

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;
```

