

# Database Technology– FSS 2018

## Exercise 12: Recovery

### 12.1 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.

### 12.2. Checkpoint

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

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

### 12.3. Log

Assume the following two transactions:

| T1       | T2       |
|----------|----------|
| read(A)  |          |
| A:=A-50  |          |
| write(A) |          |
| read(B)  |          |
| B:=B+50  |          |
| write(B) |          |
|          | read(C)  |
|          | C:=C-100 |
|          | write(C) |

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