

Decisions and reminders

Process Control Block (PCB) = a struct that contains everything the OS needs to support a process.

We will use one whole page.

- 1st half, PCBaddr ! 0 to PCBaddr ! 1023:
saved register values and other things
- 2nd half, PCBaddr ! 1024 to PCBaddr ! 2047:
the page directory

```
PCB_addr := get_free_pn() << 11;
PD_addr := PCB_addr + 1024;
```

A 32 bit Virtual Address as used by the CPU

T₉T₈T₇T₆T₅T₄T₃T₂T₁T₀P₁₀P₉P₈P₇P₆P₅P₄P₃P₂P₁P₀F₁₀F₉F₈F₇F₆F₅F₄F₃F₂F₁F₀

T₉T₈T₇T₆T₅T₄T₃T₂T₁T₀ = which entry in the PD holds the address of the right PT
P₁₀P₉P₈P₇P₆P₅P₄P₃P₂P₁P₀ = which entry in the PT holds the address of the right page
F₁₀F₉F₈F₇F₆F₅F₄F₃F₂F₁F₀ = which word in that page to use (offset)

Virtual Address range = 00000000₁₆ to FFFFFFFF₁₆, or 0 to 4,294,967,295
divided by number of PD entries, 1024, gives 400000₁₆ or 4,194,304.
Each PD entry gives access to 4 Mega-words.

1023:	addrs FFC00000 to FFFFFFFF	
...	...	
768:	addrs C0000000 to C03FFFFFF	↑ OS attic
767:	addrs BF400000 to BFFFFFFF	OS stack ↓
...	...	
...	...	↑
512:	addrs 80000000 to 803FFFFFF	OS code and globals
511:	addrs 7F400000 to 7FFFFFFF	user stack ↓
...	...	
...	...	
256:	addrs 40000000 to 403FFFFFF	
255:	addrs 3F400000 to 3FFFFFFF	
...	...	
...	...	
2:	addrs 00800000 to 00BFFFFFF	
1:	addrs 00400000 to 007FFFFFF	↑
0:	addrs 00000000 to 003FFFFFF	user code and globals

PD_addr →

The plan is to put something where it isn't already.

Physical memory as it is now	
<i>non-existent</i>	
7FFFFFFF	the stack
...	(32 pages)
7FFF0000	
<i>non-existent</i>	
000FFFFF	
...	
...	everything else
...	(512 pages)
00000000	

The plan, with V.M.		
FFFFFFFF		
...		
C0000000	OS attic	
BFFFFFFF	OS Stack	put a page here
...		
...		
...		
80000000	OS code	move our program here
7FFFFFFF	USR stack	put a page here
...		
...		
40000000		
3FFFFFFF		
...		
...		
...		
...		
...		eventually put a little
00000000	USR code	program down here

Moving a program can stop certain things from working.