Large-Scale Distributed Systems
Project 3: Firefly-inspired synchronization

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1 Introduction

2 Implementation of the skeleton

According to the paper "Firefly-inspired Heartbeat Synchronization in Overlay Networks", the skeleton for the different algorithms is composed of two main functions, namely activeThread and passiveThread. We provide the pseudo code for the implementation in Algorithm 2.1.

3 Conclusion

Algorithm 2.1 Skeleton for the Firefly algorithms

Variables:

φ ▷ phase

Δ ▷ cycle length

$$\text{update\_phi\_period} = \begin{cases} \frac{\Delta}{5} & \text{if } \Delta < 1 \\ \frac{1}{5\Delta} & \text{if } \Delta \geq 1 \end{cases}$$

function SENDFLASH()
    $P \leftarrow$ view from PSS
    send flash to all peers in P
end function

function PROCESSFLASH()
    depends on the implementation
end function

function UPDATEPHI()
    if $\varphi < 1$ **then**
        $\varphi \leftarrow \varphi + \frac{1}{\Delta} \cdot$update_phi_period
    else
        fire event "Flash!"
    end if
end function

function ACTIVETHREAD()
    if $\varphi \geq 1$ **then**
        $\varphi \leftarrow 0$
        sendFlash()
    else
        update_phi ← new periodic thread "updatePhi" with period update_phi_period
        wait for the event "Flash!"
        $\varphi \leftarrow 0$
        sendFlash()
        kill update_phi
    end if
end function

function PASSIVETHREAD()
    receive flash
    processFlash()
end function