Computer System - 1

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Computer Science?

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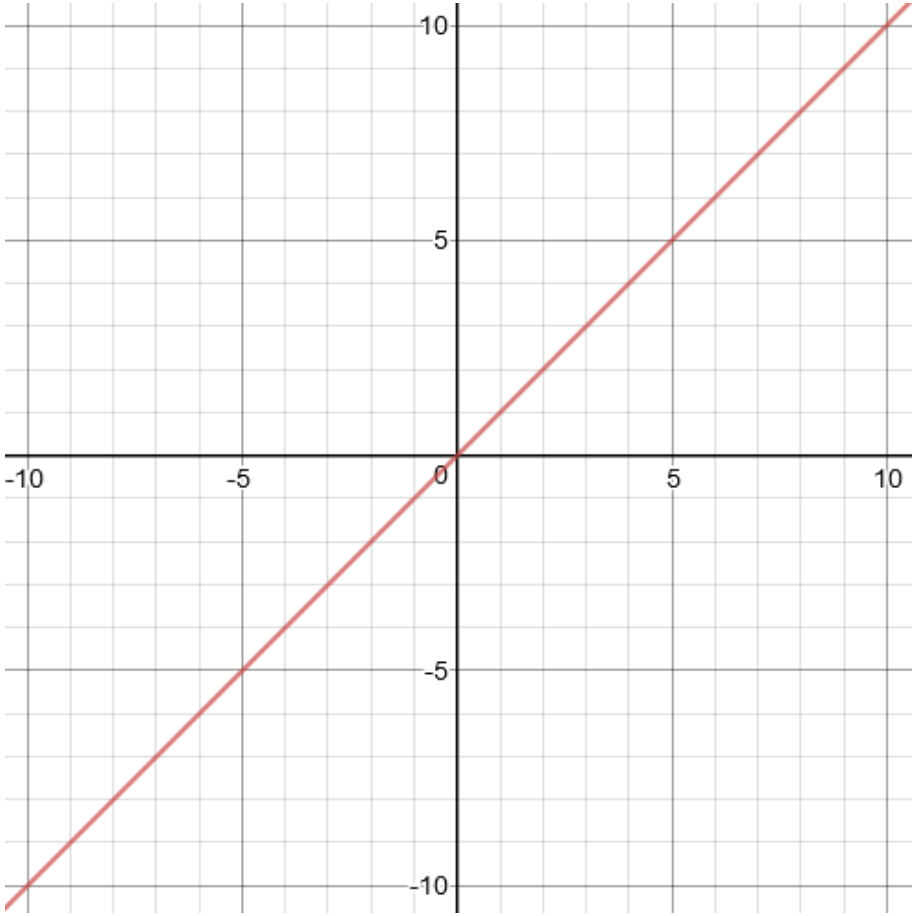
4.4 Software engineering

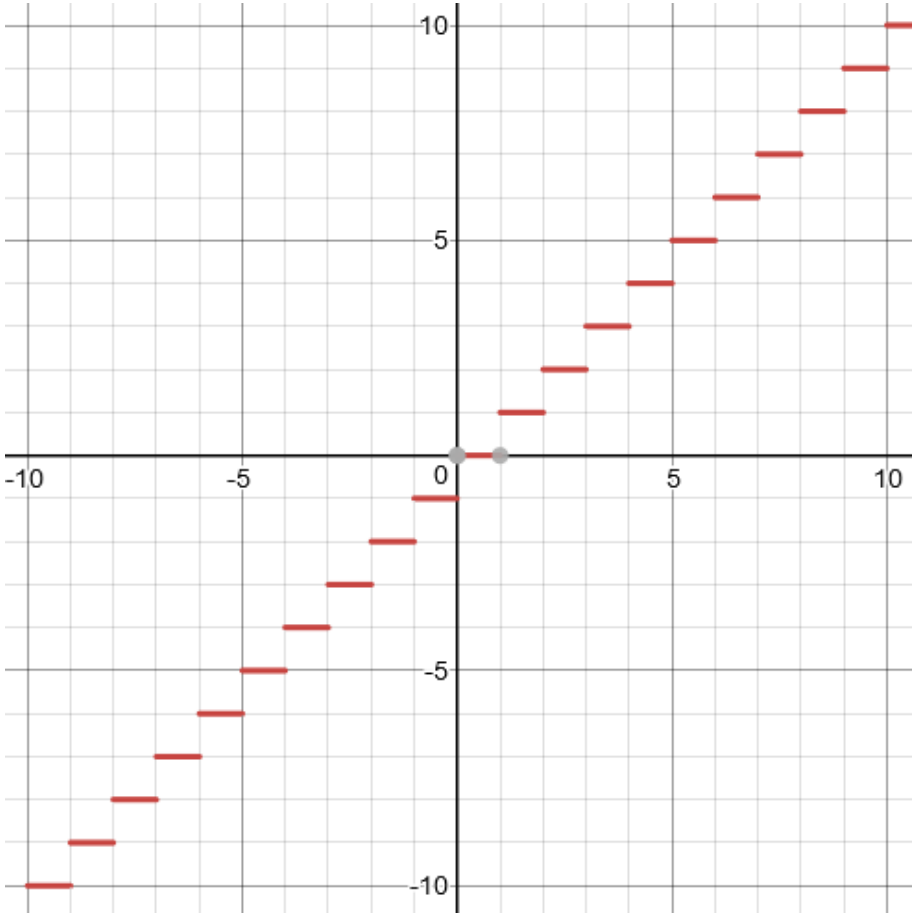
Design and use of computers		
Theory	Experimentation	Engineering

Why?

- What does “Digital” mean?
- Why do we have to know it?

Digital?





bit?

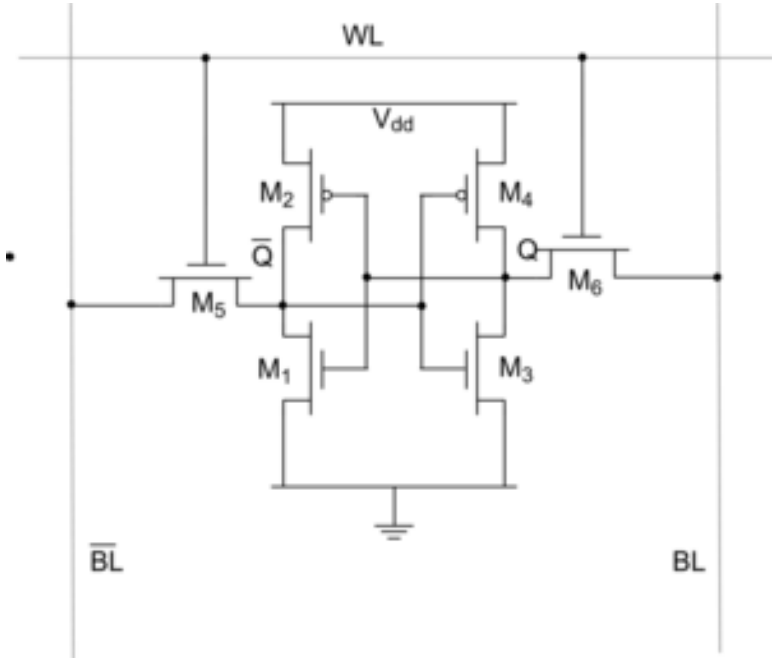
Basic unit of information	
0	1
false	true
on	off

Boolean algebra

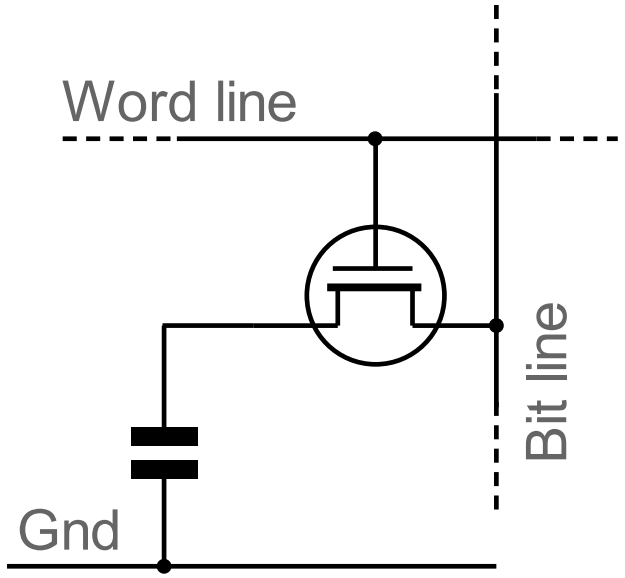
x	y	$x \wedge y$	$x \vee y$
0	0	0	0
1	0	0	1
0	1	0	1
1	1	1	1

x	$\neg x$
0	1
1	0

bit?



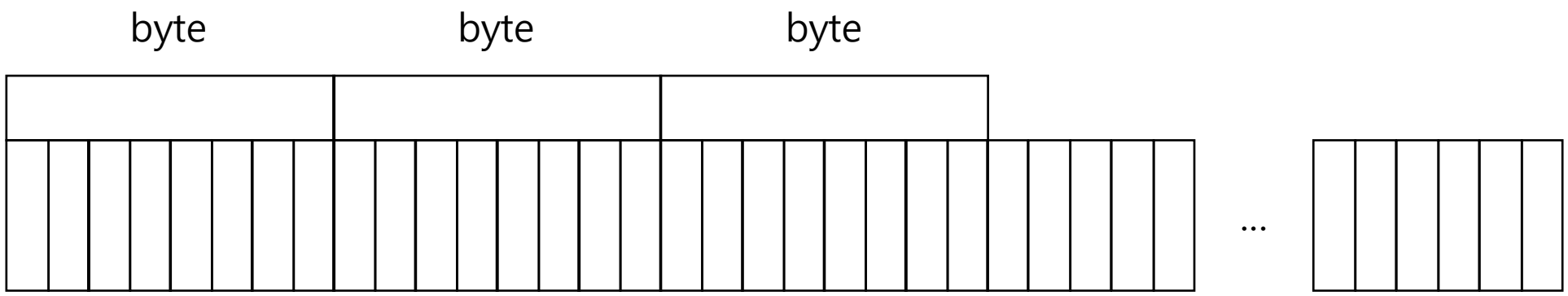
SRAM



DRAM

bit?

Random Access Memory(Virtual Memory Address)



How to represent data?

- Number, image, sound, character…
- Everything in computer is bit!

Hexadecimal representation

Dec	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hex	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

- Ex)
  - 13 = 00001101 = 0xD
  - 89 = 01011001 = 0x59
  - 255 = 11111111 = 0xFF

Overall

- Mainly about computer architecture
- A bit of exercise quiz