Names:

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Unsynchronized execution of threads

Executing 1 thread

```
oavil004@ocelot:~/Documents/Operating 523% ./pthreads 1
Thread 0 created successfully
***thread 0 sees value 0
***thread 0 sees value 1
***thread 0 sees value 2
***thread 0 sees value 3
***thread 0 sees value 4
***thread 0 sees value 5
***thread 0 sees value 6
***thread 0 sees value 7
***thread 0 sees value 8
***thread 0 sees value 9
***thread 0 sees value 10
***thread 0 sees value 11
***thread 0 sees value 12
***thread 0 sees value 13
***thread 0 sees value 14
***thread 0 sees value 15
***thread 0 sees value 16
***thread 0 sees value 17
***thread 0 sees value 18
***thread 0 sees value 19
Thread 0 sees final value 20
oavil004@ocelot:~/Documents/Operating 524%
```

Executing 2 threads

```
oavil004@ocelot:~/Documents/Operating 525% ./pthreads 2
Thread 0 created successfully
Thread 1 created successfully
***thread 1 sees value 0
***thread 0 sees value 1
***thread 1 sees value 2
***thread 0 sees value 3
***thread 0 sees value 4
***thread 0 sees value 5
***thread 1 sees value 6
***thread 1 sees value 7
***thread 0 sees value 8
***thread 0 sees value 9
***thread 1 sees value 10
***thread 1 sees value 11
***thread 0 sees value 12
***thread 1 sees value 13
***thread 0 sees value 14
***thread 1 sees value 15
***thread 0 sees value 16
***thread 0 sees value 17
***thread 1 sees value 18
***thread 1 sees value 19
***thread 1 sees value 20
***thread 1 sees value 21
***thread 0 sees value 22
***thread 0 sees value 23
***thread 0 sees value 24
***thread 0 sees value 25
***thread 0 sees value 26
***thread 1 sees value 27
***thread 1 sees value 28
***thread 0 sees value 29
***thread 1 sees value 30
***thread 0 sees value 31
***thread 0 sees value 32
***thread 1 sees value 33
***thread 0 sees value 34
***thread 0 sees value 35
Thread 0 sees final value 36
***thread 1 sees value 36
***thread 1 sees value 37
***thread 1 sees value 38
***thread 1 sees value 39
Thread 1 sees final value 40
oavil004@ocelot:~/Documents/Operating 526%
```

Executing 3 threads

```
***thread 2 sees value 11
***thread 1 sees value 12
***thread 0 sees value 13
***thread 2 sees value 14
***thread 0 sees value 15
***thread 0 sees value 16
***thread 1 sees value 17
***thread 1 sees value 18
***thread 1 sees value 19
***thread 1 sees value 20
***thread 2 sees value 21
***thread 2 sees value 22
***thread 2 sees value 23
***thread 2 sees value 24
***thread 2 sees value 25
***thread 1 sees value 26
***thread 1 sees value 27
***thread 0 sees value 28
***thread 2 sees value 29
***thread 0 sees value 30
***thread 0 sees value 31
***thread 1 sees value 32
***thread 2 sees value 33
***thread 2 sees value 34
***thread 0 sees value 35
***thread 0 sees value 36
***thread 1 sees value 37
***thread 2 sees value 38
***thread 1 sees value 39
***thread 1 sees value 40
***thread 0 sees value 41
***thread 0 sees value 42
***thread 0 sees value 43
***thread 2 sees value 44
***thread 1 sees value 45
***thread 1 sees value 46
***thread 0 sees value 47
***thread 2 sees value 48
***thread 2 sees value 49
***thread 2 sees value 50
***thread 1 sees value 51
Thread 1 sees final value 52
***thread 0 sees value 52
***thread 2 sees value 53
***thread 2 sees value 54
***thread 2 sees value 55
Thread 2 sees final value 56
***thread 0 sees value 56
***thread 0 sees value 57
***thread 0 sees value 58
***thread 0 sees value 59
Thread 0 sees final value 60
oavil004@ocelot:~/Documents/Operating 531%
```

Executing 4 threads

```
***thread 1 sees value 32
***thread 1 sees value 33
***thread 0 sees value 34
***thread 0 sees value 35
***thread 2 sees value 36
***thread 3 sees value 37
***thread 1 sees value 38
***thread 1 sees value 39
***thread 0 sees value 40
***thread 0 sees value 41
***thread 0 sees value 42
***thread 2 sees value 43
***thread 3 sees value 44
***thread 3 sees value 45
***thread 1 sees value 46
***thread 0 sees value 47
***thread 0 sees value 48
***thread 0 sees value 49
***thread 2 sees value 50
***thread 3 sees value 51
***thread 3 sees value 52
***thread 3 sees value 53
***thread 3 sees value 54
***thread 3 sees value 55
***thread 3 sees value 56
***thread 3 sees value 57
***thread 1 sees value 58
***thread 0 sees value 59
***thread 2 sees value 60
***thread 2 sees value 61
***thread 3 sees value 62
***thread 3 sees value 63
***thread 0 sees value 64
***thread 1 sees value 65
***thread 2 sees value 66
***thread 3 sees value 67
***thread 3 sees value 68
Thread 3 sees final value 69
***thread 0 sees value 69
Thread 0 sees final value 70
***thread 1 sees value 70
***thread 1 sees value 71
***thread 2 sees value 72
***thread 1 sees value 73
***thread 2 sees value 74
***thread 2 sees value 75
***thread 1 sees value 76
***thread 2 sees value 77
Thread 2 sees final value 78
***thread 1 sees value 78
***thread 1 sees value 79
Thread 1 sees final value 80
oavil004@ocelot:~/Documents/Operating 533%
```

Executing 5 threads

```
***thread 1 sees value 53
***thread 1 sees value 54
***thread 1 sees value 55
***thread 1 sees value 56
***thread 0 sees value 57
***thread 2 sees value 58
***thread 4 sees value 59
***thread 4 sees value 60
***thread 3 sees value 61
***thread 3 sees value 62
***thread 1 sees value 63
***thread 0 sees value 64
***thread 2 sees value 65
***thread 4 sees value 66
***thread 4 sees value 67
***thread 4 sees value 68
***thread 3 sees value 69
***thread 1 sees value 70
***thread 0 sees value 71
***thread 0 sees value 72
***thread 2 sees value 73
***thread 4 sees value 74
Thread 4 sees final value 75
***thread 3 sees value 75
***thread 3 sees value 76
***thread 1 sees value 77
***thread 1 sees value 78
***thread 1 sees value 79
Thread 1 sees final value 80
***thread 0 sees value 80
***thread 2 sees value 81
***thread 0 sees value 82
***thread 0 sees value 83
***thread 0 sees value 84
***thread 2 sees value 85
***thread 2 sees value 86
***thread 3 sees value 87
***thread 3 sees value 88
***thread 2 sees value 89
***thread 0 sees value 90
***thread 2 sees value 91
***thread 2 sees value 92
***thread 3 sees value 93
***thread 3 sees value 94
Thread 3 sees final value 95
***thread 0 sees value 95
***thread 2 sees value 96
Thread 2 sees final value 97
***thread 0 sees value 97
***thread 0 sees value 98
***thread 0 sees value 99
Thread 0 sees final value 100
oavil004@ocelot:~/Documents/Operating 535%
```

Analysis of output

Each thread runs a total of twenty times. During each iteration, the value of the shared value is increased by one.

When only one thread is running, the program increased the shared variable by one twenty times and the thread sees the final value of 20 at the end as it should.

When two threads are running, both should see a final value of 40 at the end of the program. But because the threads are not synchronized, they each see a different value. In this particular output, we can see that thread 0 sees a value of 36 at the end of the program while thread 1 see a value of 40.

(... We'll continue writing this after implementing synchronization because I can't really determine why synchronization will fix this issue just yet...)