Actores

Técnicas de Programación Concurrente

Actores

Vamos con unos ejemplos introductorios con Actix

- Hola mundo!
- Actores con estado interno
- Uso de sleep

Carl Hewitt
Paper original de **1973!**

Problema del banquero

Solucionemos el problema de banquero utilizando actores

- Qué actores necesitamos?
- Qué tipos de mensaje?

Tips:

- El progreso de un proceso asíncrono se sigue/controla desde el estado interno del actor
- Recursión de actores

Problema de los Filósofos

Solucionemos el problema de los filósofos nuevamente, utilizando actores y la solución de Chandy/Misra

- For every pair of philosophers who contend for a chopstick, one chopstick is created, assigned to the philosopher with the lower ID number (**deadlock avoidance**).
- Each chopstick can either be *dirty* or *clean.* Initially, all chopsticks are dirty.
- When a philosopher wants to use a set of resources (*i.e.*, eat), said philosopher must obtain the chopsticks from their contending neighbors. For all such chopsticks the philosopher does not have, they send a request message.
- When a philosopher with a chopstick receives a request message, they keep the chopstick if it is clean, but give it up when it is dirty. If the philosopher sends the chopstick over, they clean the chopstick before doing so.
- After a philosopher is done eating, all their chopsticks become dirty. If another philosopher had previously requested one of the chopsticks, the philosopher that has just finished eating cleans the chopstick and sends it.

Referencias

https://www.ijcai.org/Proceedings/73/Papers/027B.pdf

https://www.cs.utexas.edu/users/misra/scannedPdf.dir/DrinkingPhil.pdf