

Concurrency

Multithreading, multiprocessing, etc. — simultaneous execution

Concurrency — execution which is independent of other execution.

Deadlock — two or more executions waiting on each other

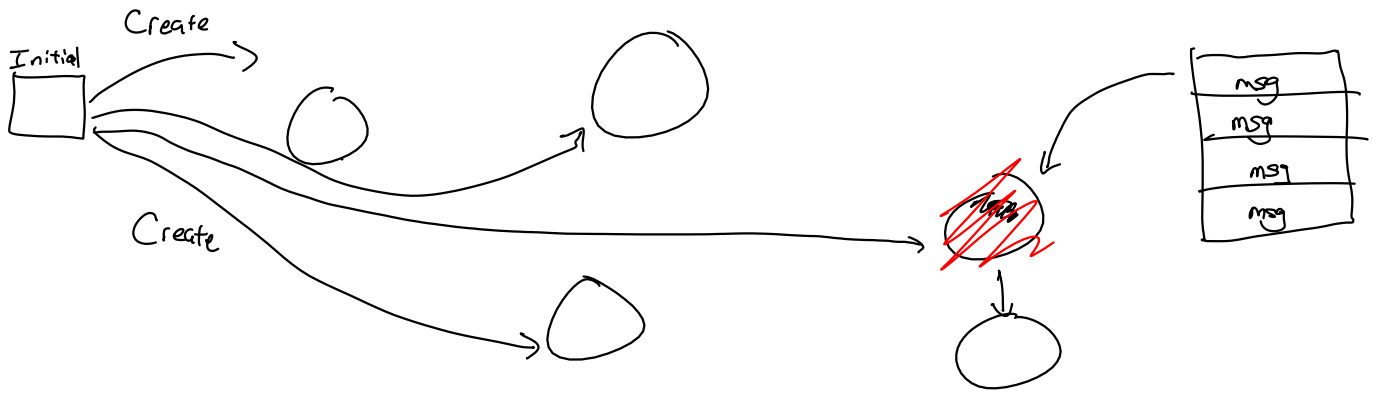
Race Conditions — result of execution depends on execution ordering arbitrarily chosen by runtime

Atomic — execution either hasn't occurred or has completed and other parties can't observe any intermediate state

Actor Model of Concurrency

AFBV

actor function responds to messages



Semantics:

$$\text{Create}(\underbrace{e}_w, \underbrace{e}_w) \implies a$$

local data
actor function

$a ::= \langle \text{int. set of actor names} \rangle$

$$\underbrace{e}_w \leftarrow \underbrace{e}_w$$

addr msg data