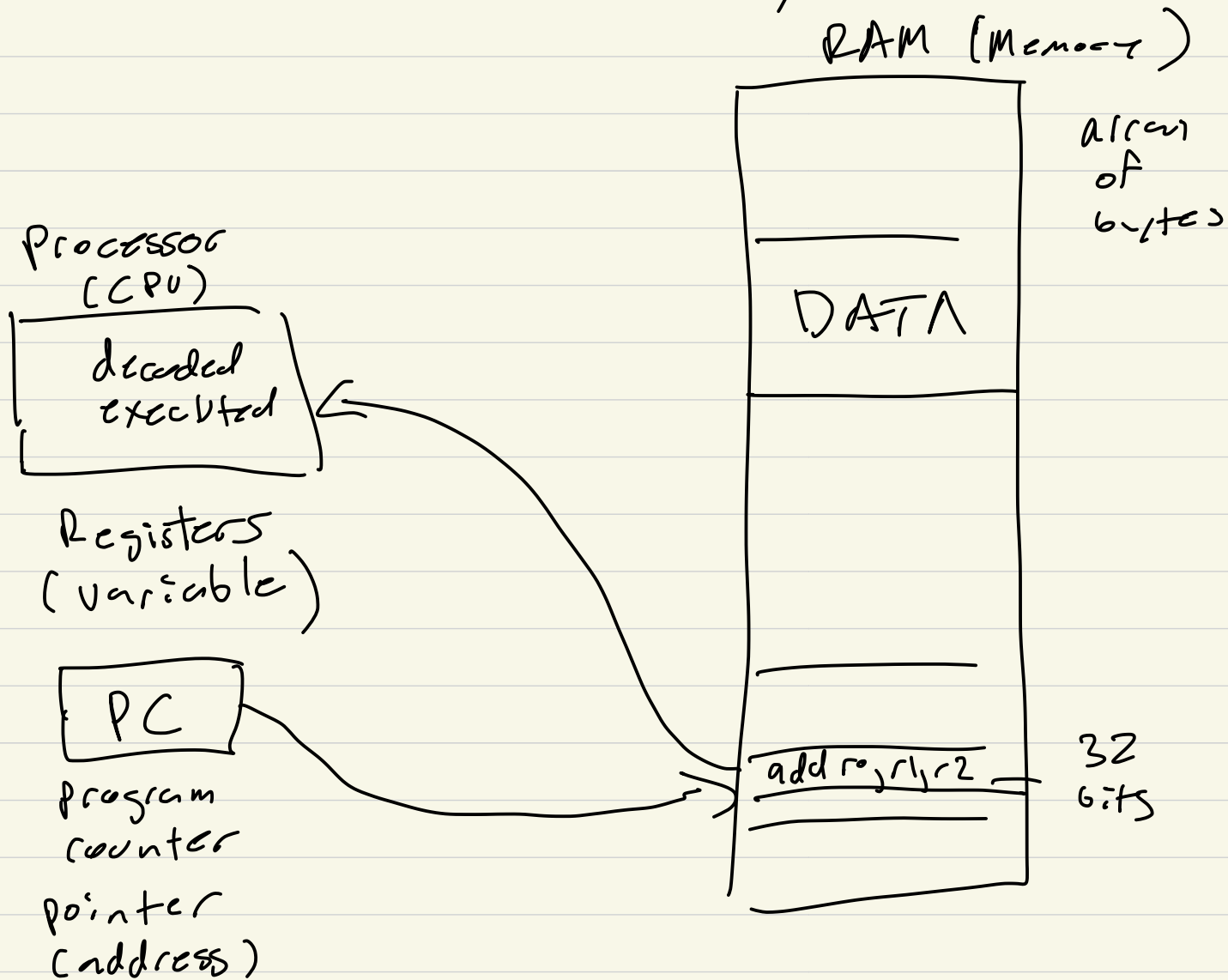


CS 326-02 Code and Memory



Life of the processor

while (1) {

$IW = \text{RAM}[PC]$

instruction word

decode and execute IW

update PC

$PC = PC + 4$;

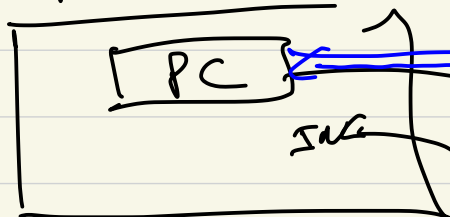
}

- 4 classes of instructions
- (1) Data Processing
 - (2) Memory
 - (3) Control
 - (4) Privileged
- USER space
- Kernel

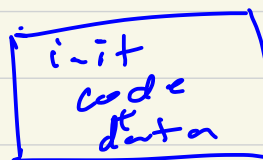
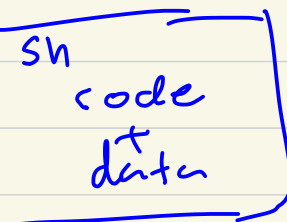
Physical
Memory

RAM (Memory)

Processor



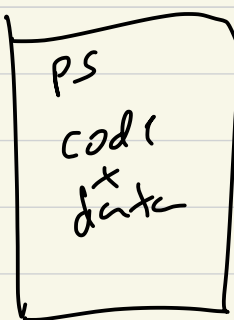
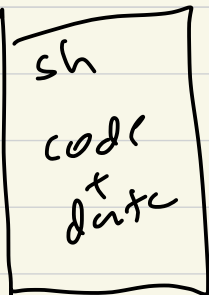
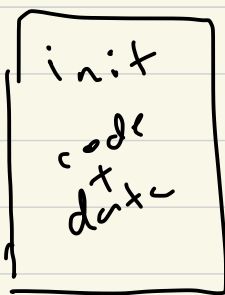
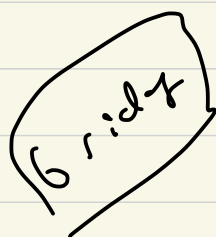
user
mode



...

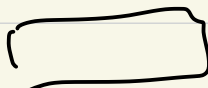
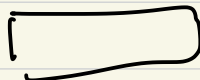
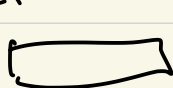
Kernel
mode

Kernel
code
+
data



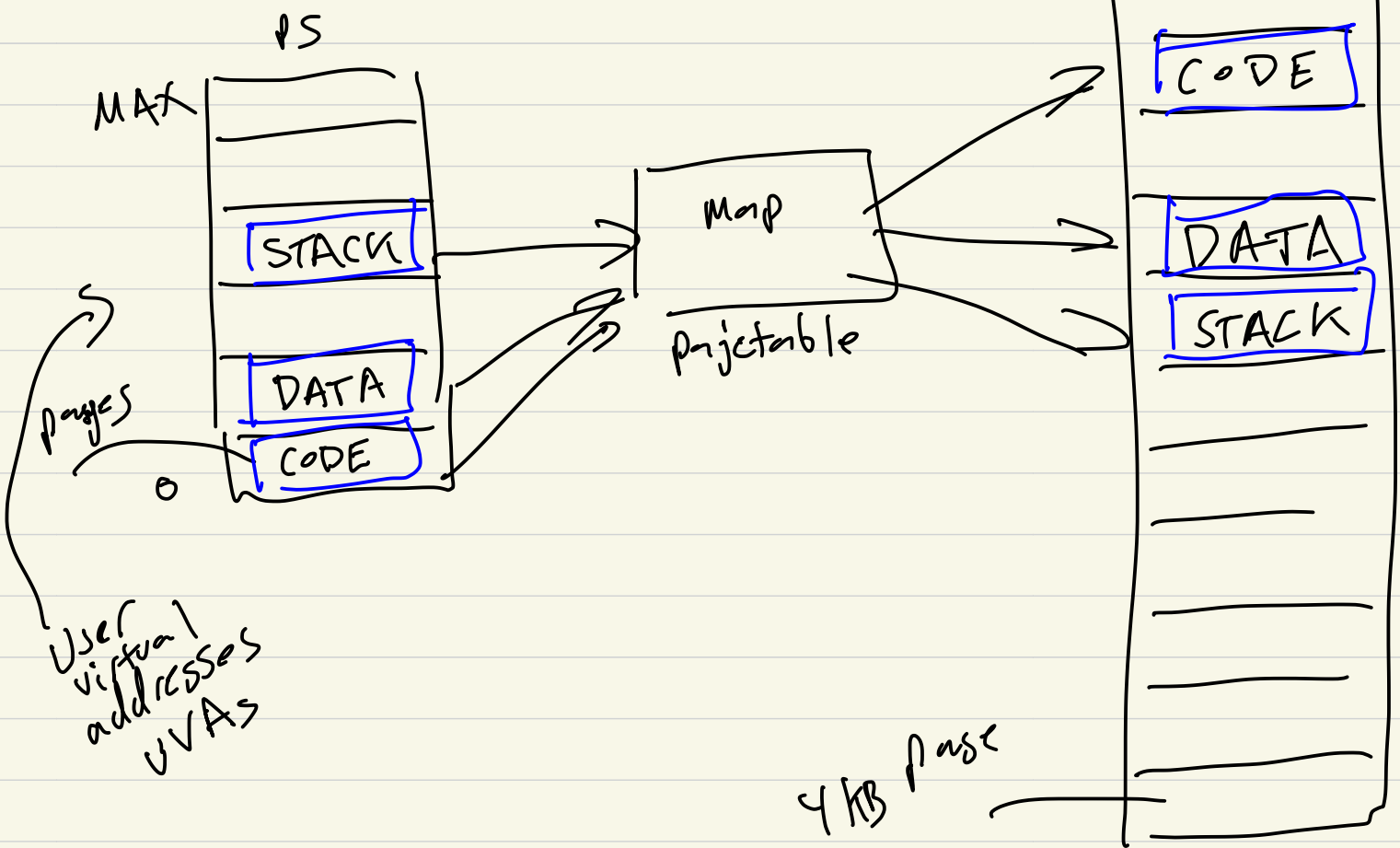
user

Kernel



code
+
data

Virtual Memory page table

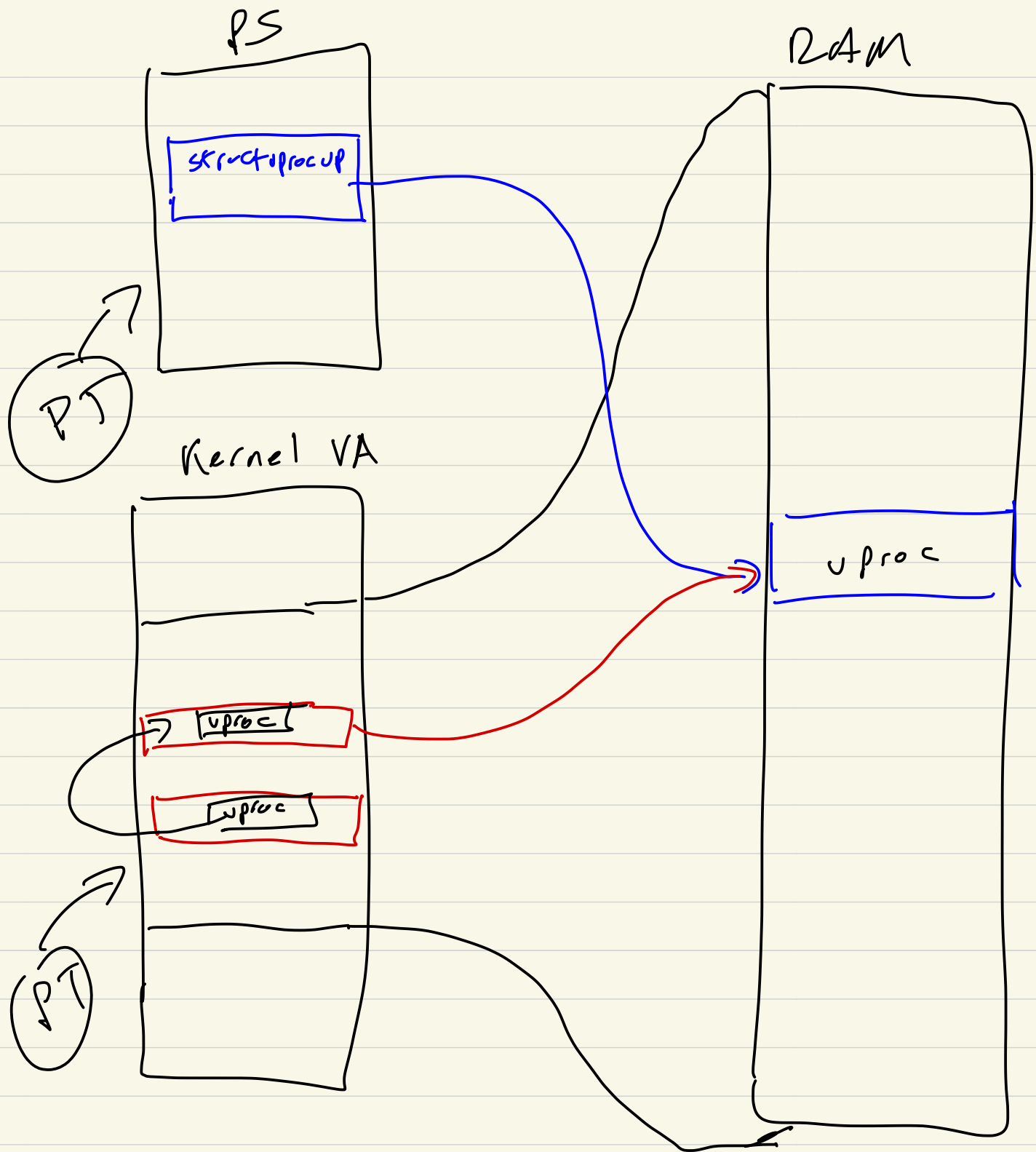


processor

$$IW = RAM[PC]$$

↓

$$IW = RAM[MAP(PT, PC)]$$



copy out (pagetable, $\begin{matrix} \text{VVA} \\ \text{user} \\ \text{virt} \\ \text{addr} \end{matrix}$, $\begin{matrix} \text{KVA} \\ \text{Kerne} \\ \text{virt} \\ \text{addr} \end{matrix}$, size