CSE 30: Computer Organization and Systems Programming

Discussion on Lectures 2 and 3

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How much memory can a machine with a 32-bit address space support

A. 2GB
B. 4GB
C. 16GB
D. 8MB
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A. 2GB
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In sign and magnitude, we will be able to represent ______ in one byte

A. -63 to 63
B. -127 to 127
C. -128 to 127
D. -255 to 255
E. 0 to 255
In sign and magnitude, we will be able to represent _______ in one byte

A. -63 to 63

B. -127 to 127  \(-(2^{(N-1)}-1)\) to \((2^{(N-1)}-1)\), \(N=8\)

C. -128 to 127

D. -255 to 255

E. 0 to 255
What is the range of numbers we can represent in 2’s complement format using N bits

A. \(-2^{N-1}\) to \(2^{N-1}\)

B. \(-2^{N-1}\) to \(2^{N-1} - 1\)

C. \(-(2^{N-1}-1)\) to \(2^{N-1}-1\)

D. \(-2^N\) to \(2^N\)
What is the range of numbers we can represent in One’s complement format using N bits

A. \(-2^{N-1} \text{ to } 2^{N-1}\)

B. \(-2^{N-1} \text{ to } 2^{N-1} - 1\)

C. \(-(2^{N-1}-1) \text{ to } 2^{N-1}-1\)

D. \(-2^N \text{ to } 2^N\)
Two’s Complement: $1101_2 = ?_{10}$

A. -2
B. -3
C. -4
D. -5
Two’s Complement: $1101_2 = ?_{10}$

A. -2

B. -3

C. -4

D. -5
$00000200_{16} + FFFFFFFF_{16} = ?_{16}$

A. $000001FF$

B. $000002FF$

C. $FFFFFFDFF$

D. $FFFFFF1FF$
\[000000200_{16} + FFFFFFFF_{16} = ?_{16}\]

**A.** 000001FF

**B.** 000002FF

**C.** FFFFFFFDFF

**D.** FFFFFFF1FF
Will $01111111_2 + 00000101_2$ result in overflow?

A. Yes

B. No

C. It depends
Will $01111111_2 + 00000101_2$ result in overflow?

A. Yes

B. No

C. It depends – If it’s a signed representation then there is overflow - carry in different from carry out or addition of 2 positive numbers is negative
Subtract using 2’s complement 16 bit representation: $204_{10} - 46_{10}$. What will the NZVC flags be?

A. $N=0, Z=0, V=0, C=0$

B. $N=0, Z=0, V=0, C=1$

C. $N=0, Z=0, V=1, C=1$

D. $N=0, Z=0, V=1, C=0$
Subtract using 2’s complement 16 bit representation: $204_{10} - 46_{10}$. What will the NZVC flags be?

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C. $N=0, Z=0, V=1, C=1$

D. $N=0, Z=0, V=1, C=0$
What factor differentiates the following categories of data

1. Global and static
2. Local variables
3. Dynamic Variables

A. Scope
B. Lifetime
C. Representation
D. Scope and Lifetime
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1. Global and static
2. Local variables
3. Dynamic Variables

A. Scope
B. Lifetime
C. Representation
D. Scope and Lifetime
The following code tries to append a string s1 to another string s2. Does it work as expected?

```c
char* append (char s1[ ], char s2[ ])
{
    int s1len = strlen (s1);
    int s2len = strlen (s2);
    int k;
    for (k=0; k<s2len; k++)
    {
        s1[k+s1len+1] = s2[k];
    }
    return s1;
}
```