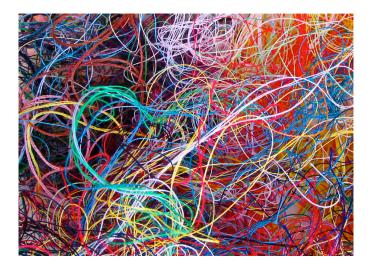
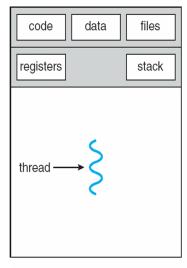
## **Threads**

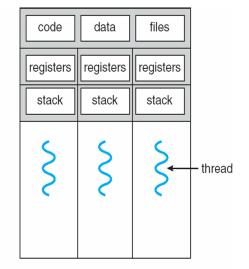


Bowdoin Sean Barker 4

## **Multithreaded Processes**



single-threaded process



multithreaded process

Bowdoin Sean Barker 5

### **Thread APIs**

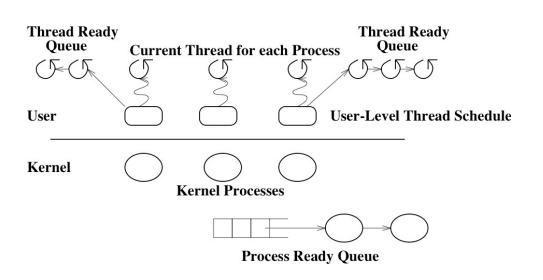
```
POSIX Threads (Pthreads):
    pthread_create(&tid, NULL, my_fun, &param); // thread runs my_fun

Win32 Threads:
    ThreadHandle = CreateThread(NULL, 0, MyFun, &Param, 0, &ThreadID);

Java Threads:
    Thread t = new Thread(new MyRunnable(param));
    t.start(); // start the thread running MyRunnable.run()
```

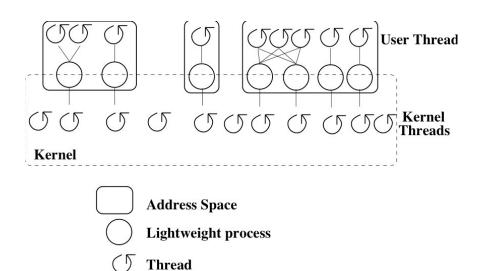
Bowdoin Sean Barker

#### **User-Level Threads**



Bowdoin Sean Barker 7

# **Lightweight Processes**



Bowdoin

Sean Barker

## Threads Summary

- Threads vs processes
- User-level and kernel-level threads
- Thread interfaces vs implementations

Bowdoin

Sean Barker

9