CS 208

Wed. Oct 11, 2023
Test #3

-55_{\text{ten}}

1. Write 55 in binary
2. Write that as a 32-bit #
3. Complement + add 1
4. Write result in hexadecimal
4D UTF-16 LE BE

u + 2295

\[
\begin{align*}
22 & \rightarrow \text{byte 1} \\
95 & \rightarrow \text{byte 2} \\
95 & \rightarrow \text{byte 1} \\
22 & \rightarrow \text{byte 2}
\end{align*}
\]
#5

1. Think about the # of bytes in various C types (int - 4 bytes, char - 8 bytes)

2. ints are stored as two's complement, 32 bits / 4 bytes
6. %x in printf says "hexadecimal"

ints are 4 bytes

\[ a \sim 1011 \sim 0000 \ldots 01011 \]

\[ \sim a \sim \]

32 bits
Wrohoo BREAK
x86-64

Memory

2^{64}

Registers (64 bits)

rax
rbx
rcx
rdx
rsi
rdi
r8
r9
Function calling

1. Caller puts parameters in rdi, rsi, rdx, ...
2. Call name_of_function
3. function assumes params are in rdi, rsi, ...
4. ...
5. fn puts return value in rax
6. ret
rax \[ \begin{array}{c} 64 \text{ bits} \\ \end{array} \] \begin{array}{c} 32 \text{ bits} \\ eax \end{array}
EFLAGS
Test %edi, %edi

1. Compute %edi & %edi

2. IF result < 0
   (EFLAGS) SF = 1
   else (EFLAGS) SF = 0

3. IF result == 0
   ZF = 1
   else
   ZF = 0

7. Store the sign of the answer in SF
7. Store zeroness of answer in ZF
(F (a < 0) 3

\)

\s

js .L3

js: jump if sign bit (SF) is 1

Test %edi, %edi
sets value of SF
cmp  %edi, %esi

%edi — %esi

set SF, ZF