# Why is Concurrent Programming required?

* Performance gain from multiprocessing hardware

– Parallelism

* Increased application throughput

– A blocking I/O call only blocks one thread

* Increased application responsiveness

– High priority thread for user requests

• More appropriate structure

– For programs which control multiple activities and handle multiple events

• Embedded systems for driving hardware (like Therac-25)

– Equipment might naturally consist of multiple sensors/activators

• Distributed systems

# Concurrency abstraction

The concurrency abstraction ignores all aspects of time –

each atomic action takes an arbitrary 1 unit of time.

It allows us to think about what possible scenarios may result within a concurrent system.

It allows us to not worry about whether things are really happening in parallel or other particular aspects of real time.

It models concurrent systems as interleaving of atomic actions.