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
<table>
<thead>
<tr>
<th>Time</th>
<th>Roommate A</th>
<th>Roommate B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00</td>
<td>Arrive home: no milk</td>
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</tr>
<tr>
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<td>3:25</td>
<td></td>
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</tr>
<tr>
<td>3:30</td>
<td></td>
<td>Arrive home: too much milk!</td>
</tr>
</tbody>
</table>
Computerized Milk Purchase

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;