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:

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http://www.gamasutra.com/features/20060630/paquet_01.shtml

1.

가

(critical section)

(mutex)

2.

?

가

가

가

가

가

CPU

Windows API

API

Windows API	
_InterlockedAnd	AND
_InterlockedCompareExchange	
_InterlockedDecrement	
_InterlockedExchange	
_InterlockedExchangeAdd	
_InterlockedIncrement	가
_InterlockedOr	OR
_InterlockedXor	OR

Linux

Linux API

3.

가 가

가 .

lock-free (non-blocking) lockless (wait-free)

[ST04] [Val95] [Har01]

(Pentium 4[Ric05])

100)

가 .

_InterlockedCompareExchange _InterlockedExchange API

가 가 API .

```
#define CS long
#define CS_FREE 0
#define CS_USED 1

void InitializeCS(CS* pCS)
{
    // Set the free flag
    *pCS = CS_FREE;
}

void EnterCS(CS* pCS)
{
    while (_InterlockedCompareExchange(pCS, CS_USED, CS_FREE)
        == CS_USED)
    {
        // 가 가
        //
```

```

    }
}

void LeaveCS(CS* pCS)
{
    // 가
    _InterlockedExchange(pCS, CS_FREE);
}

```

4.

가 .

가 .

_InterlockedCompareExchange _InterlockedAnd .

```

void _InterlockedAnd( int * piDestination, int iAnd)
{
    int iOriginalValue
    int iCurrentValue;

    // 가
    //
    iCurrentValue= *piDestination;

    do
    {
        iOriginalValue = iCurrentValue;

        //
        int iDesiredValue = iOriginalValue & iAnd;

        //
        iCurrentValue = _InterlockedCompareExchange(piDestination,
            iDesiredValue, iOriginalValue);
    }
}

```

```
//
//
}
while (iOriginalValue != iCurrentValue);
}
```

가 . 가

가

가

. 가

가

가 .

5.

5.1

가 가 .

5.2

가 . volatile

가

C++

가 volatile

(:)

5.3

가
가
(release memory barrier release memory fence)

가
가 (acquire memory barrier acquire memory fence)

Windows API

Windows API	
_ReadBarrier	
_WriteBarrier	
_ReadWriteBarrier	

Windows API x86

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6.

[Ric05] Jeffrey Richter. Concurrent Affairs - Performance-Conscious Thread Synchronization(, ,) 2005 10 MSDN

[Val95] John D. Valois. Lock-Free Linked Lists Using Compare-and-Swap() 1995 8 14 ACM

[Har01] Timothy L. Harris. A Pragmatic Implementation of Non-Blocking Linked Lists() 2001 10 15

[ST04] Håkan Sundell, Philippas Tsigas. Lock-Free and Practical Deques using Single-Word Compare-And-Swap()
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