Recitation9

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- Malloc due next Tuesday

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- Then Operating Systems...right?

Let's get to business...

What's on the Exam?

- Signals
- Virtual Memory
- Optimizations
- fork(), exec()
- IO, file descriptors
- malloc
- ...and anything in lecture/recitations/labs

First things first...

Cookies!

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Cookies!

Warner Bros

First and most important question...

What's your TA's name?

(This handsome guy)

Ok, here's a real question...

How many times will the following program print “15213 rocks!”?

```
#define N (15213)

int main()
{
    int i;
    for (i=0; i< N; i++)
    {
        fork();
        fork();
        printf(“15213 rocks!\n”);
    }

    printf(“No really it does...\n”);
}
```

Remember tshlab...

Why is it that exec() never returns?

Imagine you have a friend...

...who writes the following malloc. What do you tell him?

```c
#define N (15213)

void *malloc(size_t size)
{
    char buf[1024];

    if (size > 1024)
        return NULL;

    return buf;
}
```

Another malloc question...

How would you describe the output of this program?

```
int main()
{
    if (fork() == 0)
        printf(“%d\n”,(int)malloc(4));
    else
        printf(“%d\n”,(int)malloc(4));
}
```

tshlab...

What is the problem with this piece of code?

```
sigprocmask(SIG_BLOCK, &mask);
...
if (fork() == 0)
{
...
}

sigprocmask(SIG_UNBLOCK, &mask);

while(getfgpid())
    pause();
```

NVIDIA interview question...

Say you ran a program with a profiler and found that a specific function took up 20% of the time of your program.

You then found that you could remove the function with no side effects.

After doing so, your program now runs more than 20% better. How is this possible?

Virtual memory time...

What are the advantages of a two-level page table over a one-level page table?

Virtual memory time...

Given a full two-level page table how much space would be taken up by page directories/tables?

malloc...

What are the pros/cons of implicit vs. explicit list?

ah segfaults...

What occurs during a segfault besides you banging your head on the desk?

VM question...

- Two-level page table
- Memory is byte addressable
- VA are 32 bits wide
- 8 bits for VPN1
- 8 bits for VPN2
- 16 bits for VPO
- PA are 24 bits wide

hrm...

Why do we use the top bits of a Virtual Address to index into a table rather than the bottom bits?

That's it!

Good luck!

Get a good night's sleep!

Be prepared!

Ace this stupid test!