Exam Tomorrow!
Today
Exam Logistics
Review Questions
Exam Logistics

Closed book!

Info Sheet will be provided

Lectures 1-9, Labs 1-3, Assigned Readings

Review Session tonite!
Integers, Floating Point
Signed vs. Unsigned
Two’s complement
Floating Point Representation
Normalized vs. Denormalized
x86, x86_64

Memory Addressing Modes
LEA, MOV, CMP, JMP

x86 vs. x86_64

Switch Statement

STACK!!!

Arrays, Structs, Unions
Review Questions
What is the hex representation of the following expression?

\[-0xc0c0c0c0c0c0\]
If you wrote a program and compiled it for x86 and x86-64 processors, which would generally have more memory accesses and why?
Which values are exactly representable in Floating Point?
What does the following program print?

```c
int main()
{
    unsigned int i = 0;

    if (i < -1) {
        printf("hello\n");
    } else {
        printf("goodbye\n");
    }
}
```
What does the following program print?

```c
int main()
{
    unsigned int i = 0xffffffff;
    int j = (int)i;

    printf("%d\n", j);
}
```
What does the following program print?

```c
int main()
{
    float i = 1.5;
    int j = (int)i;

    printf("%d\n", j);
}
```
Why is the implied 1 necessary in normalized floating point numbers?
What are some differences between x86 and x86_64?
What is the difference between the JMP and CALL instructions?
What is the difference between the LEA and MOV instructions?
What occurs in a **PUSH/POP** instruction?
What occurs in a LEAVE instruction?
What occurs in a **CMP** instruction?
What occurs in a RET instruction?
What are the min/max of an n-bit two’s complement number?
How much space does this `struct` take up?

```c
struct s {
    char c;
    double d;
    int i;
    void *v;
};
```
How much space does struct s1 take up?

```c
struct s0 {
    char c;
    double d;
};

struct s1 {
    char c;
    struct s0 array[2];
};
```
What does the instruction `JMP *0xdead(,%edx,4)` do?
Why is XOR %eax, %eax used instead of MOV $0, %eax?
int getbuf()
{
    char buf[32];

    Gets(buf);

    return 1;
}
What does the following program do?

```
0000000000400498 <hello>:
  400498:  push   %rbx
  400499:  mov    %edi,%ebx
  40049b:  test   %edi,%edi
  40049d:  je     4004b8 <hello+0x20>
  40049f:  lea    -1(%rbx),%edi
  4004a2:  callq  400498 <hello>
  4004a7:  mov    %ebx,%esi
  4004a9:  mov    $0x4005d8,%edi
  4004ae:  mov    $0x0,%eax
  4004b3:  callq  400398 <printf@plt>
  4004b8:  pop    %rbx
  4004b9:  retq
```
What is the difference between compiling this with `-O0` vs. `-O2`?

```c
void hi(int i) {
    hi(i);
}

int main() {
    hi(0);
}
```
Questions?
Last Thoughts
If you’ve studied hard over the weekend relax tonite, its good to keep a fresh mind for the exam...If not start studying!...and then relax...
Last Thoughts

Come to tonite’s Review Session!