



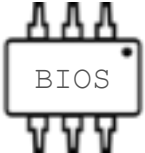
Botstrapping

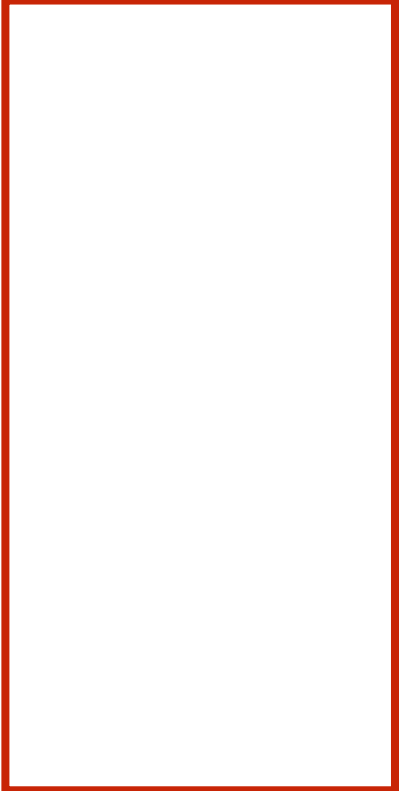
I/O

OXFORD

0x0000000000000000

















BIOS

Step 1: Power-on! The CPU starts executing code contained in the **BIOS** (basic input/output system)

## Bootloader

Step 2: the BIOS loads the **bootloader** from a device  
(hard-drive, USB, network ...) based on the configuration

Kernel

Step 3: the bootloader loads the OS kernel in RAM





stack

The diagram consists of three vertically stacked rectangular boxes. The top box is orange and labeled 'stack'. A black arrow points downwards from the bottom center of the orange box to the top center of the middle box. The middle box is yellow and labeled 'heap'. The bottom box is green and labeled 'Terminal'.

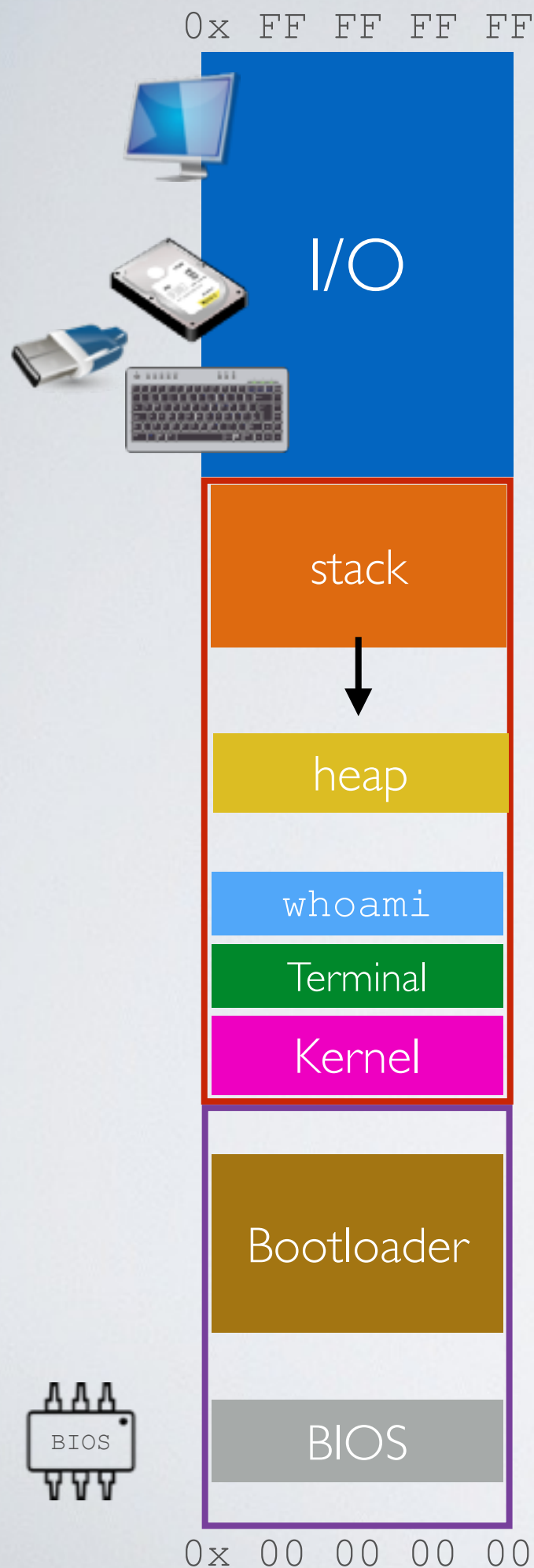
heap

Terminal

Step 4: the kernel starts the user-interface program  
(e.g Bash terminal)

Step 5: using the terminal, users can execute programs (e.g Bash terminal) ... and repeat

```
whoami
```



# Bootstrapping

Step 5: using the terminal, users can execute programs (e.g Bash terminal) ... and repeat

Step 4: the kernel starts the user-interface program (e.g Bash terminal)

Step 3: the bootloader loads the OS kernel in RAM

Step 2: the BIOS loads the **bootloader** from a device (hard-drive, USB, network ...) based on the configuration

Step 1: Power -on! The CPU starts executing code contained in the **BIOS** (basic input/output system)

The need for **concurrency**