EE365 - Microprocessors

#2

Number Representations

period 2
08/29/03
D. R. Schertz

EE365 - Microprocessors

#2

Number Representations

period 2
08/29/03
D. R. Schertz

Binary to Decimal

- 8 bit
- 2's Complement (Integer Part)
- Positional Notation

```
 1   0   1   0   1   0   1   0
-2^7 2^6 2^5 2^4 2^3 2^2 2^1 2^0
-128 + 32 + 8 + 2 = -86
```

Binary to Decimal

- 8 bit
- Pure Fraction
- Positional Notation

```
.1   0   1   0   1   0   1   0
 2^-1 2^-2 2^-3 2^-4 2^-5 2^-6 2^-7 2^-9
```

1/2 + 1/8 + 1/32 + 1/128

.5 + .125 + .03125 + .0078125 = 0.6640625

Decimal to Binary

- Unsigned Binary (Integer Part)

```
2 ) 80
2 ) 40 r 0
2 ) 20 r 0
2 ) 10 r 0
2 )  5 r 0
2 )  2 r 1
2 )  1 r 0
     0 r 1          01010000.
```

Decimal to Binary

- Unsigned Binary (Pure Fraction)

```
                    .8125
                     x2
                1  .625
                     x2
                1  .25
                     x2
                0  .5
                     x2
.11010000       1  .0
```