

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

- 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**

Roommate B

- Arrive home: no milk
- Leave for store
- Arrive at store
- Leave store
- 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;
```

