

Advanced Programming in the UNIX Environment

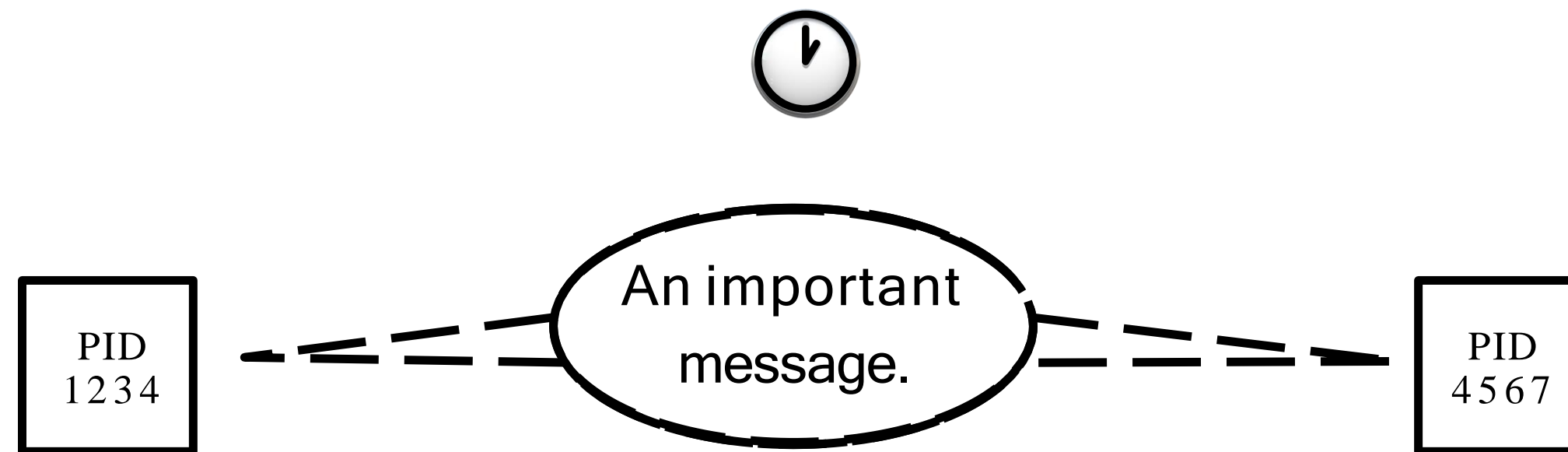
Interprocess Communication

Interprocess Communication

- *asynchronous* vs. synchronous

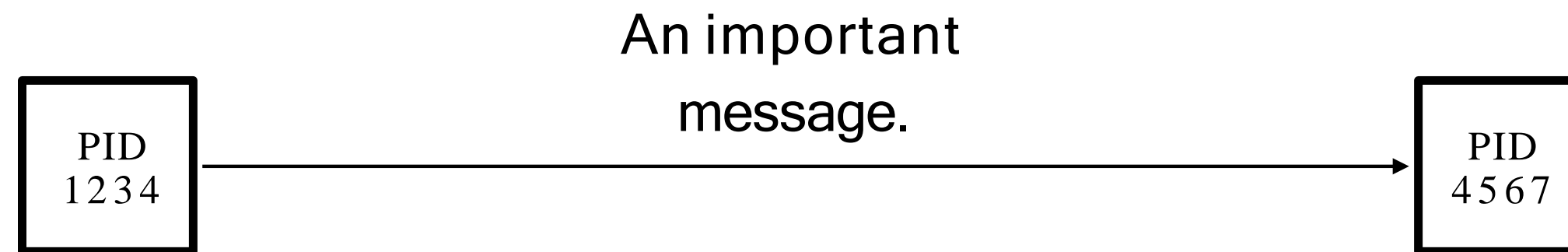
Interprocess Communication

- *asynchronous* vs. *synchronous*



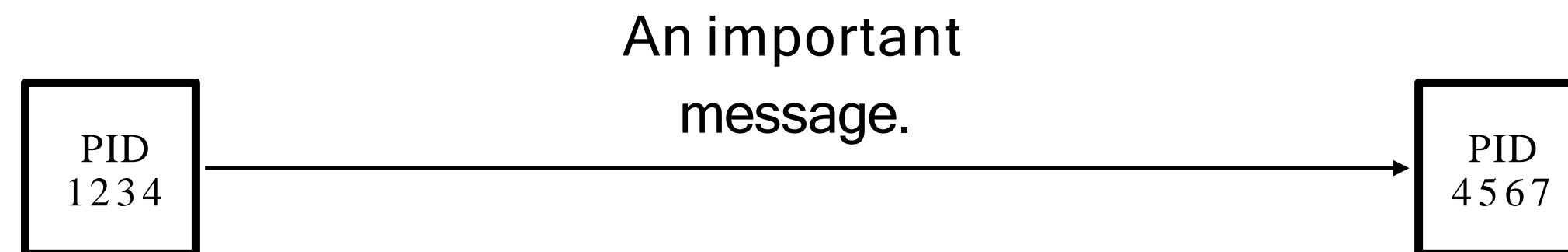
Interprocess Communication

- asynchronous vs. *synchronous*



Interprocess Communication

- asynchronous vs. synchronous
- *unidirectional* vs. bidirectional



Interprocess Communication

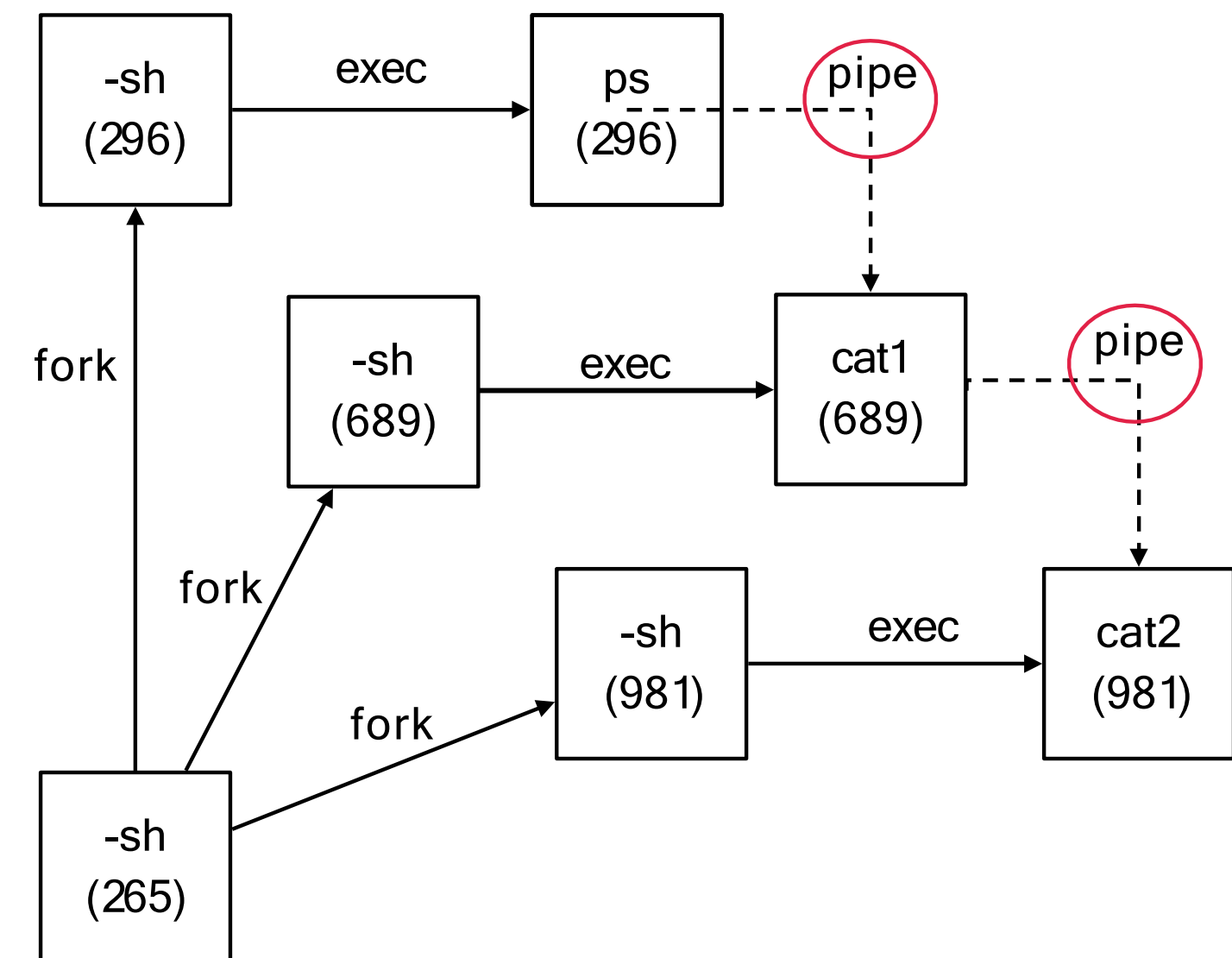
- asynchronous vs. synchronous
- unidirectional vs. *bidirectional*



Interprocess Communication

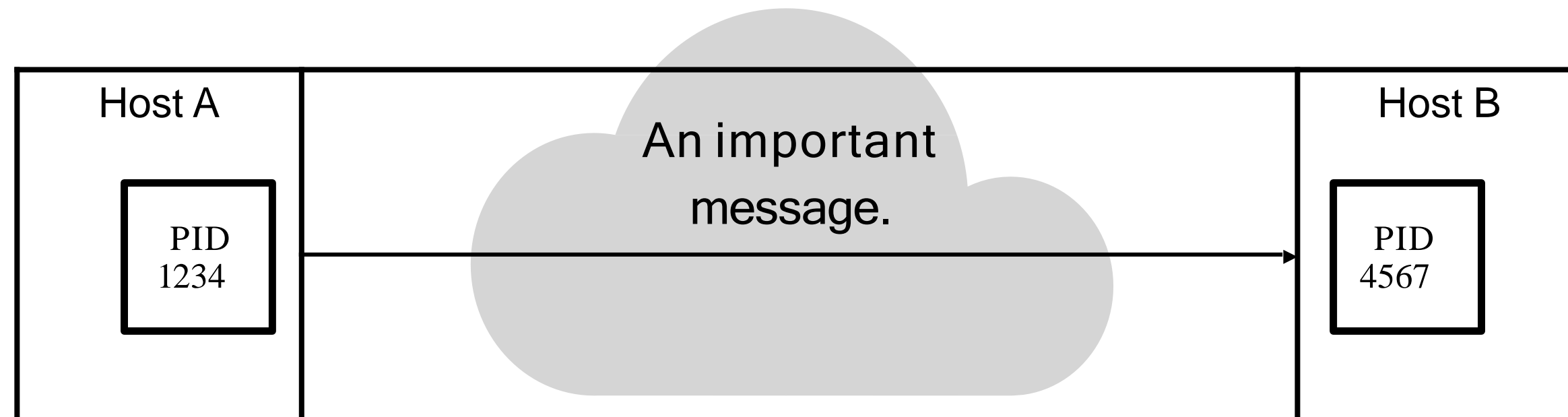
- asynchronous vs. synchronous
- unidirectional vs. bidirectional
- *related processes* vs. unrelated processes

```
$ ps -o pid,ppid,pgid,sid,comm | /cat1 | /cat2
```



Interprocess Communication

- asynchronous vs. synchronous
- unidirectional vs. bidirectional
- *related processes* vs. unrelated processes
- network communication



Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system

synchronous	✗
asynchronous	✓
bidirectional	✓
related processes	✓
unrelated processes	✓
network communication	✗
variable data	✓

Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system
- Signals

synchronous	✗
asynchronous	✓
bidirectional	✗
related processes	✓
unrelated processes	✓
network communication	✗
variable data	✗

Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system
- Signals
- Semaphores

synchronous	✗
asynchronous	✓
bidirectional	✗
related processes	✓
unrelated processes	✓
network communication	✗
variable data	✗

Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system
- Signals
- Semaphores
- Shared Memory
- Message Queues

synchronous	✗
asynchronous	✓
bidirectional	✓
related processes	✓
unrelated processes	✓
network communication	✗
variable data	✓

Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system
- Signals
- Semaphores
- Shared Memory
- Message Queues
- Pipes

synchronous	✓
asynchronous	✗
bidirectional	✗
related processes	✓
unrelated processes	✗
network communication	✗
variable data	✓

Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system
- Signals
- Semaphores
- Shared Memory
- Message Queues
- Pipes
- Fifos

synchronous	✓
asynchronous	✗
bidirectional	✗
related processes	✓
unrelated processes	✓
network communication	✗
variable data	✓

Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system
- Signals
- Semaphores
- Shared Memory
- Message Queues
- Pipes
- Fifos
- Socketpairs

synchronous	✓
asynchronous	✗
bidirectional	✓
related processes	✓
unrelated processes	✗
network communication	✗
variable data	✓

Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system
- Signals
- Semaphores
- Shared Memory
- Message Queues
- Pipes
- Fifos
- Socketpairs
- Sockets

synchronous	✓
asynchronous	✗
bidirectional	✓
related processes	✓
unrelated processes	✓
network communication	✓
variable data	✓

Means of Interprocess Communications

- two processes reading from/writing to a file on a shared file system
- Signals
- **Semaphores**
- **Shared Memory**
- **Message Queues**
- Pipes
- Fifos
- Socketpairs
- Sockets

Interprocess Communications Links

- <https://beej.us/guide/bgipc/html/single/bgipc.html>
- <https://users.cs.cf.ac.uk/Dave.Marshall/C/>
- <https://tldp.org/LDP/lpg/node7.html>
- https://en.wikipedia.org/wiki/Inter-process_communication