


If X should always run before Y then X should have "happens before" relation with Y.

## Single Thread rule

statement 1;  
statement 2;  
statement 3;  
.  
.  
.  
statement n;



**All statements  
happened  
before n**

## Monitor Lock rule

### Thread A

```
synchronized (lock) {  
    .....  
}
```

release lock by  
A happened  
before B got it

### Thread B

```
synchronized (lock) {  
    .....  
}
```

release lock by  
B happened  
before A got it

## Volatile Variable Rule

### Thread A

```
statement x ;  
.....  
statement writeVariable;  
.....
```

### Thread B

```
statement y ;  
.....  
statement readVariable;  
.....
```

Shared  
volatile  
variable

Write volatile  
variable happened  
before read  
statements

LOGICBIG.COM

## Thread start rule

### Thread A

```
.....  
Thread threadB = new Thread(..);  
.....  
.....  
threadB.start();  
.....
```

**threadB.start()  
happened before all  
statements in run**

### Thread B

```
.....  
public void run() {  
    statement 1;  
    .....  
    .....  
}  
.....
```

## Thread Join rule

### Thread A

```
.....  
Thread threadB = new Thread(..);  
.....  
threadB.start();  
.....  
threadB.join();  
statement 1;  
.....
```

### Thread B

```
.....  
public void run() {  
    statement 1;  
    .....  
    .....  
}  
.....
```

finishing of run  
method of B  
happened before  
statement 1

