

Data and Web Science Group Prof. Dr. Heiko Paulheim

# Database Technology

## Exercise 11: Recovery

#### 11.1 Forward, Backward

Explain why log records for transactions on the undo-list must be processed in reverse order, whereas redo is performed in a forward direction.

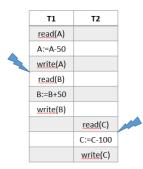
#### 11.2. Checkpoint

Explain the purpose of the checkpoint mechanism. How often should checkpoints be performed? How does the frequency of checkpoints affect:

- a. System performance when no failure occurs?
- b. The time it takes to recover from a system crash?
- c. The time it takes to recover from a media (disk) failure?

### 11.3. Log

Assume the following two transactions:



- a. Write down the corresponding log and values of the variables (assuming initially A=1000, B=2000, C=700)
- b. Show which recovery actions and log records are written out if the system crashes at the specified points.