Implementing all-or-nothing atomicity

Barbara Liskov
MIT CSAIL
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Xfer

- xfer(A, B, amt)
  A <- A – amt;
  B <- B + amt;

recovery

start at the top:
  while more records
    if commit add t to committed list
    if change and t not in committed list, undo
start at the bottom:
  while more records
    if change and t in committed list, redo

Scenario

<begin 17>

Scenario

<begin 17>
<begin 18>

Scenario

<begin 17>
<begin 18>
<change 18 F 4500 5300>

Scenario

<begin 17>
<begin 18>
<change 18 F 4500 5300>
<outcome 18 abort>

Scenario

<begin 17>
<begin 18>
<change 18 F 4500 5300>
<outcome 18 abort>
<begin 19>

Scenario

<begin 17>
<begin 18>
<change 18 F 4500 5300>
<outcome 18 abort>
<begin 19>
<change 19 F 4500 5000>

Scenario

<begin 17>
<begin 18>
<change 18 F 4500 5300>
<outcome 18 abort>
<begin 19>
<change 19 F 4500 5000>
<outcome 19 commit>

Scenario

<begin 17>
<begin 18>
<change 18 F 4500 5300>
<outcome 18 abort>
<begin 19>
<change 19 F 4500 5000>
<outcome 19 commit>
<change 17 F 5000 4000>

Scenario

<begin 17>
<begin 18>
<change 18 F 4500 5300>
<outcome 18 abort>
<begin 19>
<change 19 F 4500 5000>
<outcome 19 commit>
<change 17 F 5000 4000>
<change 17 B 7500 8500>

Scenario

<begin 17>
<begin 18>
<change 18 F 4500 5300>
<outcome 18 abort>
<begin 19>
<change 19 F 4500 5000>
<outcome 19 commit>
<change 17 F 5000 4000>
<change 17 B 7500 8500>
<outcome 17 commit>