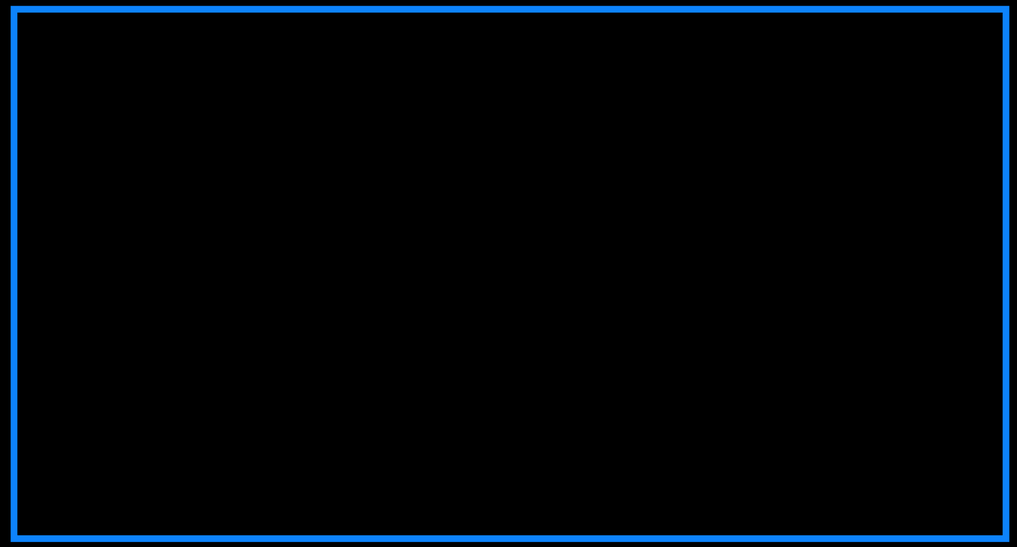
Signals: Fundamental Concepts

kernel space

user space

process

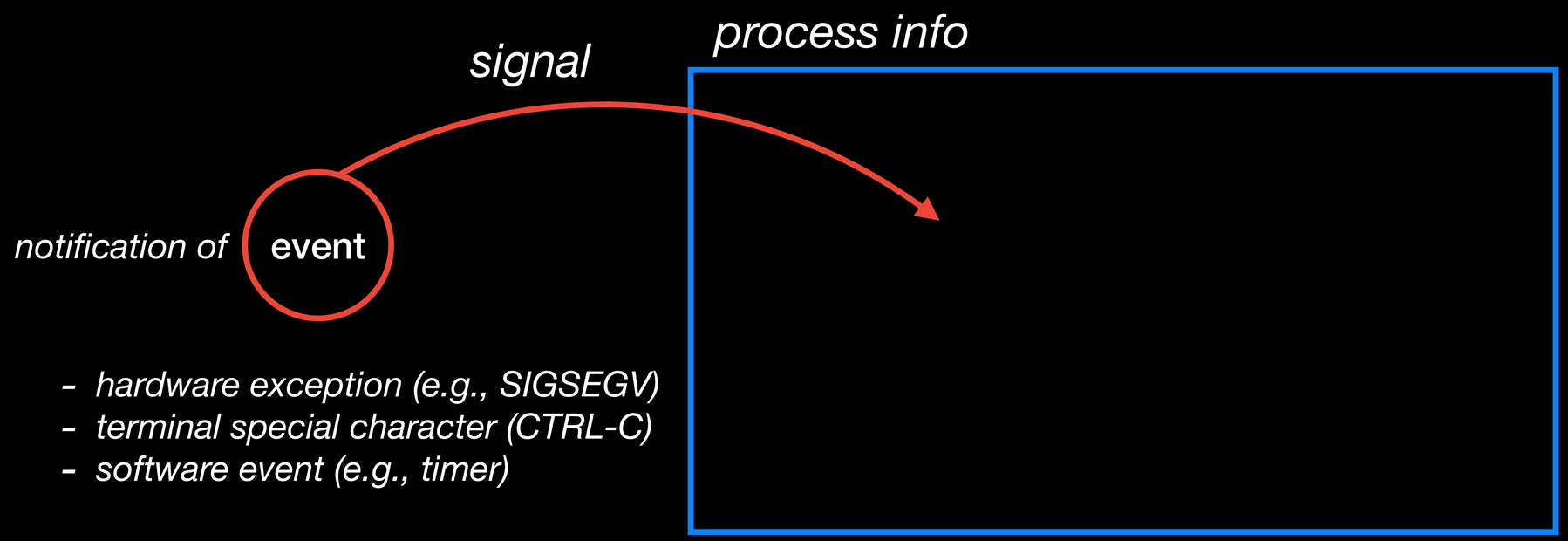
process info

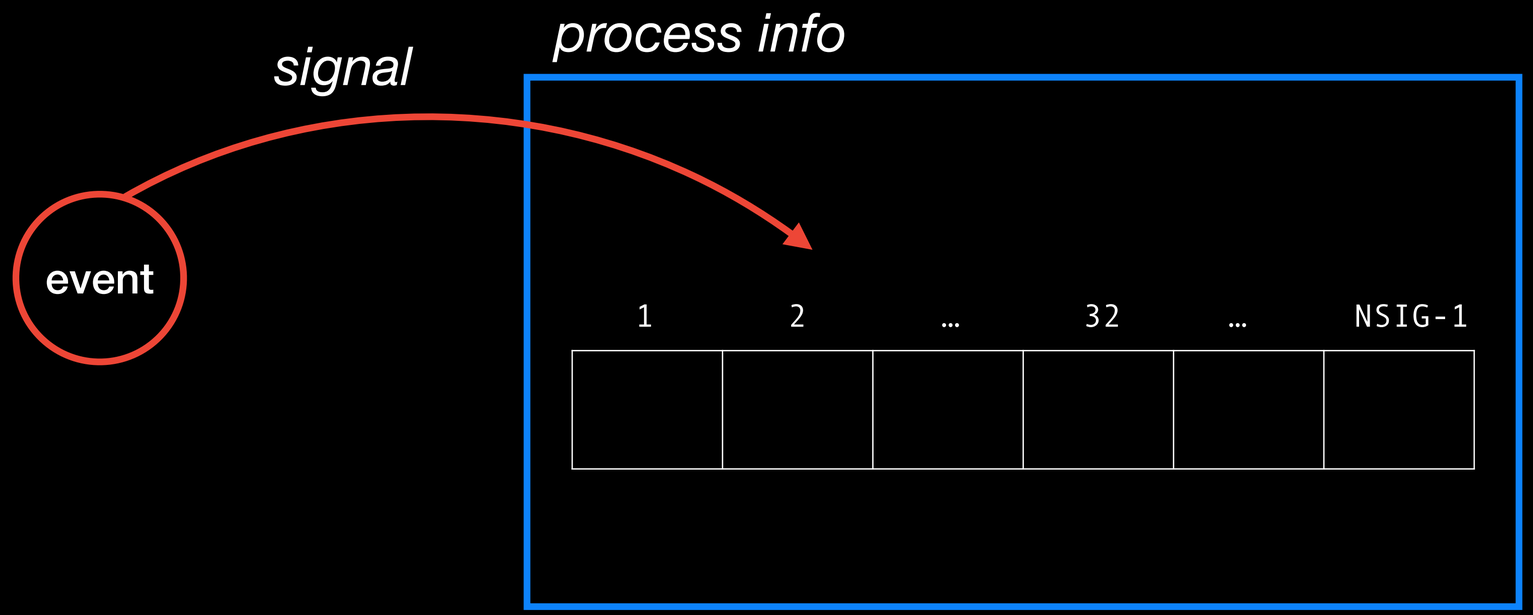


kernel space

user space

process

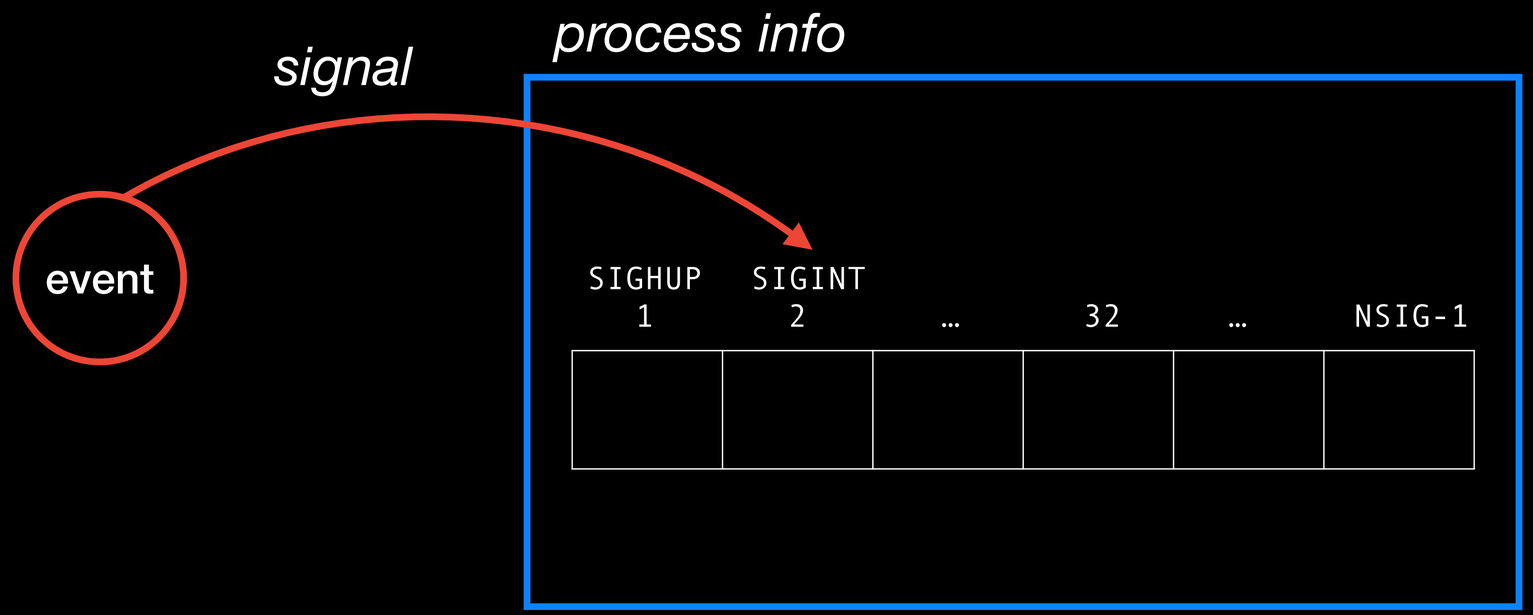

process info
signal
notification of
event
- hardware exception (e.g., SIGSEGV)
- terminal special character (CTRL-C)
- software event (e.g., timer)
kernel space
user space
process



kernel space

user space

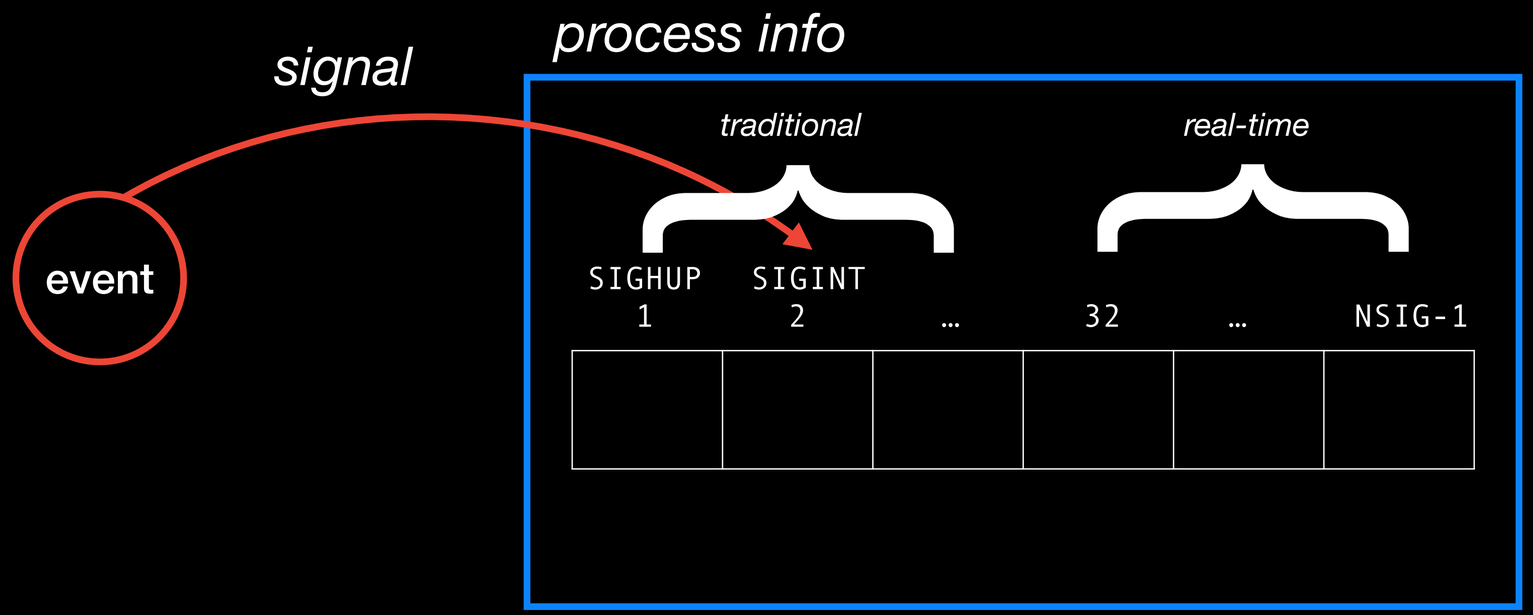
process



kernel space

user space

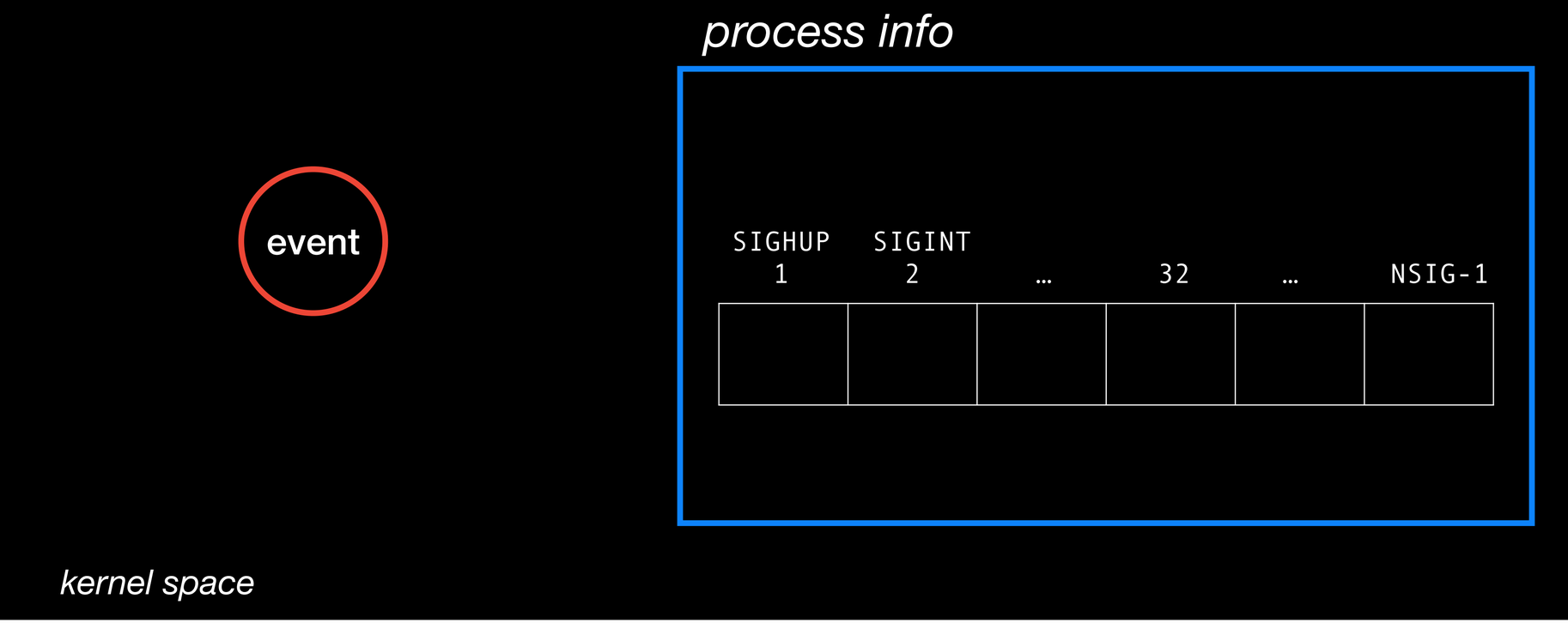
process

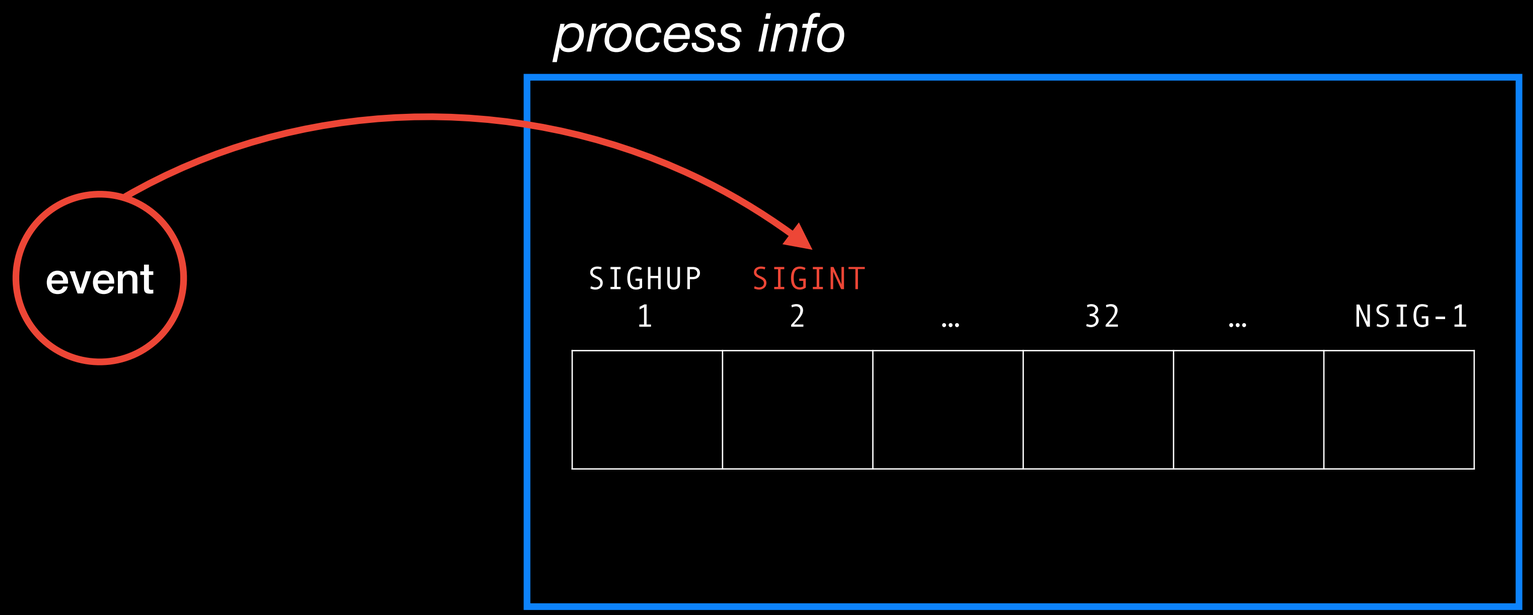


kernel space

user space

process

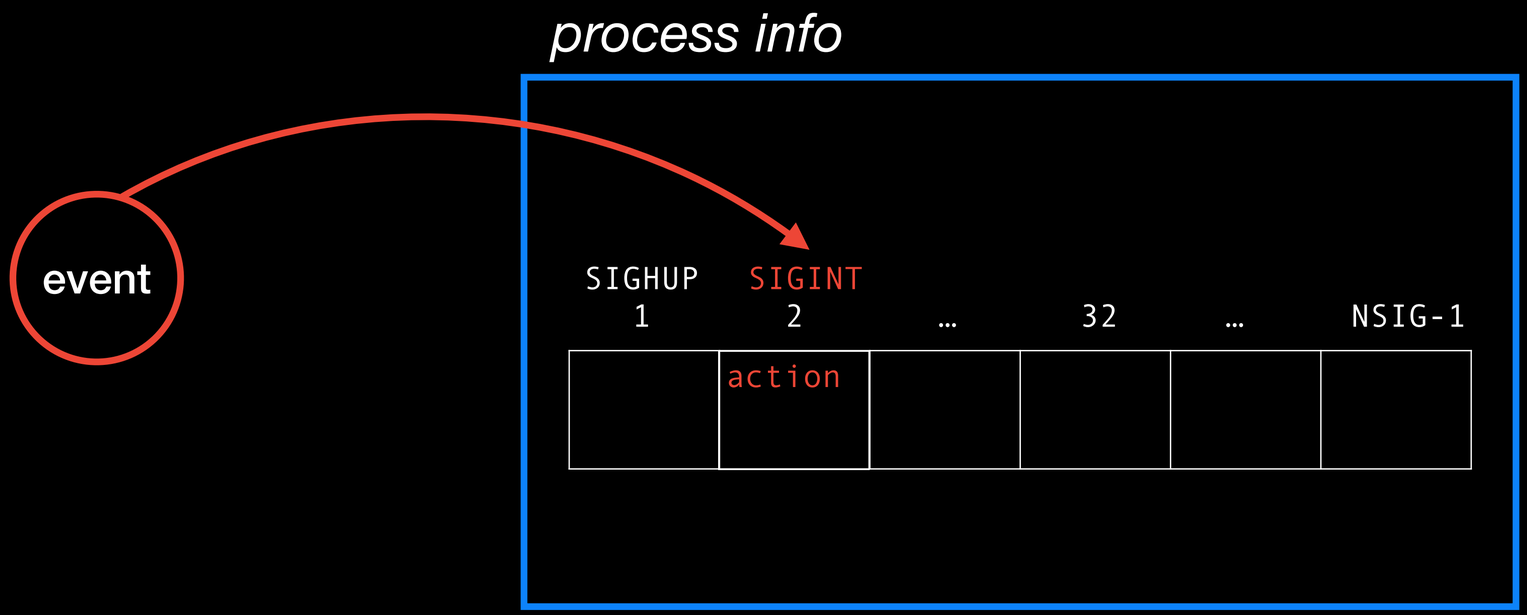

process info
event
SIGHUP
1
SIGINT
2
…
32
…
NSIG-1
kernel space
user space
process



kernel space

user space

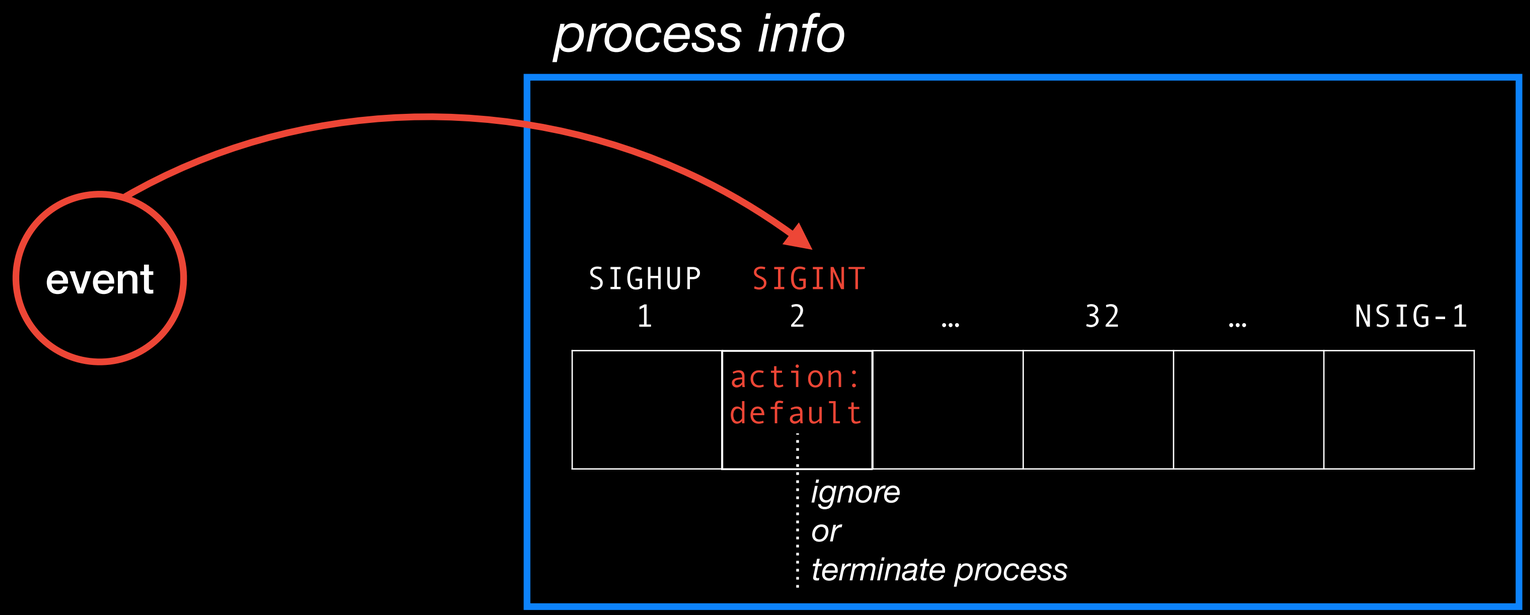
process



kernel space

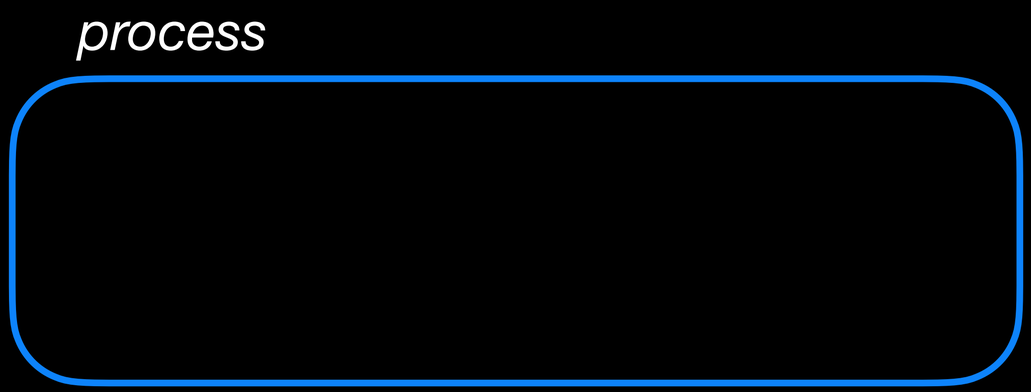
user space

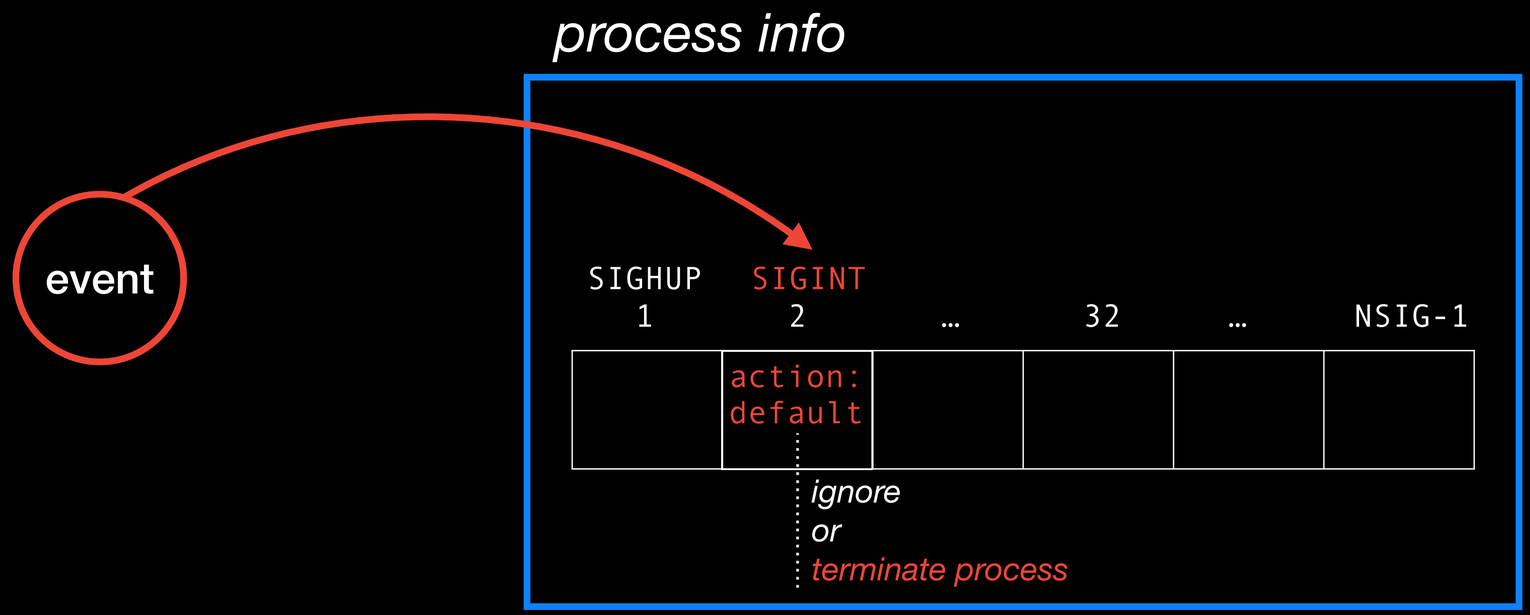
process



kernel space

user space



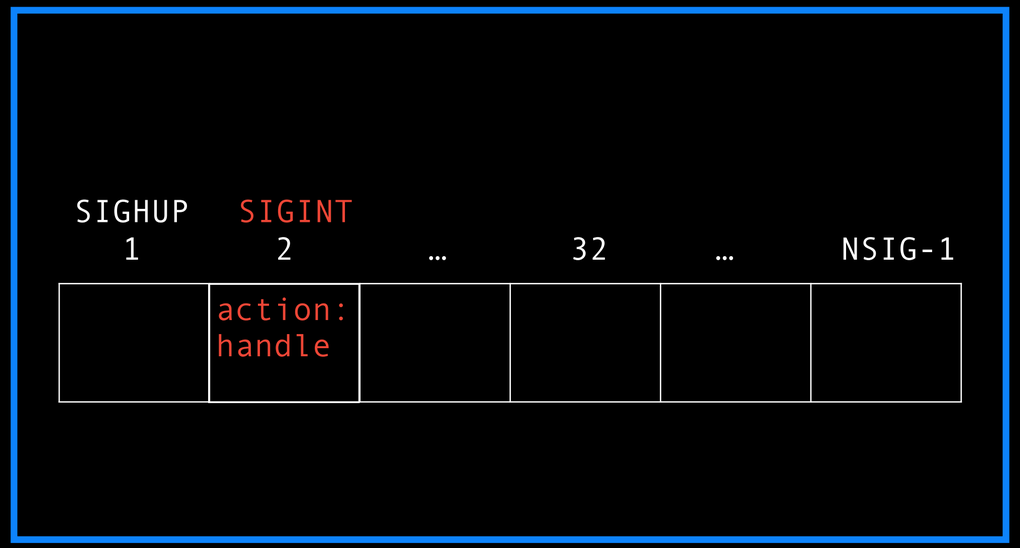


kernel space

user space

process

process info

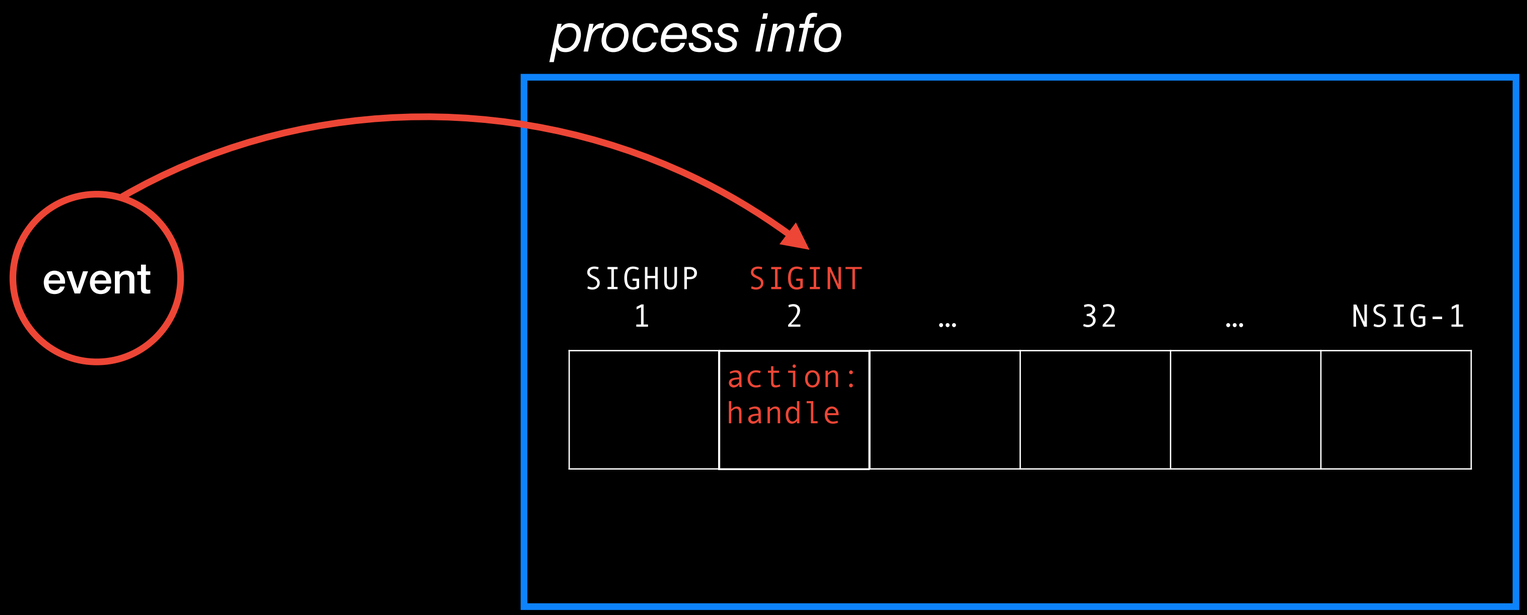


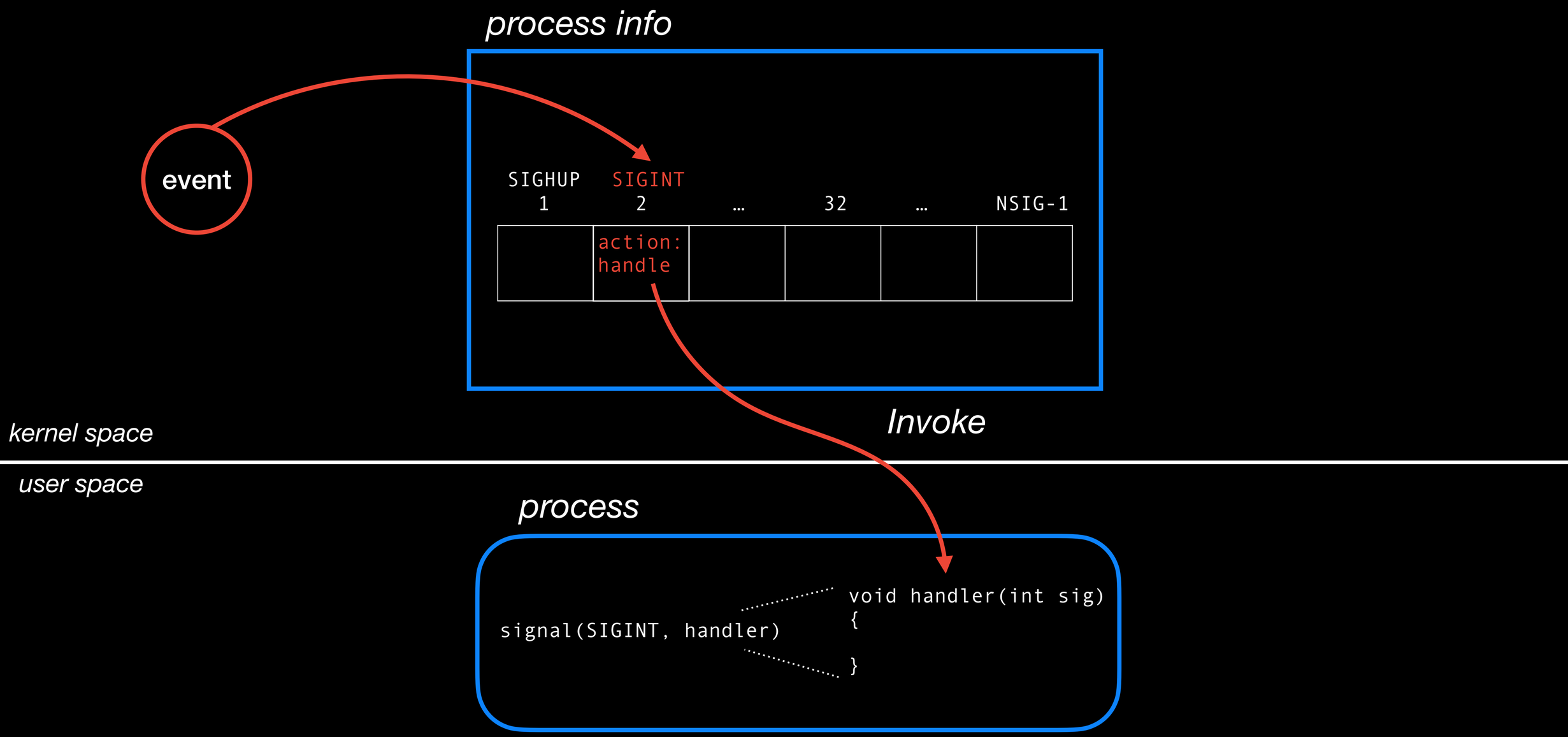
kernel space

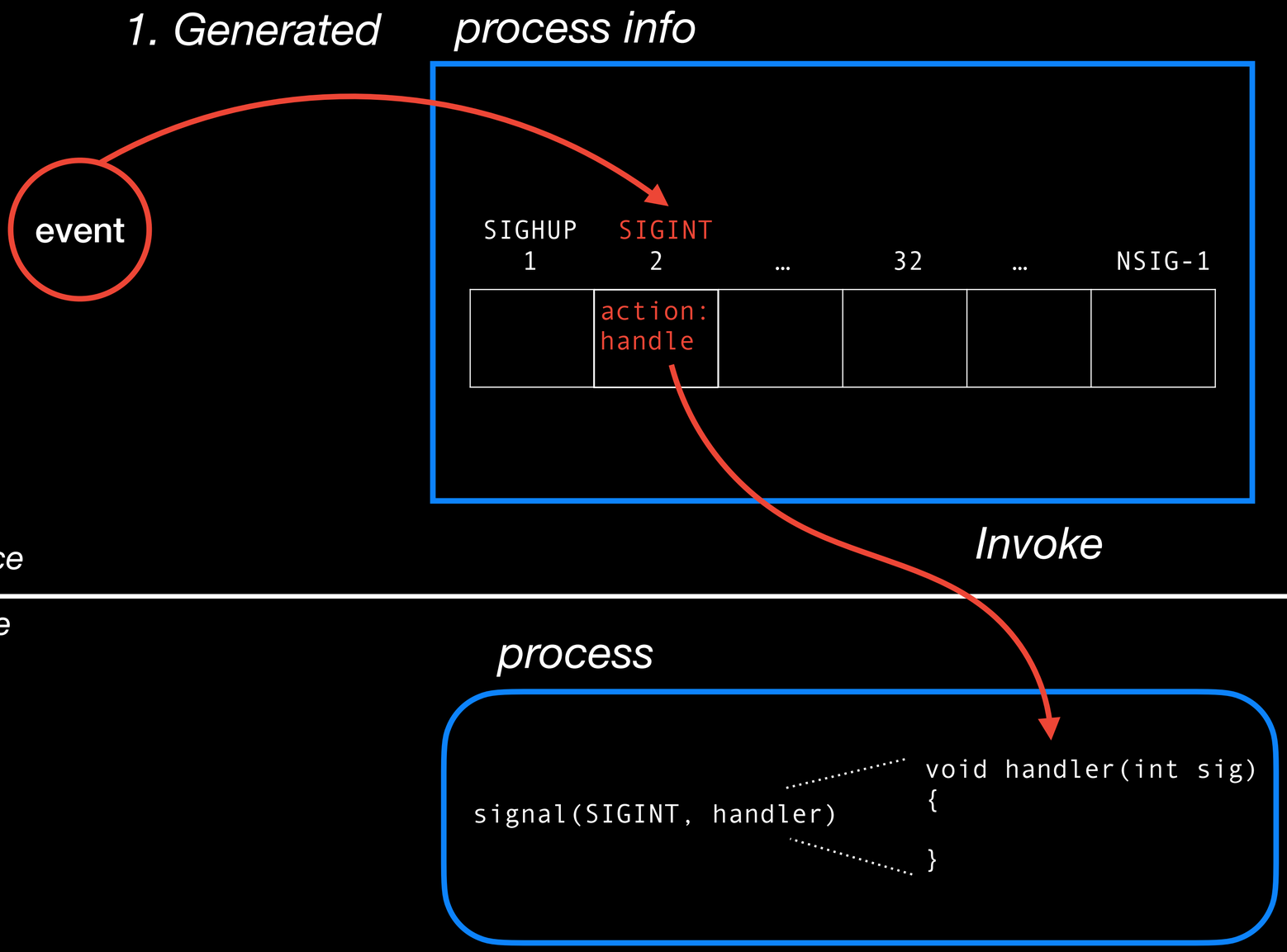
user space

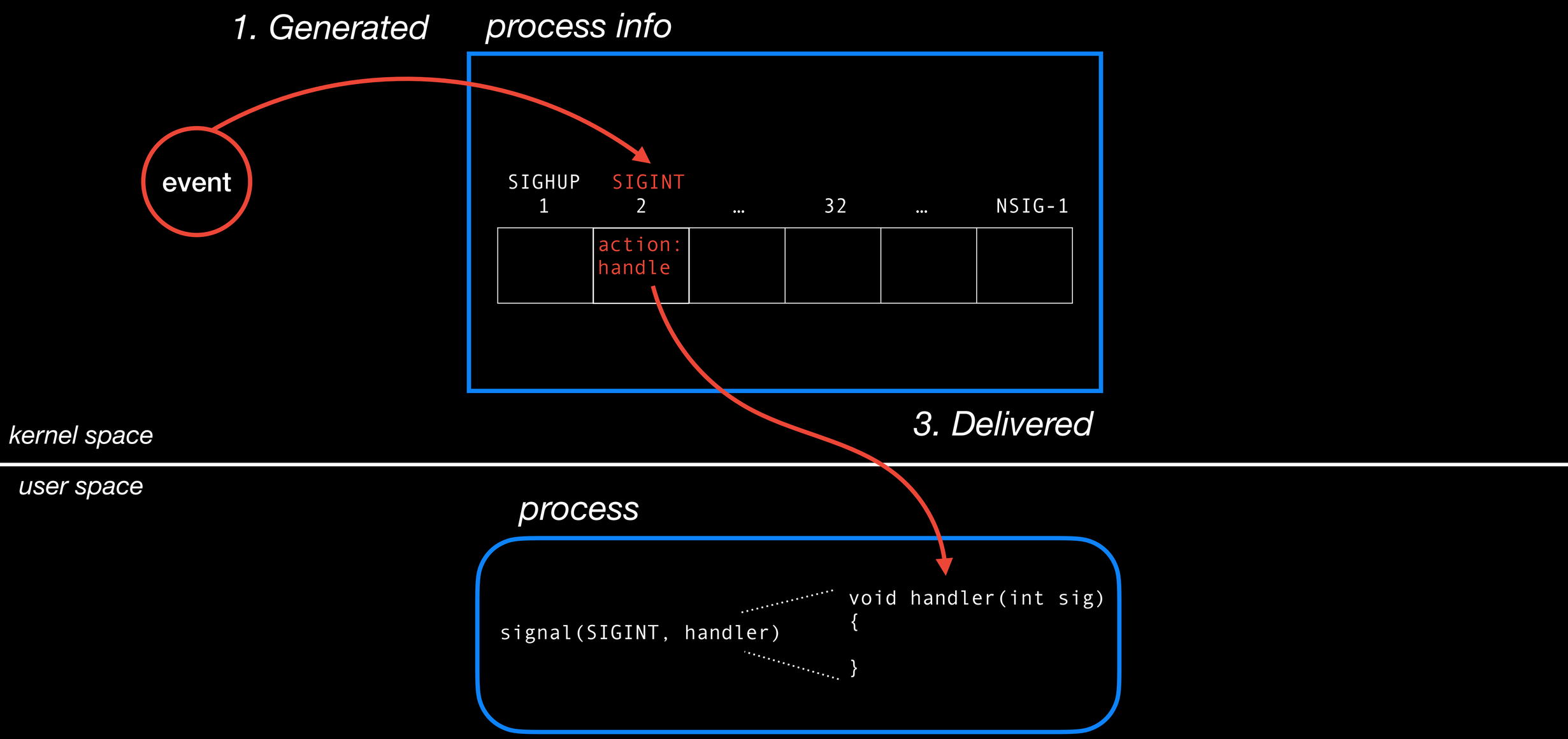
process

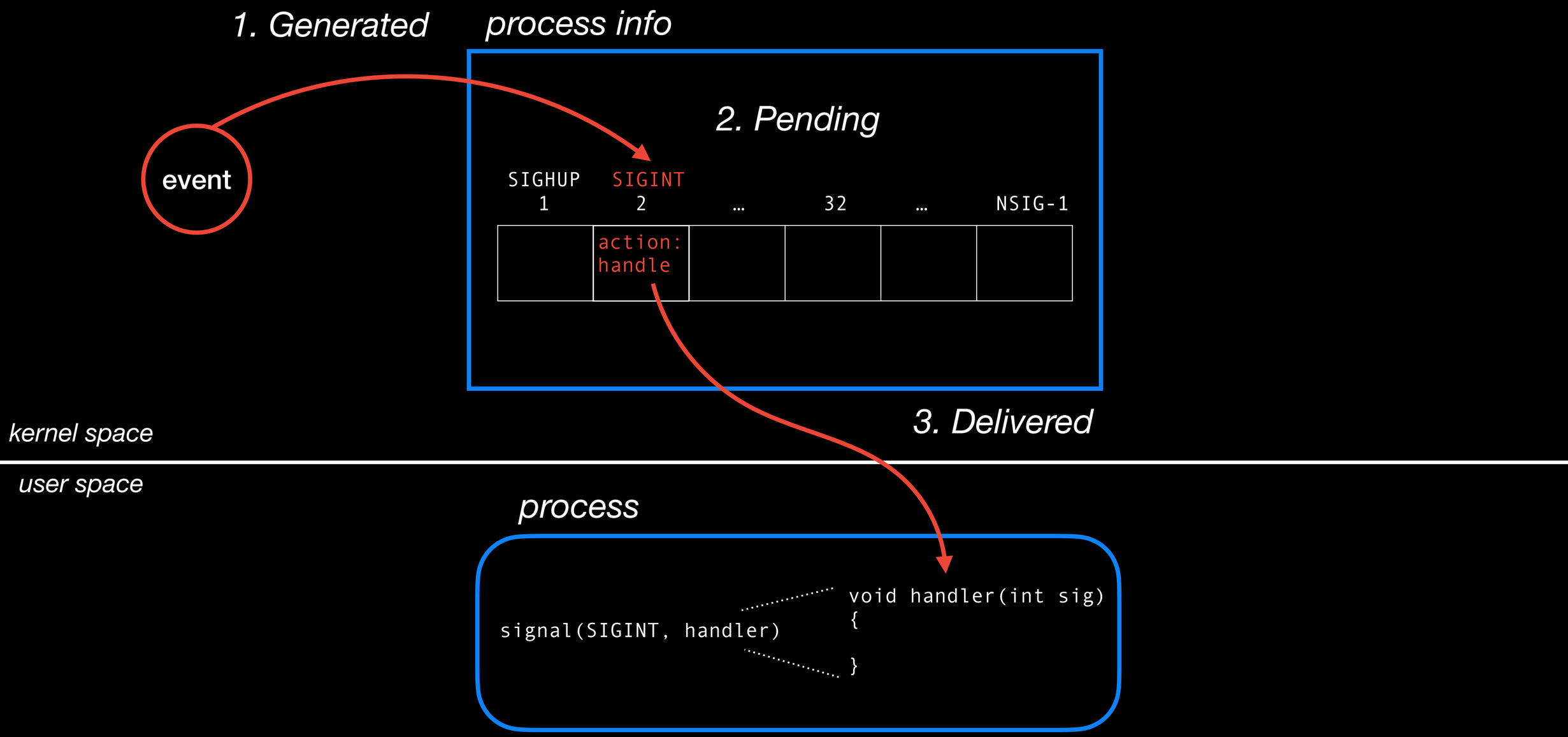
```
signal(SIGINT, handler)

void handler(int sig)
{

}
```

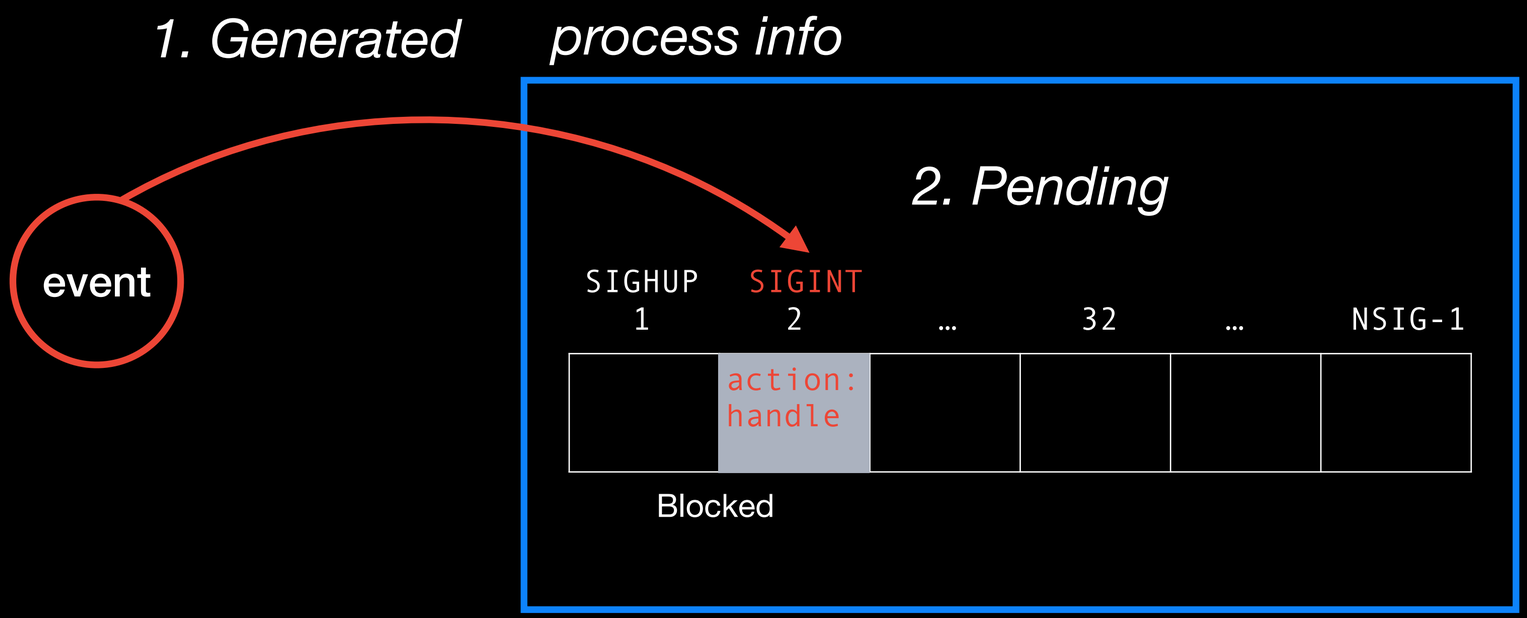

process info
event
SIGHUP
1
SIGINT
2
…
32
…
NSIG-1
action:
handle
kernel space
user space
process
signal(SIGINT, handler)
void handler(int sig)
{
}


process info
event
SIGHUP
1
SIGINT
2
…
32
…
NSIG-1
action:
handle
Invoke
kernel space
user space
process
signal(SIGINT, handler)
void handler(int sig)
{
}


1. Generated
process info
event
SIGHUP
1
SIGINT
2
…
32
…
NSIG-1
action:
handle
Invoke
kernel space
user space
process
signal(SIGINT, handler)
void handler(int sig)
{
}

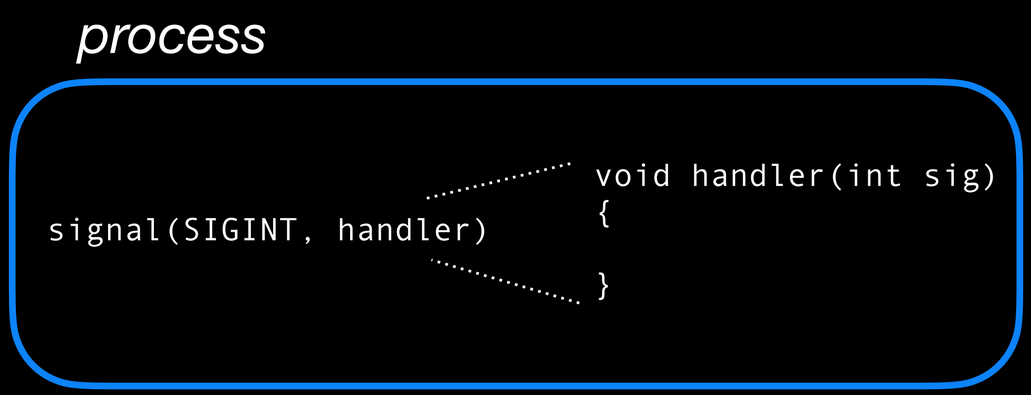

1. Generated
process info
event
SIGHUP
1
SIGINT
2
…
32
…
NSIG-1
action:
handle
3. Delivered
kernel space
user space
process
signal(SIGINT, handler)
void handler(int sig)
{
}

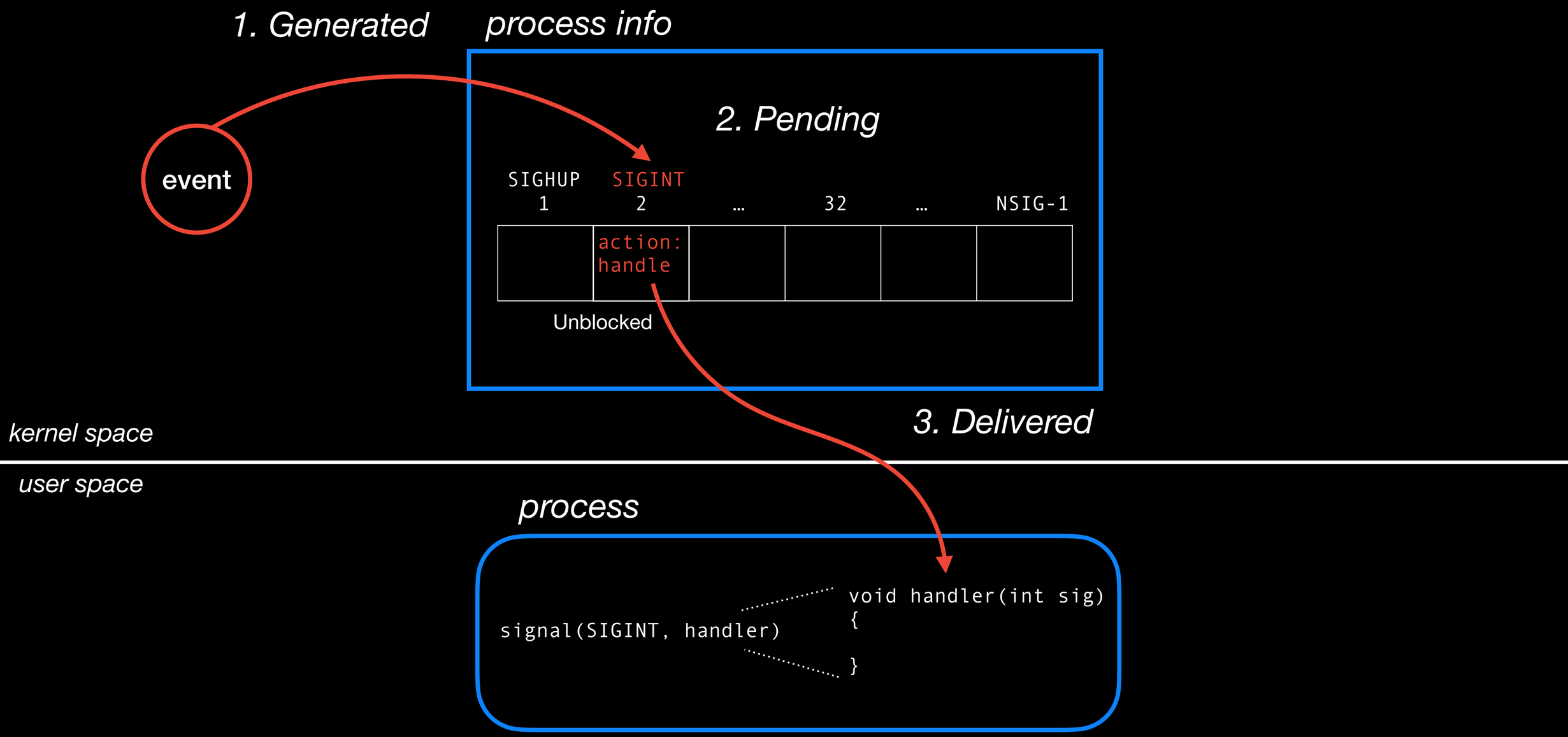

1. Generated
process info
event
2. Pending
SIGHUP
1
SIGINT
2
…
32
…
NSIG-1
action:
handle
3. Delivered
kernel space
user space
process
signal(SIGINT, handler)
void handler(int sig)
{
}



kernel space

user space




1. Generated
process info
event
2. Pending
SIGHUP
1
SIGINT
2
…
32
…
NSIG-1
action:
handle
Unblocked
3. Delivered
kernel space
user space
process
signal(SIGINT, handler)
void handler(int sig)
{
}