Section 8

Vaspol Ruamviboonsuk

QUESTIONS?

What are we doing today?

- Transactions!

- Demo: SQL Server Isolation Levels

- SQL Injection

- HW7 Setup + Fast search discussion

Transactions

- Why do we need transactions?

- Pessimistic Concurrency Control

  – Using locks (this is what we are using now)

  – Simple, less throughput especially with higher isolation level

- Optimistic Concurrency Control

  – Timestamps and more to detect

  – More sophisticated, but higher throughput

Transactions

- 3 important commands when using transactions:

  - `BEGIN TRANSACTION;`

  - `COMMIT TRANSACTION;`

  - `ROLLBACK TRANSACTION;`

- When to use which?

Transactions

- Isolation Levels

  READ UNCOMMITTED – *Dirty Read*

  READ COMMITTED – *No dirty reads*

  REPEATABLE READ – *Phantom can appear.*

  SERIALIZABLE – *Strongest isolation level.*

SQL AZURE ISOLATION LEVEL DEMO

SQL Injection

- SELECT * FROM R WHERE A = "___";

- How to construct the query string in Java?

- Why string concatenation is bad?

- Example: Code will be posted later.

SQL Injection

- Use `PreparedStatement`. It will make sure that SQL Injection will not happen.

HW7 – Getting Started

- To make your life easier, use Eclipse!

- Download the file, extract it

- Create a new project in Eclipse

- Add sqljdbc4.jar to the Build Path

- You're ready to go!

HW7 – Notes

- To test interleaving:

```
Scanner scan = new Scanner(System.in);
scan.nextLine();
```

  Run this on two consoles and interleave!

- It is common to get SocketWriteError. Just re-run the program. (You will get annoyed by how often this comes up!)

HW7 – Fast Search

Pseudocode for search

```
ResultSet idResults = connection.executeQuery();
while (idResults.next()) {
        Issue another query to get another field;
        Print the result
}
```

This code is correct, but why do you think this is bad?

HW7 – Fast Search

- Minimize the number of queries to the DBMS by issuing only one query that can get all the results.

- Can you join the tables together?

- Fast search will only search for the first word. Not the whole string.

That's it!

- Homework 7 is due on March 6 at 11:59pm