

CSE 351 Section 8 – Processes and Virtual Memory

Welcome back to section, we're happy that you're here ☺

Fork and Concurrency:

Consider this code using Linux's `fork`:

```
int x = 7;
if( fork() ) {
    x++;
    printf(" %d ", x);
    fork();
    x++;
    printf(" %d ", x);
} else {
    printf(" %d ", x);
}
```

Write all four of the different possible outputs (i.e. order of things printed) for this code?

Tip: try drawing a process graph for this program

Exercises:

- 1) Name three specific benefits of using virtual memory:
- 2) What should happen to the TLB when a new entry is loaded into the page table base register?
- 3) Fill in the formulas below using *descriptions*, not variables:

Page offset bits = $\log_2(\text{_____})$

Virtual address bits = _____ + page offset bits

Physical address bits = physical page number bits + _____

Virtual page number bits = $\log_2(\text{_____})$

Entries in a page table = _____

- 4) Fill in the following table:

VA width (n)	PA width (m)	Page size (P)	VPN width	PPN width	Bits in PTE (assume V, D, R, W, X)
32	32	16 KiB			
32	26			13	
	32		21		22
		32 KiB	25		26
64			48		29

