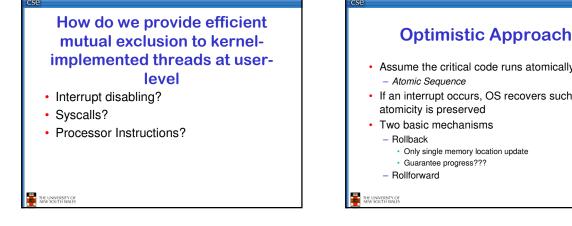
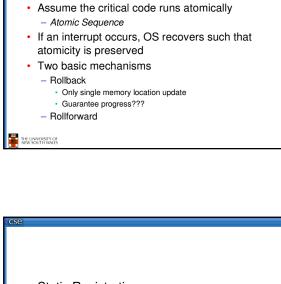


Lock-free?

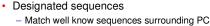
- Avoid needing locking by using lock-free date structure
 - Still need short atomic sequences
 compare-and-swap
- Lock-based data structure also need mutual exclusion to implement the lock primitive themselves.

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- Matching takes time
- sequence may occur outside an atomic sequences

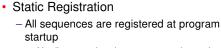
 Rollback might break code

How does the OS know what is

- Rollback might break code
 Rollforward okay
- Sequences can be inlined

```
    No overhead added to each sequence, overhead only on interruption
```





- No direct overhead to sequences themselves
- Limited number of sequences
 - Reasonable to identify on interrupt
 No inlining
- INO IN

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Dynamic Registration

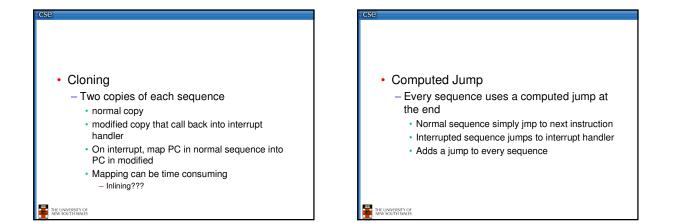
- Share a variable between kernel and userlevel, set it while in an atomic sequence
- Can inline, even synthesize sequences at runtime
- Adds direct overhead to each sequence

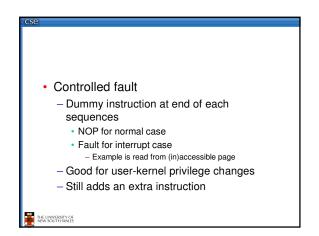
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How to roll forward?

- Code re-writing
 - Re-write instruction after sequence to call back to interrupt handler
 - Cache issues

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Limiting Duration of ROIIforward

- Watchdog
- Restriction on code so termination can be inspected for

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