Serial Schedules

A standard of database integrity

- A serial schedule is valid.
- A schedule equivalent to a serial schedule is valid.
- Equivalent: to be defined later.
Serial Schedule

- Sequential Execution of a series of Transactions.
- Non-Interleaved.
- Each completes before next starts.
- Only one active in DB at a time

Example: 3 Processes

- Database running 3 programs at once.
- A: Process check for $50
  Reduce my balance by $50
- B: Make 1% interest payment on balance
  Increase my balance by one percent
- C: Charge fee: $0..$500: $5
  $500.01 up: $2
  Reduce my balance by $2 or $5 depending on the amount of the balance
Serial Integrity

• Assume each transaction is valid itself.
  – If these should be run in a special order, that is not the responsibility of the database!
• If each is valid, we can run them in any order and get a valid result.

Example: 3 Processes

• We will look at all legitimate serial schedules.
• 6 different orders of execution
• All start with $500.
6 Orders of Execution

- A: Process check for $50
- B: Make 1% interest payment
- C: fee $0..$500: $5, $500.01 up: $2

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- Each transaction is legitimate so each schedule is legitimate
- 6 legitimate schedules produce 5 different balances for my account!