABLE order_line  
  ADD CONSTRAINT fkey_order_line_1  
  FOREIGN KEY(order_id)  
  REFERENCES orders(order_id)
```





Transactions with constraints

INSERT with foreign key constraints

```
INSERT INTO order_line  
VALUES (...);
```

```
COMMIT;
```



Manual foreign key constraints

```
SELECT order_id  
FROM orders  
WHERE order_id = $1;  
--if not found: return
```

```
INSERT INTO order_line  
VALUES (...);
```

```
COMMIT;
```



Application constraints

```
SELECT order_id
  FROM orders
  WHERE order_id = $1
  AND status = 'open';
--if not found: return
```

```
INSERT INTO order_line
  VALUES (...);
```

```
COMMIT;
```



Concurrency

Safe in SERIALIZABLE isolation

```
SELECT order_id
FROM orders
WHERE order_id = $1;
AND status = 'open';
--if not found: return
```

```
INSERT INTO order_line
VALUES (...);
```

```
COMMIT;
```

```
UPDATE orders SET status = 'paid'
WHERE order_id = $1;
```

```
COMMIT;
```



Explicit locking

Supports READ COMMITTED and SNAPSHOT isolation

```
SELECT order_id
  FROM orders FOR SHARE
 WHERE order_id = $1;
 AND status = 'open';
--if not found: return
```

```
INSERT INTO order_line
  VALUES (...);
```

```
COMMIT;
```

```
UPDATE orders SET status = 'paid'
  WHERE order_id = $1;
--waits to acquire lock
```

```
COMMIT;
```



