4. Miscellaneous Project Issues

CSEP 545 Transaction Processing
for E-Commerce
Philip A. Bernstein

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Lock Conversions

- This is step 3 of the course project
- <u>Lock conversion</u> - upgrading an r-lock to a w-lock
  - e.g., T_i = read(x) … write(x)
- The main purpose of step 3 is to ensure you understand the lock manager code we supply.
- Deadlocks are an issue
  - if two txns convert a lock concurrently, they'll deadlock (both get an r-lock on x before either gets a w-lock)
  - To avoid the deadlock, a caller can get a w-lock first and down-grade to an r-lock if it doesn't need to write.

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Lecture Depedencies

- Step 5 involves implementing a workflow controller. It depends on
  - Transaction bracketing
  - Partitioning work between WC and transaction servers (= RM in the project)
  - Propagating transaction context in RM calls
  - Parameter-based routing (e.g. choose an RM based on flight number)
  - I'll cover this next week, May 1. See also Chapter 2.
- Steps 6 – 10 involve two-phase commit.
  - I'll cover it by May 8. See also Chapter 9.

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Process Structure

- For architectural reasons, RM and WC should be processes.
- Ordinarily, there's a TM per network node.
  - To simulate this, a TM should be a process

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