

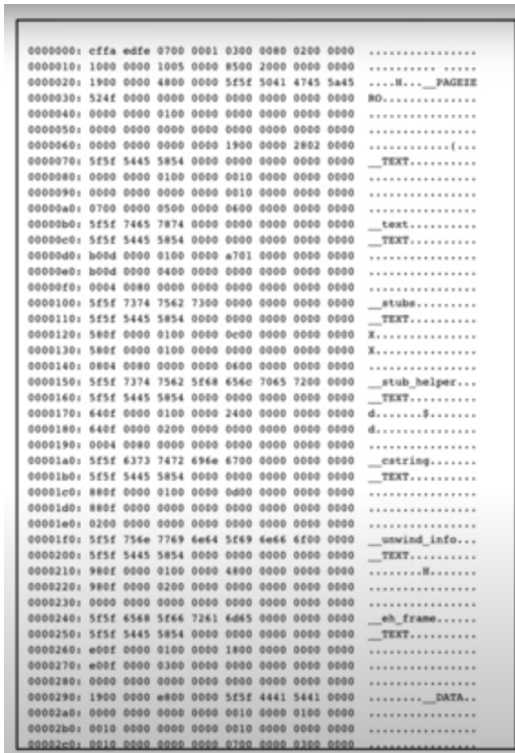
CSC209 Week 8 Notes

Hyungmo Gu

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Processes 1 of 8

- Process Models
 - Program
 - * The executable instructions of a program
 - * Source code
 - * Compiled machine code



```
0000000: cffa edfe 0700 0001 0300 0080 0200 0000 .....
0000010: 1000 0000 1005 0000 8500 2000 0000 0000 .....
0000020: 1900 0000 4800 0000 5f5f 5041 4745 5a45 ....H...PAGEEE
0000030: 524f 0000 0000 0000 0000 0000 0000 0000 NO.....
0000040: 0000 0000 0100 0000 0000 0000 0000 0000 .....
0000050: 0000 0000 0000 0000 0000 0000 0000 0000 .....
0000060: 0000 0000 0000 0000 1900 0000 2802 0000 .....{...
0000070: 5f5f 5445 5854 0000 0000 0000 0000 0000 __TEXT.....
0000080: 0000 0000 0100 0000 0010 0000 0000 0000 .....
0000090: 0000 0000 0000 0000 0010 0000 0000 0000 .....
00000a0: 0700 0000 0500 0000 0600 0000 0000 0000 .....
00000b0: 5f5f 7465 7874 0000 0000 0000 0000 0000 __text.....
00000c0: 5f5f 5445 5854 0000 0000 0000 0000 0000 __TEXT.....
00000d0: b00d 0000 0100 0000 a701 0000 0000 0000 .....
00000e0: b00d 0000 0400 0000 0000 0000 0000 0000 .....
00000f0: 0004 0080 0000 0000 0000 0000 0000 0000 .....
000100: 5f5f 7374 7562 7300 0000 0000 0000 0000 __stubs.....
000110: 5f5f 5445 5854 0000 0000 0000 0000 0000 __TEXT.....
000120: 580f 0000 0100 0000 0c00 0000 0000 0000 X.....
000130: 580f 0000 0100 0000 0000 0000 0000 0000 X.....
000140: 0804 0080 0000 0000 0600 0000 0000 0000 .....
000150: 5f5f 7374 7562 5f68 656e 7065 7200 0000 __stub_helper...
000160: 5f5f 5445 5854 0000 0000 0000 0000 0000 __TEXT.....
000170: 640f 0000 0100 0000 2400 0000 0000 0000 d.....$.....
000180: 640f 0000 0200 0000 0000 0000 0000 0000 d.....
000190: 0004 0080 0000 0000 0000 0000 0000 0000 .....
0001a0: 5f5f 6373 7472 496e 6700 0000 0000 0000 __cstring.....
0001b0: 5f5f 5445 5854 0000 0000 0000 0000 0000 __TEXT.....
0001c0: 880f 0000 0100 0000 0d00 0000 0000 0000 .....
0001d0: 880f 0000 0000 0000 0000 0000 0000 0000 .....
0001e0: 0200 0500 0000 0000 0000 0000 0000 0000 .....
0001f0: 5f5f 756e 7769 6e64 5f69 6e66 6f00 0000 __unwind_info...
000200: 5f5f 5445 5854 0000 0000 0000 0000 0000 __TEXT.....
000210: 980f 0000 0100 0000 4800 0000 0000 0000 .....H.....
000220: 980f 0000 0200 0000 0000 0000 0000 0000 .....
000230: 0000 0000 0000 0000 0000 0000 0000 0000 .....
000240: 5f5f 6548 5f46 7241 6d45 0000 0000 0000 __eh_frame.....
000250: 5f5f 5445 5854 0000 0000 0000 0000 0000 __TEXT.....
000260: 400f 0000 0100 0000 1800 0000 0000 0000 .....
000270: 400f 0000 0300 0000 0000 0000 0000 0000 .....
000280: 0000 0000 0000 0000 0000 0000 0000 0000 .....
000290: 1900 0000 4800 0000 5f5f 4441 5441 0000 .....DATA..
0002a0: 0000 0000 0000 0000 0010 0000 0100 0000 .....
0002b0: 0010 0000 0000 0000 0010 0000 0000 0000 .....
0002c0: 0010 0000 0000 0000 0700 0000 0300 0000 .....
```

- Process
 - * Running instance of program
- Process Control Block (PCB)

- * is a data structure used by computer operating system to store all information about process.

– Top

- * is a basic unix command useful for observing current state of Unix System.

```
top - 14:23:18 up 11 days,  4:50, 13 users,  load average: 0.00, 0.05, 0.09
Tasks: 666 total,   1 running, 662 sleeping,   3 stopped,   0 zombie
Cpu(s):  0.0%us,  0.0%sy,  0.0%ni,100.0%id,  0.0%wa,  0.0%hi,  0.0%si,  0.0%st
Mem:   65954776k total, 46558744k used, 19396032k free, 33357016k buffers
Swap: 102399996k total,    0k used, 102399996k free,  9139880k cached
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
8	root	20	0	0	0	0	S	0	0.0	12:03.39	rcu_sched
2196	root	39	19	0	0	0	S	0	0.0	47:40.80	kipmi0
13365	reid	20	0	17732	1768	964	R	0	0.0	0:00.54	top
23412	root	20	0	0	0	0	S	0	0.0	0:21.41	kworker/2:0
51571	c4user	24	4	30668	5960	1228	S	0	0.0	8:47.88	tmux
1	root	20	0	24452	2372	1336	S	0	0.0	0:09.76	init

– Three-state Process Management Model

- * A program is in either one of three states:
 - **Running:** The process that is currently being executed
 - **Ready:** A process that is queuing and prepare to execute when given the opportunity
 - **Blocked:** A process that cannot execute until some event occurs, i.e. waking up from sleep