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

<table>
<thead>
<tr>
<th>Time</th>
<th>Roommate A</th>
<th>Time</th>
<th>Roommate B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00</td>
<td>Arrive home: no milk</td>
<td>3:00</td>
<td>Arrive home: no milk</td>
</tr>
<tr>
<td>3:05</td>
<td>Leave for store</td>
<td>3:05</td>
<td>Leave for store</td>
</tr>
<tr>
<td>3:10</td>
<td>Arrive at store</td>
<td>3:15</td>
<td>Leave store</td>
</tr>
<tr>
<td>3:15</td>
<td>Leave store</td>
<td>3:20</td>
<td>Arrive at store</td>
</tr>
<tr>
<td>3:20</td>
<td>Arrive home, put milk away</td>
<td>3:25</td>
<td>Leave store</td>
</tr>
<tr>
<td>3:25</td>
<td></td>
<td>3:30</td>
<td>Arrive home: too much milk!</td>
</tr>
</tbody>
</table>
if (milk == 0) {
    if (note == 0) {
        note = 1;
        buy_milk();
        note = 0;
    }
}

Still Too Much Milk

Thread A:

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

Thread B:

```java
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  }
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;