

Learning to Crash with OTP

Supervisors

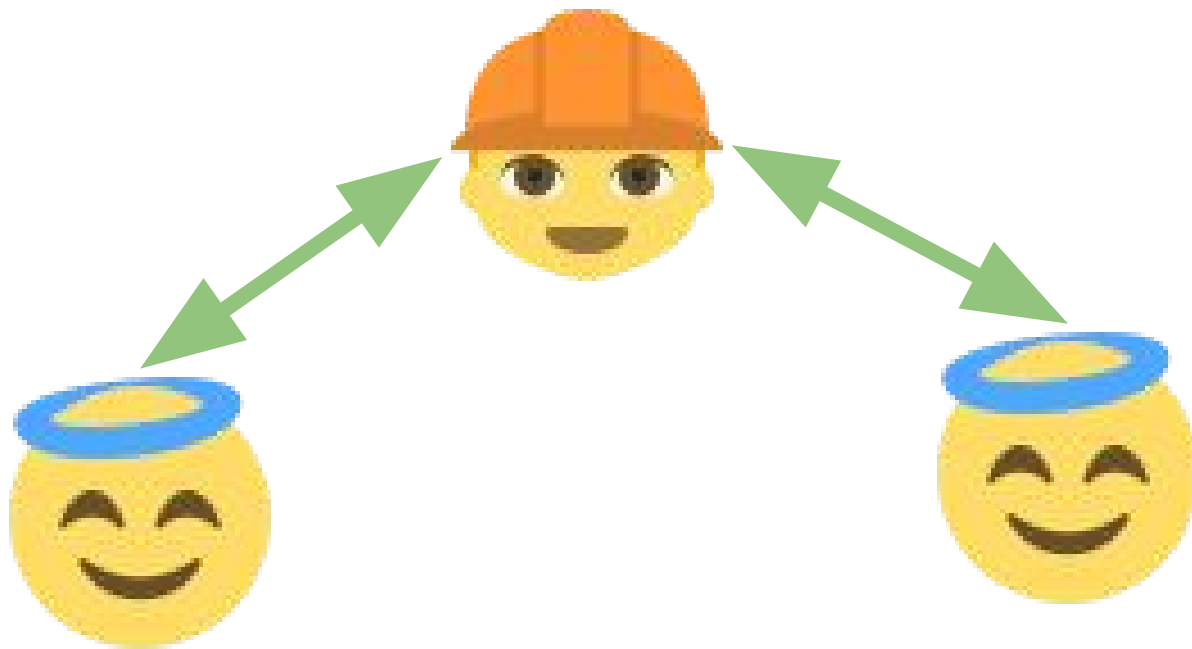
Let it crash again

- ANY process that is restarted may enter BAD state
- Crash ANY process in BAD state
- Restart ANY crashed process to GOOD state
- If restart fails to return to GOOD state then crash AGAIN
- If multiple restarts fail to return to GOOD state then crash supervisor

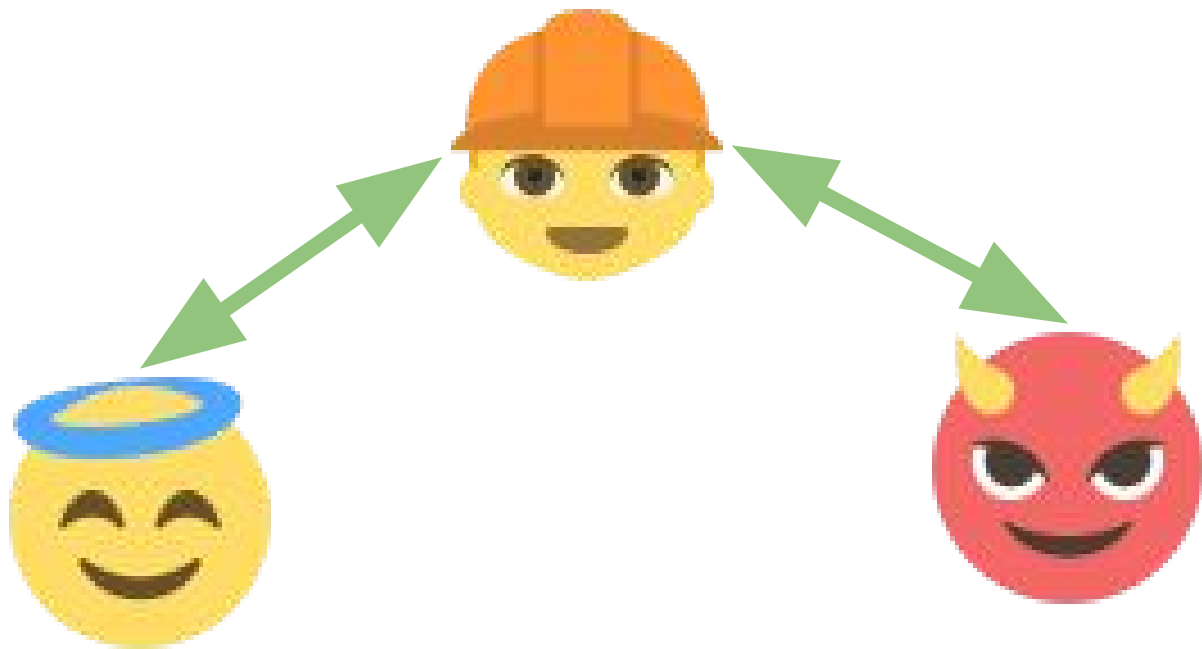
Supervisor

- `Supervisor.start_link/2,3`
- `Supervisor.Spec.worker/2,3`
- `Supervisor.Spec.supervisor/2,3`
- `Supervisor.Spec.supervise/2`

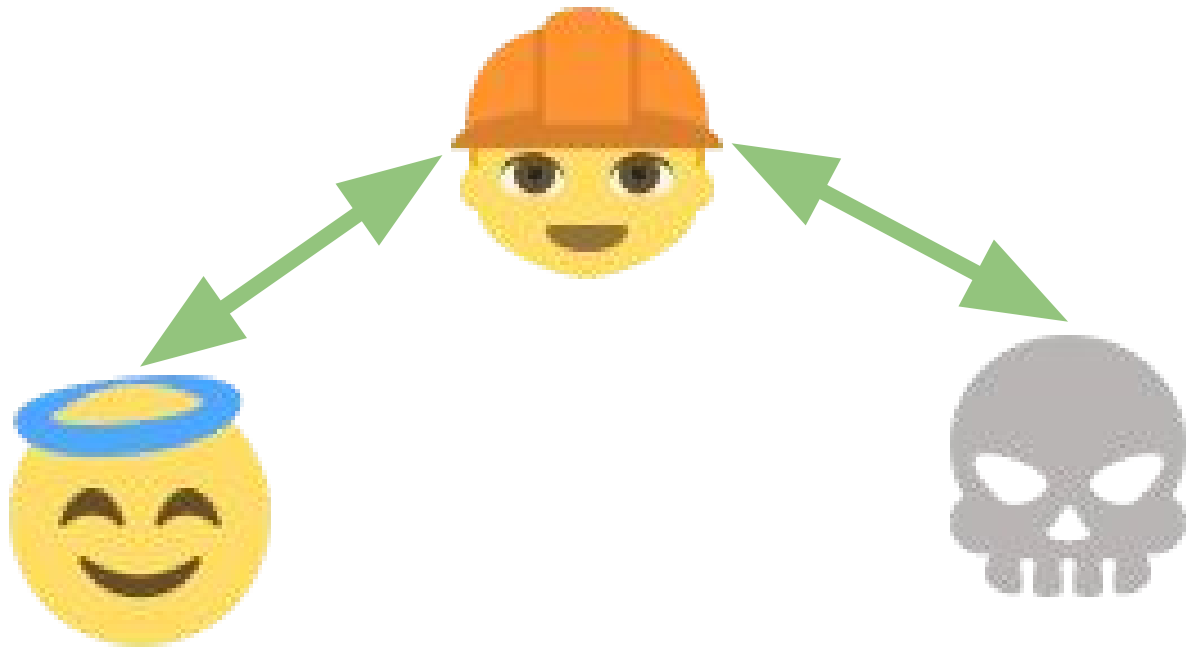
Supervisors



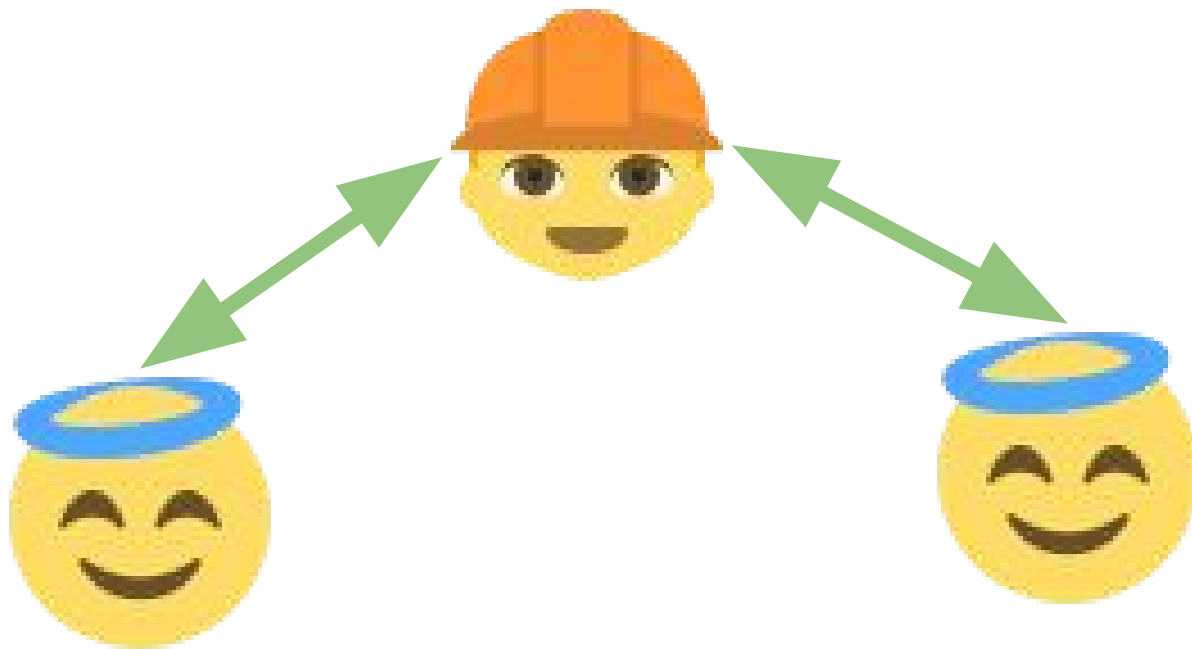
Supervisors



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Restart

- :temporary
- :transient
- :permanent

Intensity

- :max_restarts
- :max_seconds

Child Communication

- Children started in order and terminated in reverse order
- Younger children initiate communication with older children
- Younger children call (sync) or cast (async) to older siblings
- Older children reply (async) or cast (async) to younger children

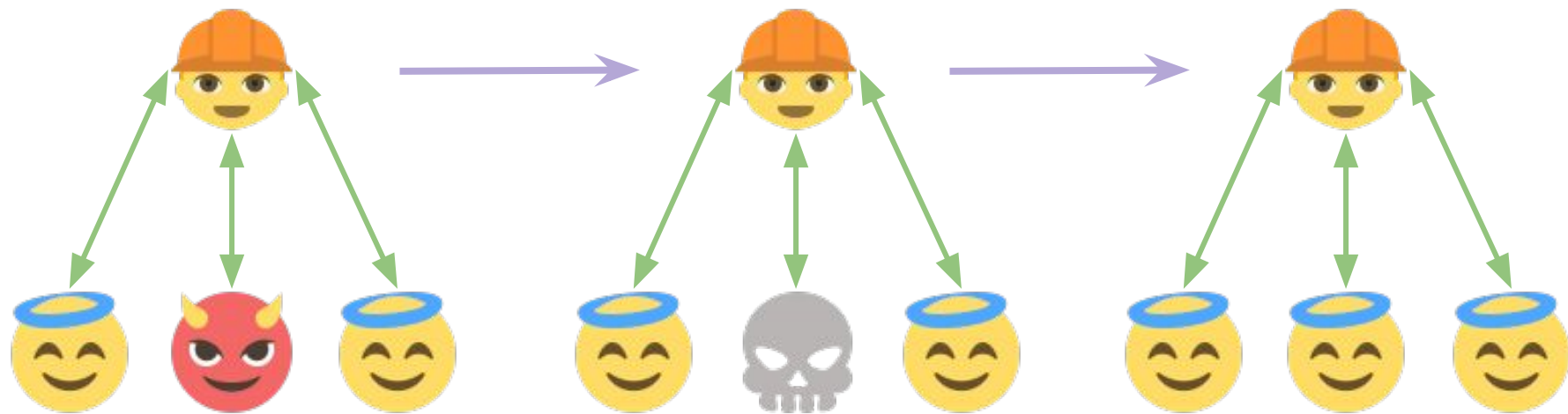
Strategies

- :one_for_one
- :rest_for_one
- :one_for_all
- :simple_one_for_one

One for one

- Children are independent
- Errors are isolated
- When child restarted older siblings may not be alive
- Children usually cast (async) or do not communicate with siblings

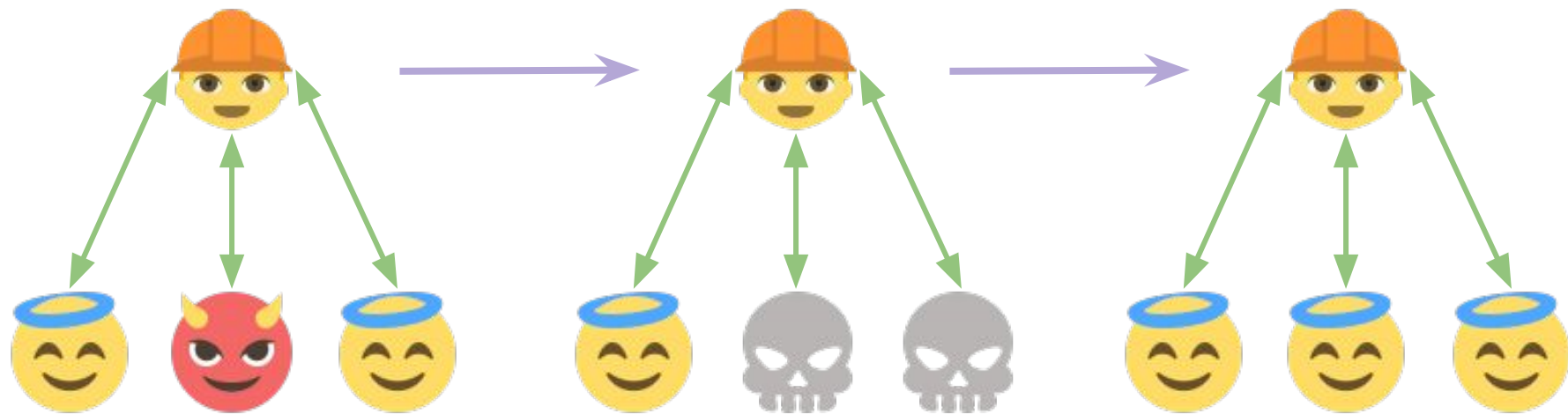
One for one



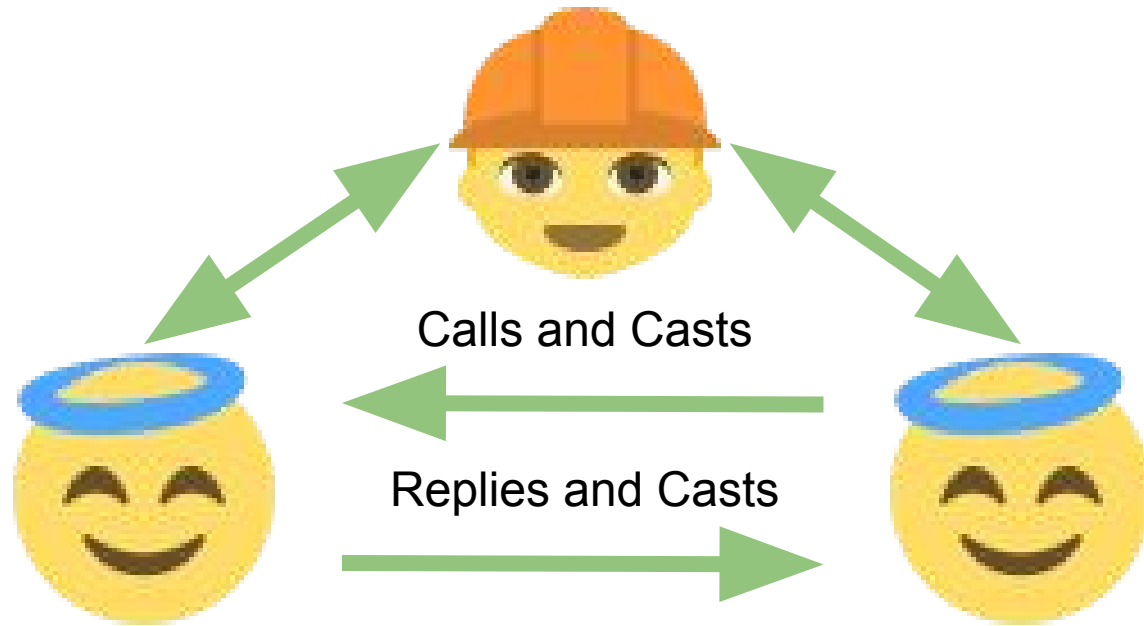
Rest for one

- Children are dependent on younger siblings
- Errors are propagated to all younger siblings
- When child restarted older siblings will be alive
- Younger children usually call (sync) older siblings

Rest for one



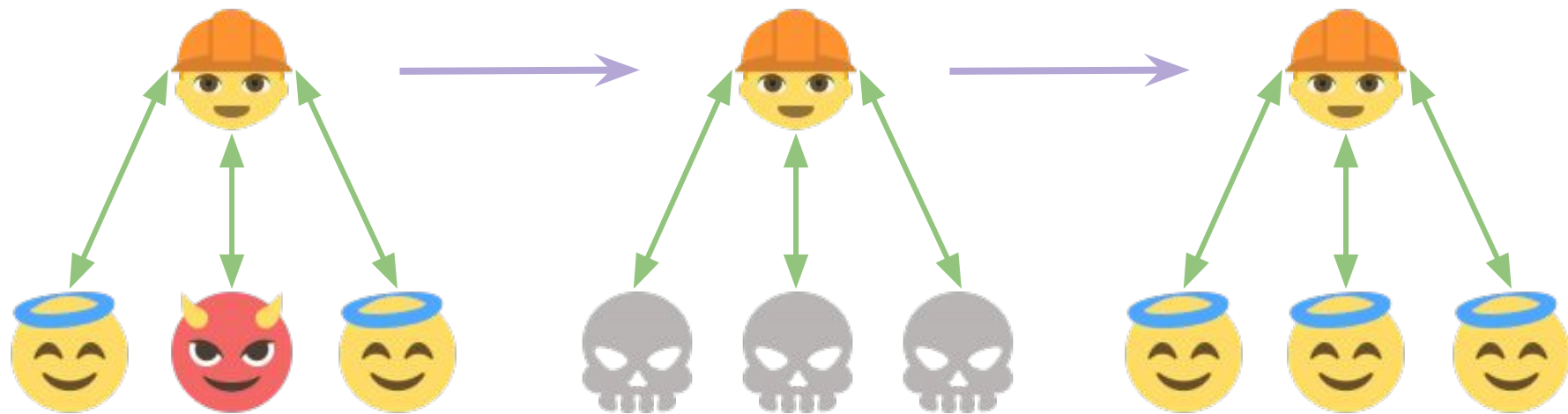
Rest for one



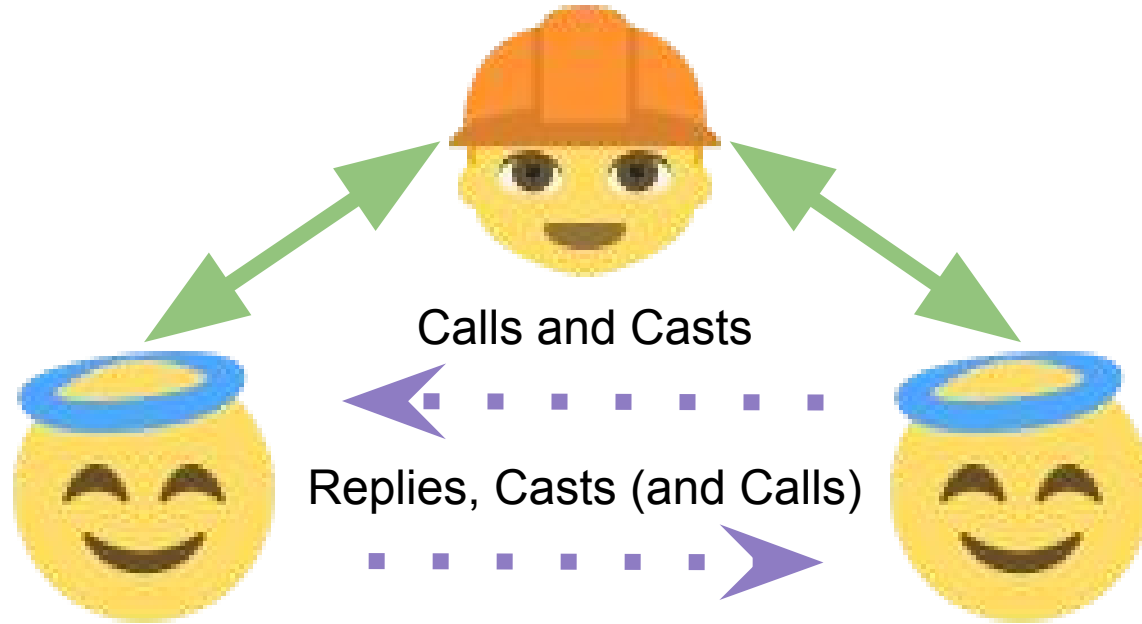
One for all

- Children are dependent on younger or older siblings
- Errors are propagated to all siblings
- When child restarted older siblings will be alive
- Younger children initiate communication with older siblings
- Older children enter BAD state when younger sibling crashes

One for all



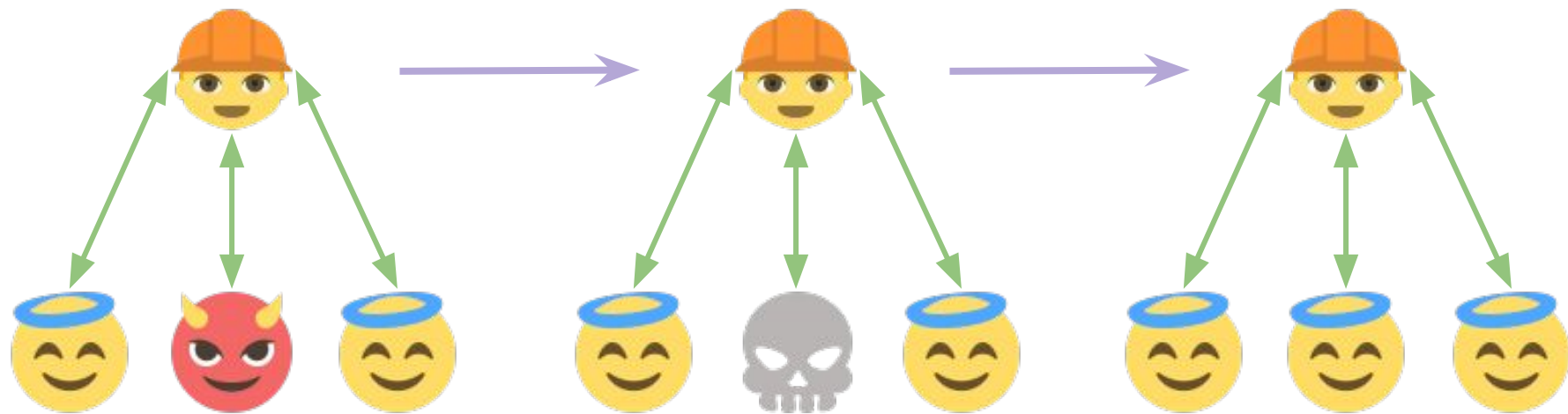
One for all



Simple one for one

- Not simple
- Children are independent
- Errors are isolated
- Children started dynamically
- Children terminated concurrently

Simple one for one



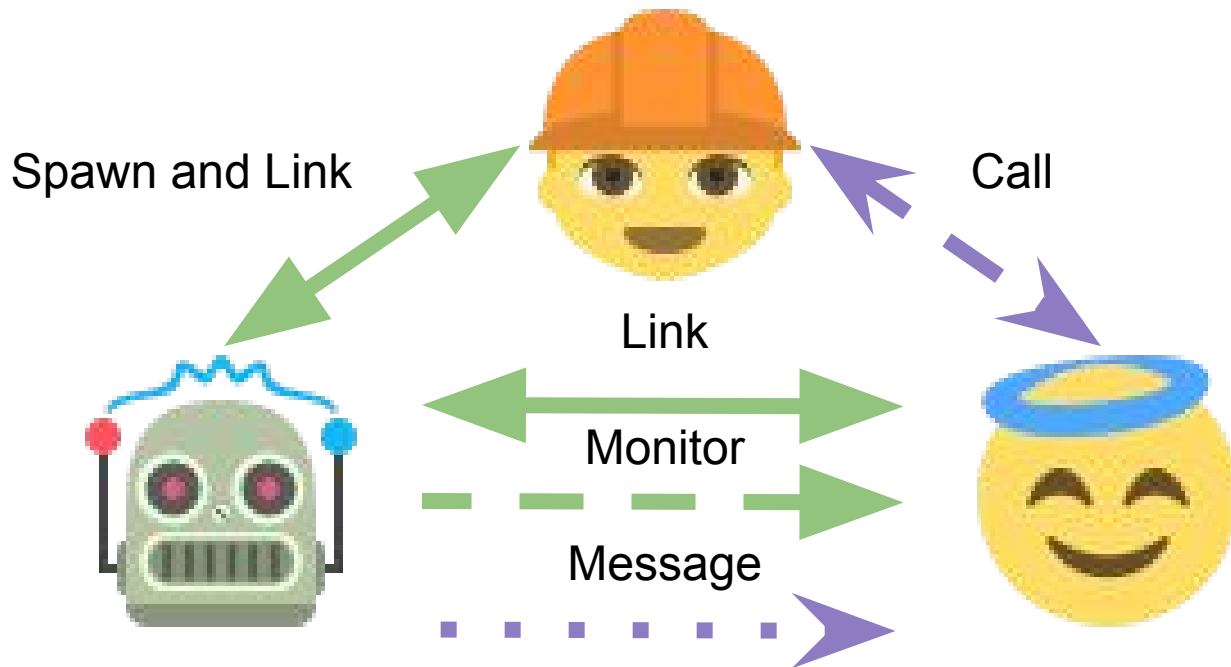
Task.Supervisor

- :simple_one_one for Tasks
- Tasks are independent
- Errors are isolated
- Tasks started dynamically
- Tasks terminated concurrently

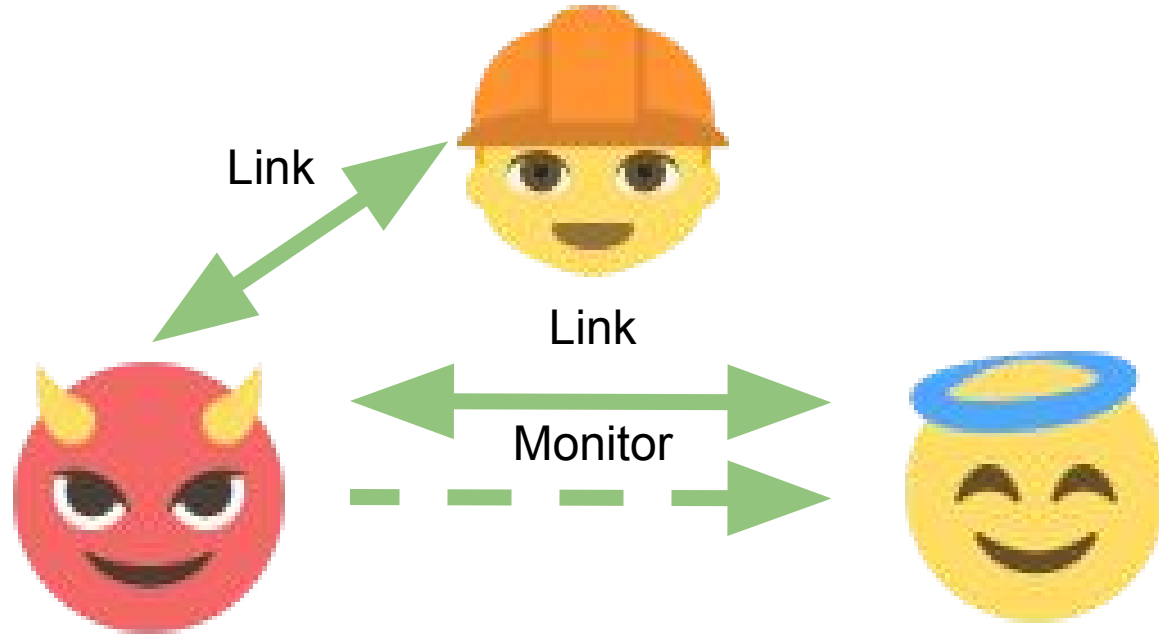
Task.Supervisor

- Task.Supervisor.start_link/1
- Task.Supervisor.start_child/2,4
- Task.Supervisor.async/2,4
- Task.Supervisor.async_nolink/2,4
- Async tasks should use the default restart: :temporary

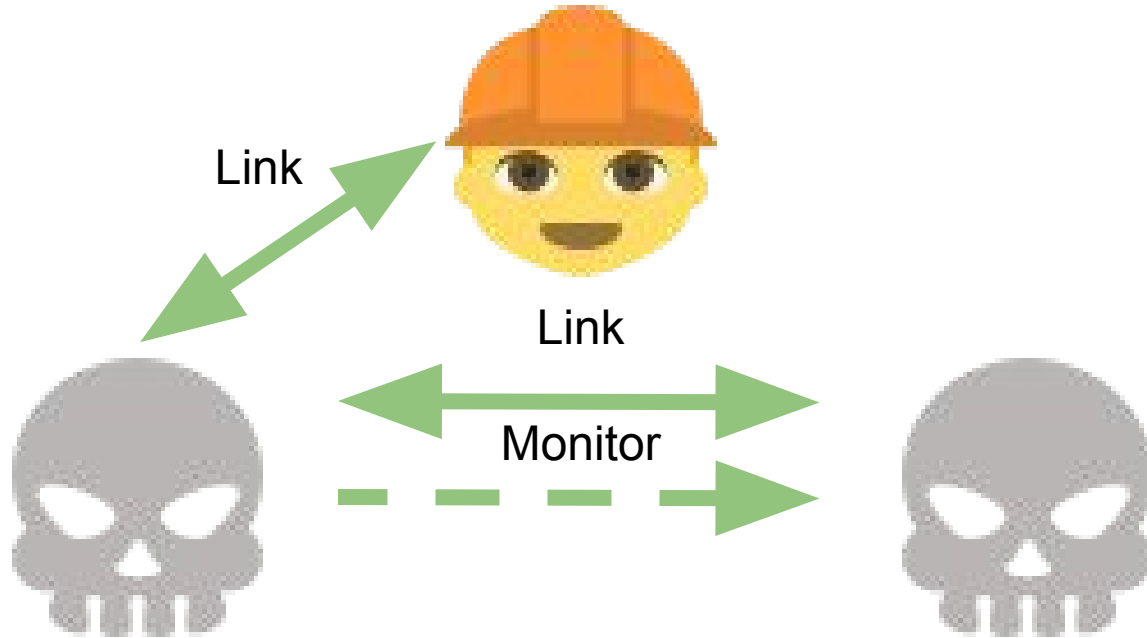
Task.Supervisor.async/2,4



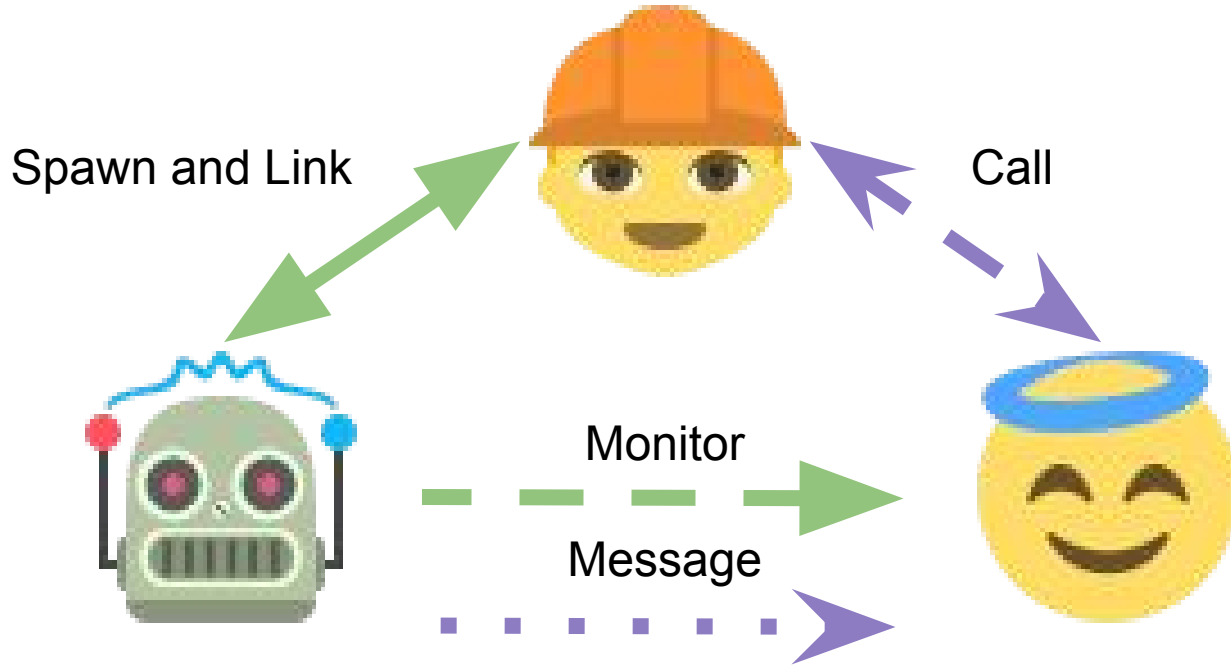
Task.Supervisor.async/2,4



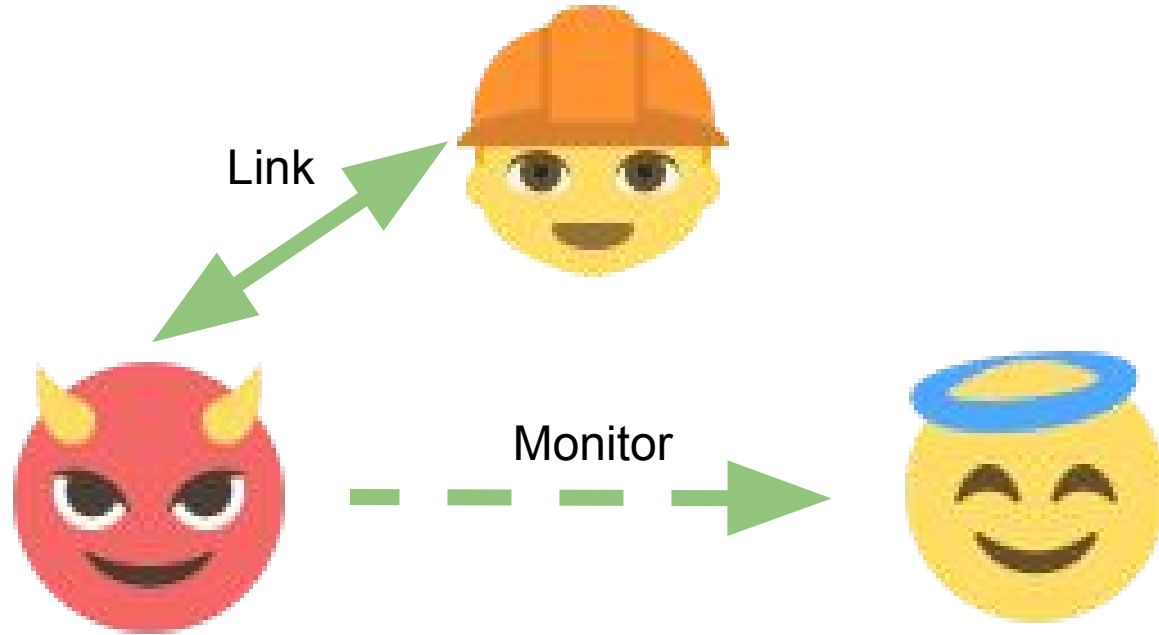
Task.Supervisor.async/2,4



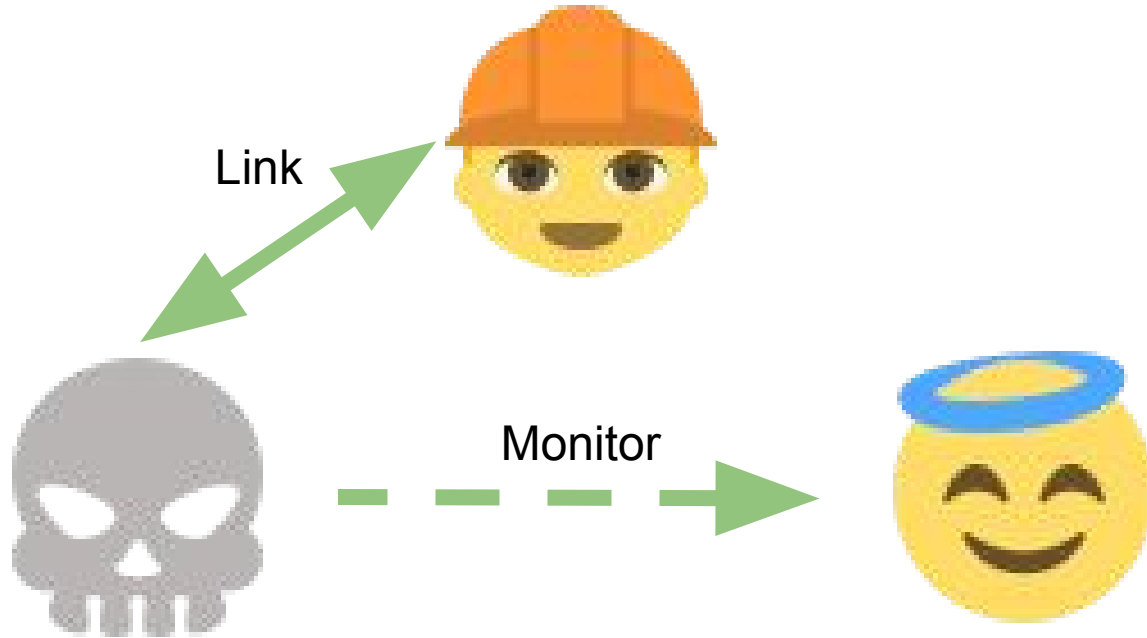
Task.Supervisor.async_nolink/2,4



Task.Supervisor.async_nolink/2,4



Task.Supervisor.async_nolink/2,4



Supervisor problems