LSN 1

- Course & people Intro
- Syllabus
- # Systems, ~~E~~ etc

Abstraction – critical technique for managing complexity.
- hiding the details when they are not important

The Three Y's – to manage complexity
- Hierarchy – dividing a system into modules, the further dividing each of these modules until the pieces are easy to understand.
- Modularity – states that the modules have well-defined functions & interfaces, so they connect together w/o unanticipated side effects.
- Regularity – seeks uniformity among modules. Common modules are reused many times, reducing the # of distinct modules

Book example is a Flintlock Rifle

- Need to know Number systems & Conversion btwn;

Decimal:
- Base 10
- Digits 0–9 (i.e. Range)
- N Digits $0 \rightarrow 10^N - 1$

Binary:
- Base 2
- Digits 0, 1
- N digits $0 \rightarrow 2^N - 1$

Hexidecimal:
- Base 16
- Digits 0–F
- N Digits $0 \rightarrow 16^N - 1$

Octal:
- Base 8
- Digits 0–7
- N Digits $0 \rightarrow 8^N - 1$

Base Conversions:

Dec → Binary Called Division

2 | 84
2 | 42 r 0
2 | 21 r 0
2 | 10 r 1
2 | 5 r 0
2 | 2 r 1
2 | 1 r 0
2 | 0 r 1

→ 1010100

0 1 0 1 0 1 0 0
128 64 32 16 8 4 2 1
84-64 20-16 2^2 2^1 2^0
=20 =4

Binary to Hex: Called substitution

Group into 4-Digit groups

1001 1011 1000 1111
9 B 8 F

0000-0 1000-8
0001-1 1001-9
0010-2 1010-A
0011-3 1011-B
0100-4 1100-C
0101-5 1101-D
0110-6 1110-E
0111-7 1111-F

Hex → Decimal:

Can use your calculator for convenience

Called Summation

B694

4×16^0
9×16^1
6×16^2
11×16^3

Other Vocabulary words:

byte – 8-bits
nibble – 4-Bits
word – Variable 8-64 Bits
LSB – Least significant Bit
MSB – Most " "