Recitation5

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?

-0xc0c0c0c0

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?

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

    if (i < -1) {
        printf(“hello\n”);
    } else {
        printf(“goodbye\n”);
    }
}
```

What does the following program print?

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

    printf(“%d\n”, j);
}
```

What does the following program print?

```
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?

```
struct s {
  char c;
  double d;
  int i;
  void *v;
};
```

How much space does struct s1 take up?

```
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?

How does the stack look like at this point?

```
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?

```
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!