Sémaphores :

1. *read* init 0
2. *write* init 0
3. *mutex* init 1

variables :

1. numWriter = 0
2. numReader = 0
3. wantToRead = 0
4. isWriting = false

```
startRead(){
        mutex.P()
        while (numWriter>0){
                wantToRead++
                mutex.V()
                read.P()
                mutex.P()
                wantToRead--
                if (wantToRead>0 && numWriter == 0)
                        read.V()
        }
        numReader++
        mutex.V()
 }

endRead(){
        mutex.P()
        numReader-- ;
        if (numreader== 0 && numWriter>0){
                write.V()
        }
        mutex.V()
}

startWrite(){
        mutex.P()
        numWriter++
        while (isWriting || nbReader>0){
                mutex.V()
                write.P()
                mutex.P()
        }
        isWriting = true
        mutex.V()
}
```

```
endWrite(){
        mutex.P()
        numWriter--
        isWriting = false
        if (numWriter > 0){
                write.V()
        }else if (wantToRead > 0)
                read.V()
        mutex.V()
}
```