Reader Writer Synchronization Problem

Global Variables:
```
int nreaders = 0;                    //initialize number of readers to zero
semaphore mutex(1);                  //to establish mutual exclusion
semaphore writing(1);
```

Readers:
```
mutex.semdown();                     //grab mutex
nreaders++;                          //announcing the new Reader

if (nreaders == 1) {                 //Check if this is the frist Reader
        if (writing.value <= 0) {            //Check if a Writer exists
                long randNum = (random() + 20000) % 200000;
                usleep(randNum);
                writing.semdown();
        }
}
mutex.up();
//do the reading
READ
//after reading is done

mutex.down();
nreaders--;
if (nreaders == 0) {                 //If last R
        writing.up();                //Let W go
}
mutex.up();
```

<u>Writers:</u>
```
writing.down();
//do the writing.
WRITE
writing.up();
```