CS208

Wed., 12 April 2023
Is bit 3 in \(\times\) a 1 or not.

\[
\text{if } (\times \& 88) \neq 0 \{ \ldots \}
\]
Turn on bit 3
(or leave it on)
$\begin{array}{c}
\times \ \ 0x\text{ABCD} \ \ \ 1234 \\
\hline
1010 \ 1011 \ 1100 \ 1101 \ 0001 \ 1010 \ 0011 \ 0100 \\
\hline
1010 \ 1011 \ 1100 \ 1101 \ 0001 \ 1010 \ 0011 \ 0100 \\
\end{array}$

Turns off bit 3
(or leaves it off)
"masking"
$\times \quad 0x\text{ABCD}\ 1234 \quad \Rightarrow 8$

1010 1011 1100 1101 0001 0010 0011 0100

1111 1111 1010 1011 1100 1101 0001 0010

$0x\text{FFABCD} 12$
unsigned $0x ABCD1234 >> 8$

1010 1011 1100 1101 0001 0010 0011 0100

$0000 0000$

$0x00 ABCD12$
\( n + n = 4 \)

\[
\text{int } x = (1 \ll n);
\]

\[
\begin{array}{cccccc}
0 & 0 & 0 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 0 & 0 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{array}
\]

\[
\text{if } (z \& 8(1 \ll 4) ! = 0) \}
\text{// bit+4 of } z \text{ is on}
\]

??
```c
int n = 4;
int y = 0x10;
int y = y >> n;
```
```c
int n = 4;
unsigned int y = 0xFFFFFFFF;
y >>= 4
```
codePoint 0xEE9

000 1110 1001

5 6

110 __ 10 __

110 0001 1 0101001

0xC3 0xA9
Ken Thompson (w/D. Ritchie)  
Turing Award 1983
Invented Unix
"Reflections on Trusting Trust"
Plan 9 OS
Go language

~1990
Unicode encodings had problems
- packed w/ null bytes
- endianness
- corrupted byte stream can’t be re-synchronized

UTF-8
Given

buffer:

\[
\begin{array}{c|c|c|c}
C3 & A9 & O \\
\hline
1100 0011 & 10101001 & 0 000 11 101 001 \\
21 0's
\end{array}
\]

\(0\times00\ 00\ 00\ 00\ E9\)