

OPUS

**A lightweight system for observational
provenance in user-space**

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Motivations

- Usability

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- Usability
- Discreet

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- Always-on

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- Usability
- Discreet
- Always-on
- Complete Capture

The PVM Model

In three unusual cases

Versioning Schemes

- Version on Write
- Open to Close
- Explicit Versioning

Unusual Operations

- Unlink
- Rename

Unusual Operations

- Unlink
- Rename

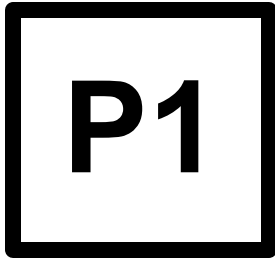
- Abstraction

Unusual Operations

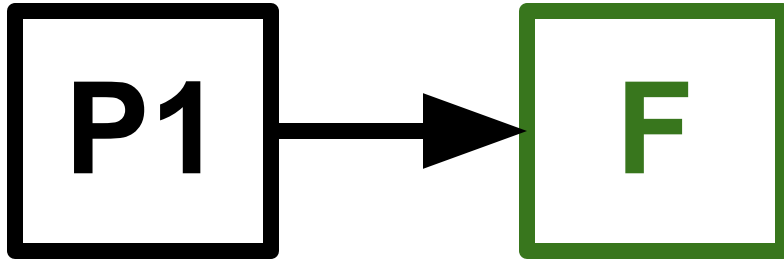
- Unlink
- Rename

- Abstraction
- Open -> Gain Reference
- Close -> Lose Reference

POSIX Problems



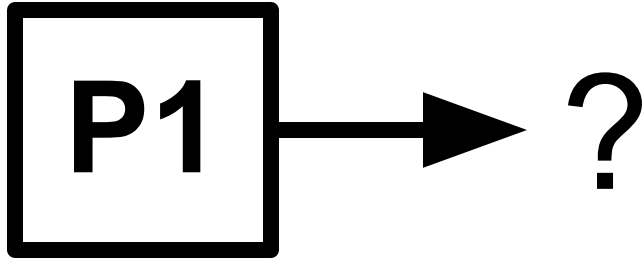
POSIX Problems



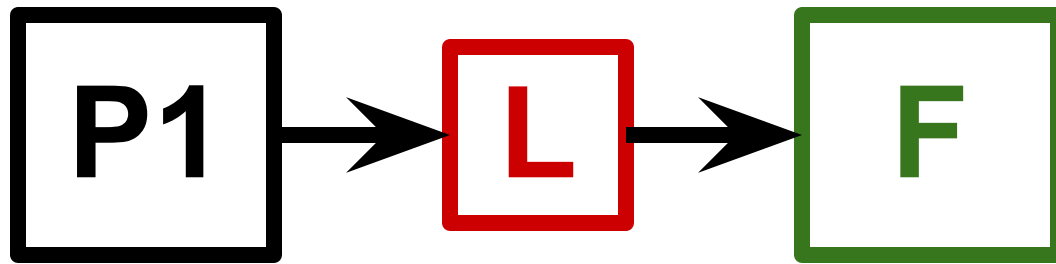
POSIX Problems



POSIX Problems



POSIX Problems



Aliases

Aliases

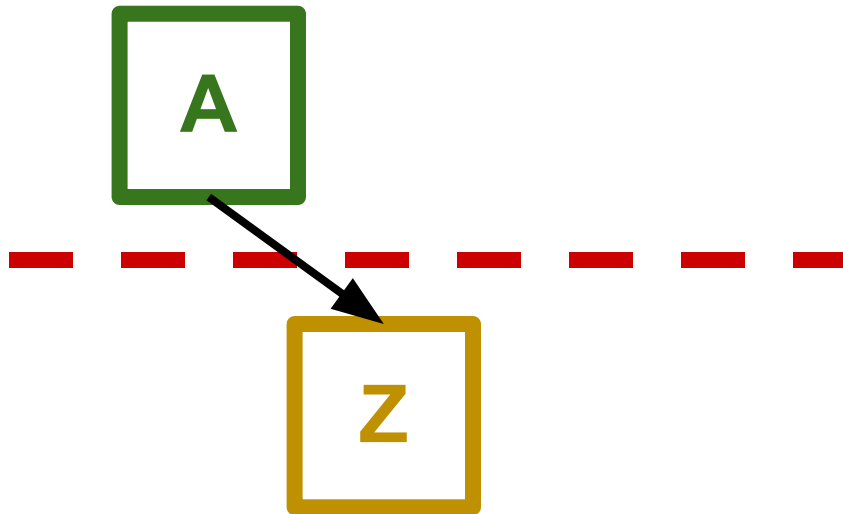
HARD

SOFT

Aliases

HARD

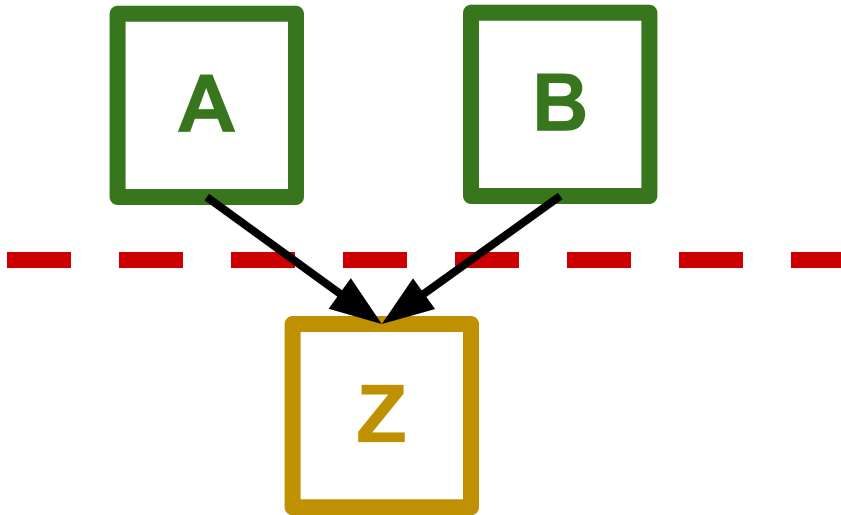
SOFT



Aliases

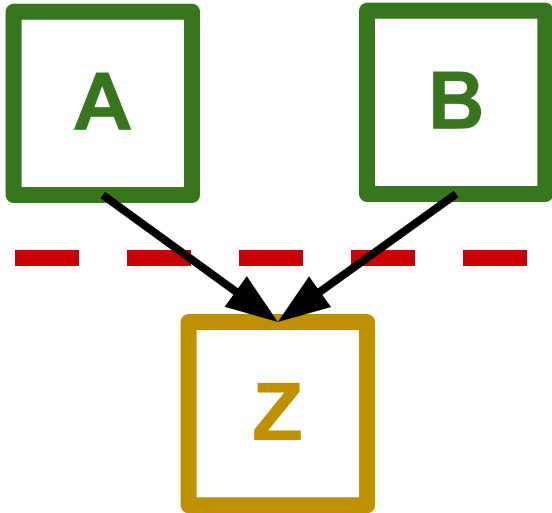
HARD

SOFT

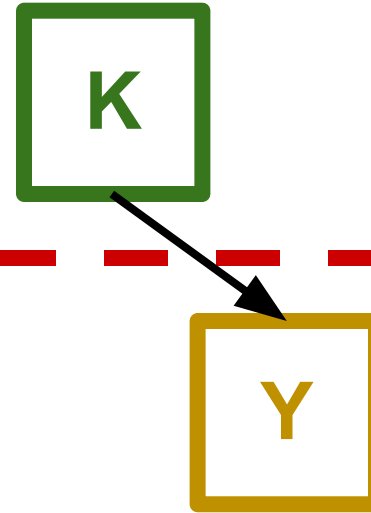


Aliases

HARD

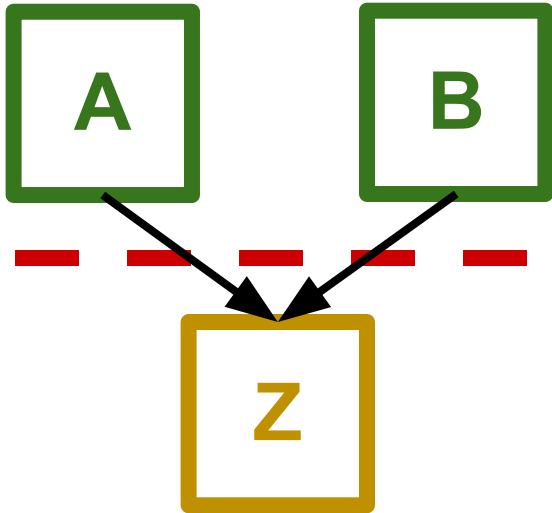


SOFT

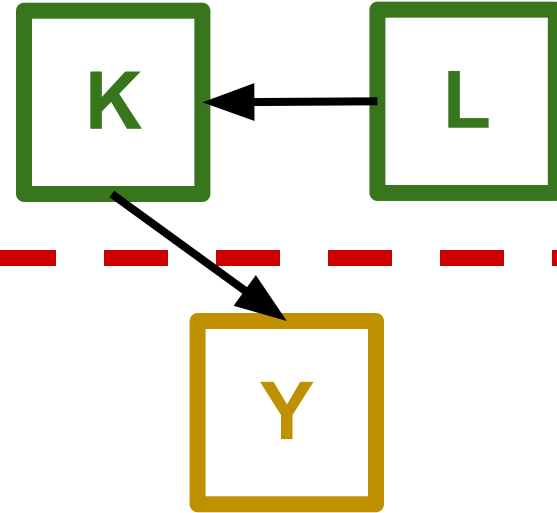


Aliases

HARD

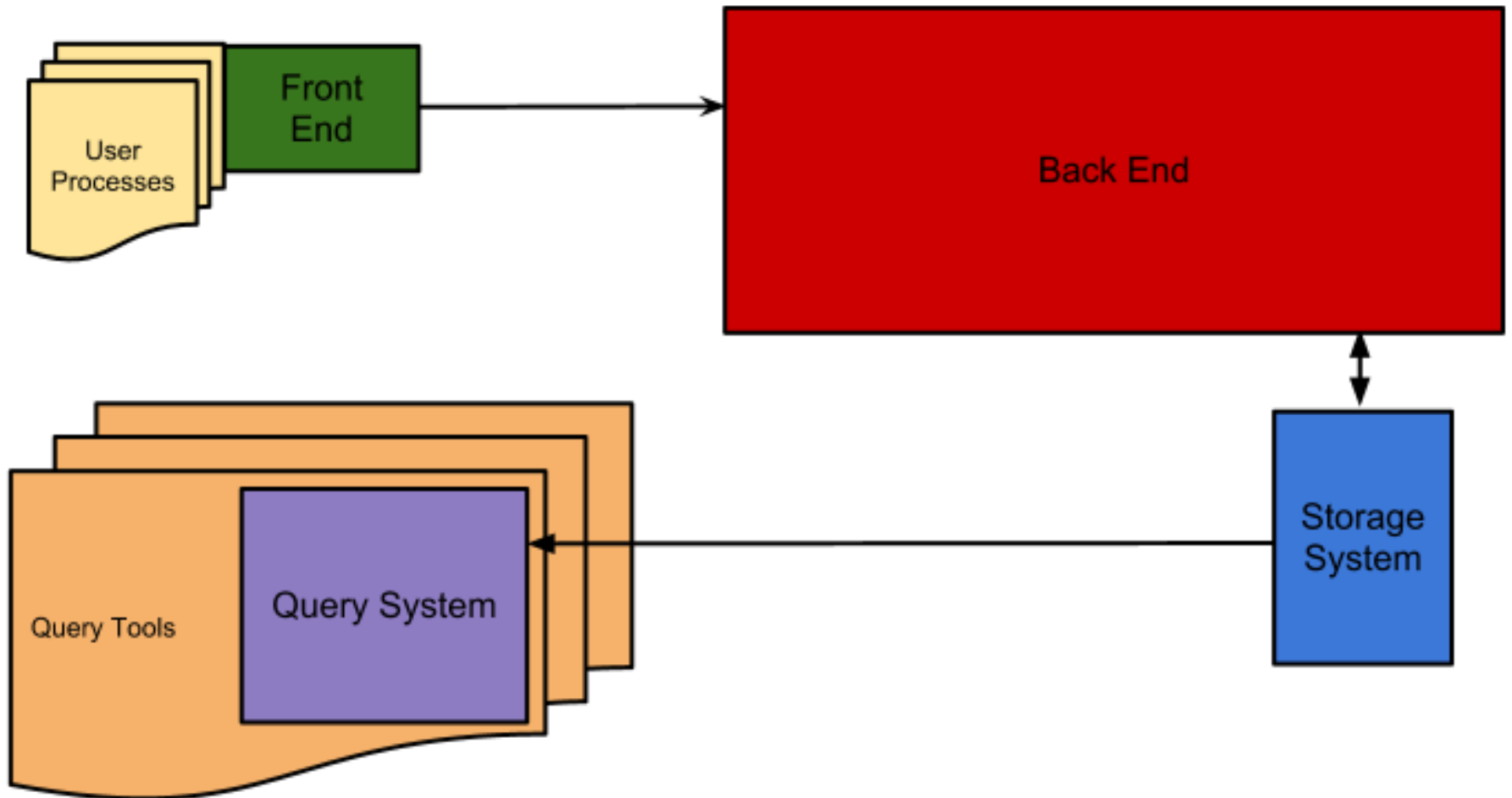


SOFT



The OPUS System

System Structure



Conclusions

- **OPUS**
- Usable system
- Complete Capture

Conclusions

- **OPUS**
- Usable system
- Complete Capture
- **PVM**
- Unusual Operations
- Process View

Thank You

For more info visit:

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