

OS Sheet 5

Problem 1:

- a) The situation in which code would deadlock: let's say we are transferring money from **account_t *a** to **account_t *b** (1) and at the same time from **account_t *b** to **account_t *a** (2).

In (1) "transfer" function's first line will lock **a** and at the same time in (2) "transfer" function will lock **b**.

Result: in (1) function is stuck at the second line and waiting for **b** to be unlocked and in (2) function is stuck also on the second line and waiting for **a** to be unlocked. Nothing will unlock this situation so **Deadlock**.

- b) Changing transfer function's content like the following piece of code will prevent deadlock:

```
pthread_mutex_lock(&from->lock);
from->money -= money;
pthread_mutex_unlock(&from->lock);

pthread_mutex_lock(&to->lock);
to->money += money;
pthread_mutex_unlock(&to->lock);
```

Problem 2: