CSE3241: Operating System and System Programming

Class-21

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Critical Section Problem

■ Critical section is a segment of code in a process where the process works on shared data.

■ For example, in critical section a process can:

  ▶ change a shared variable,
  ▶ update a shared table,
  ▶ write a shared file,
  ▶ print after reading a shared variable, and so on.

■ General Structure of a Typical Process, P_i

do{
  entry section
    critical section
  exit section

    reminder section
}while(TRUE);

Semaphore

■ Semaphore means **Sign-Bearer**:
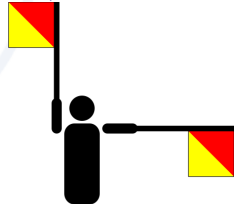- ▶ **Sema** ⟶ **Sign**
- ▶ **Phore** ⟶ **Bear**

■ In Computer Science, a semaphore is
- ▶ a **variable**.
- ▶ used to control access to a common resource by multiple processes concurrently.

■ Types of sign:
- ▶ Wait(S)
- ▶ Signal(S)

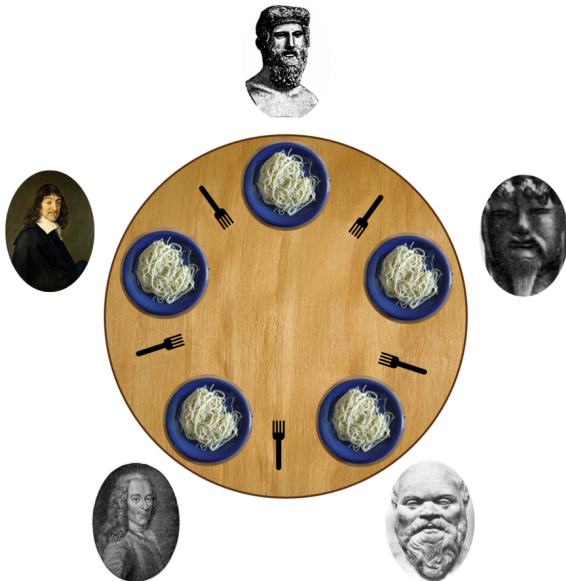Railman Wikipedia

Reader-Writer Problem

Readers

Once upon a time, there was a frog.. more?

Named Pipe

Writer

Dining Philosopher Problem [Wikipedia]

References

📋 P. B. Galvin A. Silbeschatz and G. Gagne.
Operating System Concepts.
John Wiley & Sons, 9 edition, 2012.