Spring

➔ **A research project at Sun Microsystems (1989 - 1995) for a**
– **distributed**
– **object-oriented**
operating system

Overview and Architecture

❑ Why Spring?

❑ The Spring System

- Interfaces
- Naming
- Kernel architecture

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Why Spring?

❑ What's wrong with operating systems?

- Becoming difficult to evolve:
  – initial designs did not include distributed computing
  – initial designs did not include multithreading and multiprocessing
- Security is a problem
- They tend to be monolithic, big, and growing

❑ Goals

- Make the OS as modular, open, and extensible as possible
- Use methodlogies and tools that increase quality and support modularity
- Make mulithreading and multprocessing easier
- Provide a solid foundation for security
- Interoperate with existing networked systems
- Meet new application needs
  – But not another new implementation of existing techniques!

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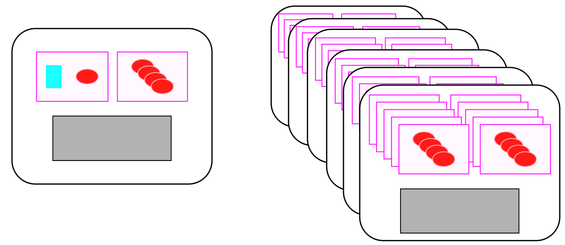
The Spring System

Anything Can Be Anywhere



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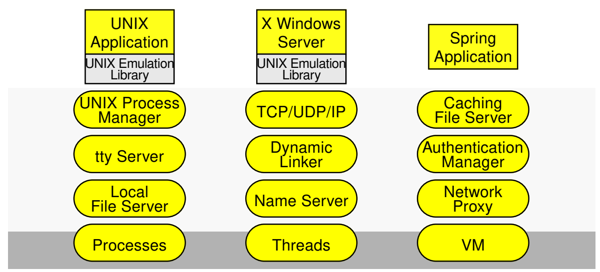
The Spring System (2)

❑ Microkernel-based



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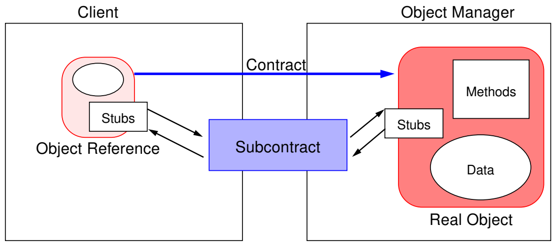
Interfaces

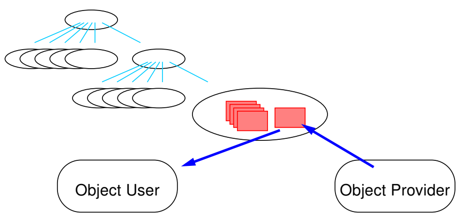
- Seperation of
  Type → ***Contract*** → **IDL (CORBA)**
  and **Class** → ***Implementation*** → **C++**

- **Subcontract**
  - open implementation of method-call processing



Naming

- Naming is not just for files



Kernel Architecture

- **Domains** & **Threads**
- **Doors**: efficient mechanism for inter-adress-space communication