

**Concurrent:** Two or more processes are making progress

**Parallel:** Two or more things are actively running at the same time

With m threads executing n atomic actions each, there are 6 possible histories

$${}_3P_3$$

What about 3 threads executing 2 actions each?

$$< 6!$$

$$90$$

2 threads executing 3 actions each?

Is there a formula for this?

$$\frac{(mn)!}{(n!)^m}$$

Concurrent may have wait time, parallel does not

On a single CPU, concurrency is possible, but not parallelism

On a multiple CPU system, parallelism is possible

**What happens when a thread is killed mid-execution?**

Cancellations

**Asynchronous:** The target thread is immediately terminated

**Synchronous:** The target thread periodically ‘checks in’ to find out if it should be terminated