

# Mutual Exclusion

Companion slides for  
The Art of Multiprocessor  
Programming  
by Maurice Herlihy & Nir Shavit

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# Locks (Mutual Exclusion)

```
public interface Lock {  
    public void lock();  
    public void unlock();  
}
```

# Locks (Mutual Exclusion)

```
public interface Lock {
```

```
    public void lock();
```

acquire lock

```
    public void unlock();
```

```
}
```

# Locks (Mutual Exclusion)

```
public interface Lock {
```

```
    public void lock();
```

acquire lock

```
    public void unlock();
```

release lock

```
}
```

# Using Locks

```
public class Counter {  
    private long value;  
    private Lock lock;  
    public long getAndIncrement() {  
        lock.lock();  
        try {  
            int temp = value;  
            value = value + 1;  
        } finally {  
            lock.unlock();  
        }  
        return temp;  
    }  
}
```

# Using Locks

```
public class Counter {  
    private long value;  
    private Lock lock;  
    public long getAndIncrement() {  
        lock.lock();  
        try {  
            int temp = value;  
            value = value + 1;  
        } finally {  
            lock.unlock();  
        }  
        return temp;  
    }  
}
```

**lock.lock();** acquire Lock

# Using Locks

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public class Counter {  
    private long value;  
    private Lock lock;  
    public long getAndIncrement() {  
        lock.lock();  
        try {  
            int temp = value;  
            value = value + 1;  
        } finally {  
            lock.unlock();  
        }  
        return temp;  
    }  
}
```

**Release lock  
(no matter what)**

# Using Locks

```
public class Counter {  
    private long value;  
    private Lock lock;  
    public long getAndIncrement() {  
        lock.lock();  
        try {  
            int temp = value;  
            value = value + 1;  
        } finally {  
            lock.unlock();  
        }  
        return temp;  
    }  
}
```

**Critical  
section**



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