Too Much Milk

Roommate A

3:00   **Arrive home: no milk**

3:05   **Leave for store**

3:10   **Arrive at store**

3:15   **Leave store**

3:20   **Arrive home, put milk away**

3:25

3:30

Too Much Milk

	Roommate A	Roommate B
3:00	Arrive home: no milk	
3:05	Leave for store	
3:10	Arrive at store	Arrive home: no milk
3:15	Leave store	Leave for store
3:20	Arrive home, put milk away	Arrive at store
3:25		Leave store
3:30		Arrive home: too much milk!

Computerized Milk Purchase

```
1  if (milk == 0) {
2     if (note == 0) {
3        note = 1;
4        buy_milk();
5        note = 0;
6     }
7  }
```

Still Too Much Milk

Thread A:

```
1   if (milk == 0) {
2     if (note == 0) {
3
4
5
6
7
8
9
10      note = 1;
11      buy_milk();
12      note = 0;
13    }
14  }
```

Thread B:

```
if (milk == 0) {
  if (note == 0) {
    note = 1;
    buy_milk();
    note = 0;
  }
}
```

Second Attempt

Thread A:

```
1  if (note == 0) {
2    if (milk == 0) {
3      buy_milk();
4    }
5    note = 1;
6  }
```

Thread B:

```
1  if (note == 1) {
2    if (milk == 0) {
3      buy_milk();
4    }
5    note = 0;
6  }
```

Third Attempt

Thread A:

```
1   noteA = 1;
2   if (noteB == 0) {
3     if (milk == 0) {
4       buy_milk();
5     }
6   }
7   noteA = 0;
```

Thread B:

```
1   noteB = 1;
2   if (noteA == 0) {
3     if (milk == 0) {
4       buy_milk();
5     }
6   }
7   noteB = 0;
```

Fourth Attempt

Thread A:

```
1  noteA = 1;
2  if (noteB == 0) {
3    if (milk == 0) {
4      buy_milk();
5    }
6  }
7  noteA = 0;
```

Thread B:

```
1  noteB = 1;
2  while (noteA == 1) {
3    // do nothing
4  }
5  if (milk == 0) {
6    buy_milk();
7  }
8  noteB = 0;
```