

Andrew Faulring

- faulring@cs.cmu.edu
- Office hours:
 - NSH 2504 (lab) / 2507 (conference room)
 - Tuesday 4-5
- Lab 3: due Monday (7 Oct), 11:59pm
- Lab 4: later this week (probably by Thursday)
- Exam 1: Tuesday (8 Oct), 6:00-7:30pm
Doherty Hall 2315

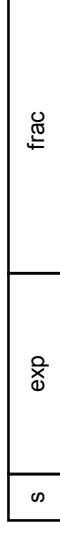
Recitation 5: Exam 1 Review

Andrew Faulring
15213 Section A
7 October 2002

Today's Plan

- Exam 1 review
 - Problems from last fall's exam 1
 - Floating Point
 - Unions

Floating Point



- s: sign bit
- exp: encodes E (m bits)
 - value unbiased
 - bias = $2^{m-1} - 1$
- frac: fractional number (n bits)
 - Normalized: [1.0, 2.0)
 - exp $\neq 0 \dots 0$ & exp $\neq 1 \dots 1$
 - Denormalized: [0.0, 1.0)
 - exp = $0 \dots 0$

Example: exp with 3 bits

exp	exp	E	2^E	(denorms)
0	000	-2	$\frac{1}{4}$	
1	001	-2	$\frac{1}{4}$	
2	010	-1	$\frac{1}{2}$	
3	011	0	1	
4	100	1	2	
5	101	2	4	
6	110	3	8	
7	111	n/a		(inf, n/a)

Practice Problems

- #2 floating point
- #1 two's-complement
- #5 array index
- #7 struct layout (with unions)

#7 changes

```
typedef union {  
    OldSensorData    oldData;  
    NewSensorData    newData;  
} SensorDataUnion;
```