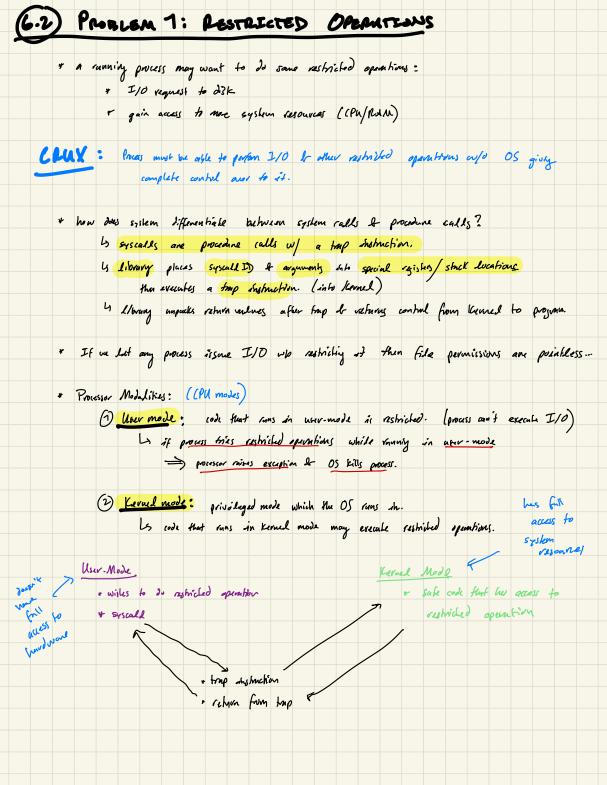
## 6 Mechanism: Limited Direct Exec.

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In locations of trap handlers assigned to specific traps/exceptions. (trap = trap handler addr.)

Ly this way, hurdware knows where to jump when a trap is called.

(until subort)

	OS (Kroel)	KAROWAE	PROGRAM (wer)
Vook			
(1)	initialize top toble		
(2)	(دعه هدد	share locations of trap homlers	
3	create entry for process list		
(A)	allocate mem for average		
X	head around who man		
	setuo mor stack		
	fill kirned stack w/ ray	IPC	
8	return from two		
(9)	initialize top broke  mative growth)  (viole entry for process list  allocate mem for program  boad program with onean  setup uper stack  fill Kernel stack w/ very  return from top	restore regs from Kerned Strack	
		to wer spect	
(10)		more to user mode	
(11)	Jum process	jump to contry point	
$\widetilde{m}$	Jrun process		Sted executing
			\$ 0
(13)	prival yed		call syscall
(14)	opention		trup into OS
75		save regs to kernel shock	
(96)		more to knowled mode	
(77)		jump to trap hundher	
18	handle trap	0	
(ia)	do work of 145call		
1000	return from map		
(F)		restore regs from Kened Street	
(22)	(DOCKTINULE)	to user spect	
$\sim$		more to user mode	
(12)		jump to PC	
			¥
(29)			return from program
P (F)	clean process		tmp (exit)
(26)	free mem of process remove from pous lis		
(29).	remove from pous lis	f	

TIP: Ensure new passes valid args to syscall. \* user program is required to specify correct systeal ID in register before top (63) PROBEEM 2: SWOTCHEAU BETWEEN PROCESSES \* Issue: consider a single CPU machine, then of one process is roundy that must mean the OS is convently not mining. How Joss OS switch between processes? CRUY: How to regain control of the CPUZ \* A Cooperative Approach & Wort For Syscalls \* OS trusts the processes of the cyslem to behave responsibly (first originals) La assumes that a process will periodically give up CPU at running for too long In most processes and up transferry control to OS frequently w/ system calls. \* These types of systems also typically richede a yield syscall for process to intentionally give up CPU usagu who needery to do a nestricted operation. \* Cheminally, if a program obes comething ittegal (access restricted memory), it will generate a trop into OS. \* Q: what if a non-malicious process gate cought in infinite loop?

Ly how does OS nagain contral? (A: NEBOOT!) Non-Cooperative Approach: OS Tates Contact " OS roully con't do onch if a process doesn't make syscells. CAX: How to regard control upo cooperation? \* A: implement a finer intermet, i.e. \* for every specific interval of time, raise an interrupt @ Book Fine, 4 OS implements pre-configured intempt boundless and knownel starts running. tells how du ave \* OS can now till, scoiled, or do whether it pleases wy the process. where timer hundler as In start timer.

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