컴퓨터 개념 및 실습

소개

- 담당교수

  민상렬 (컴퓨터공학부)

  301동 501호 (02-880-7047)

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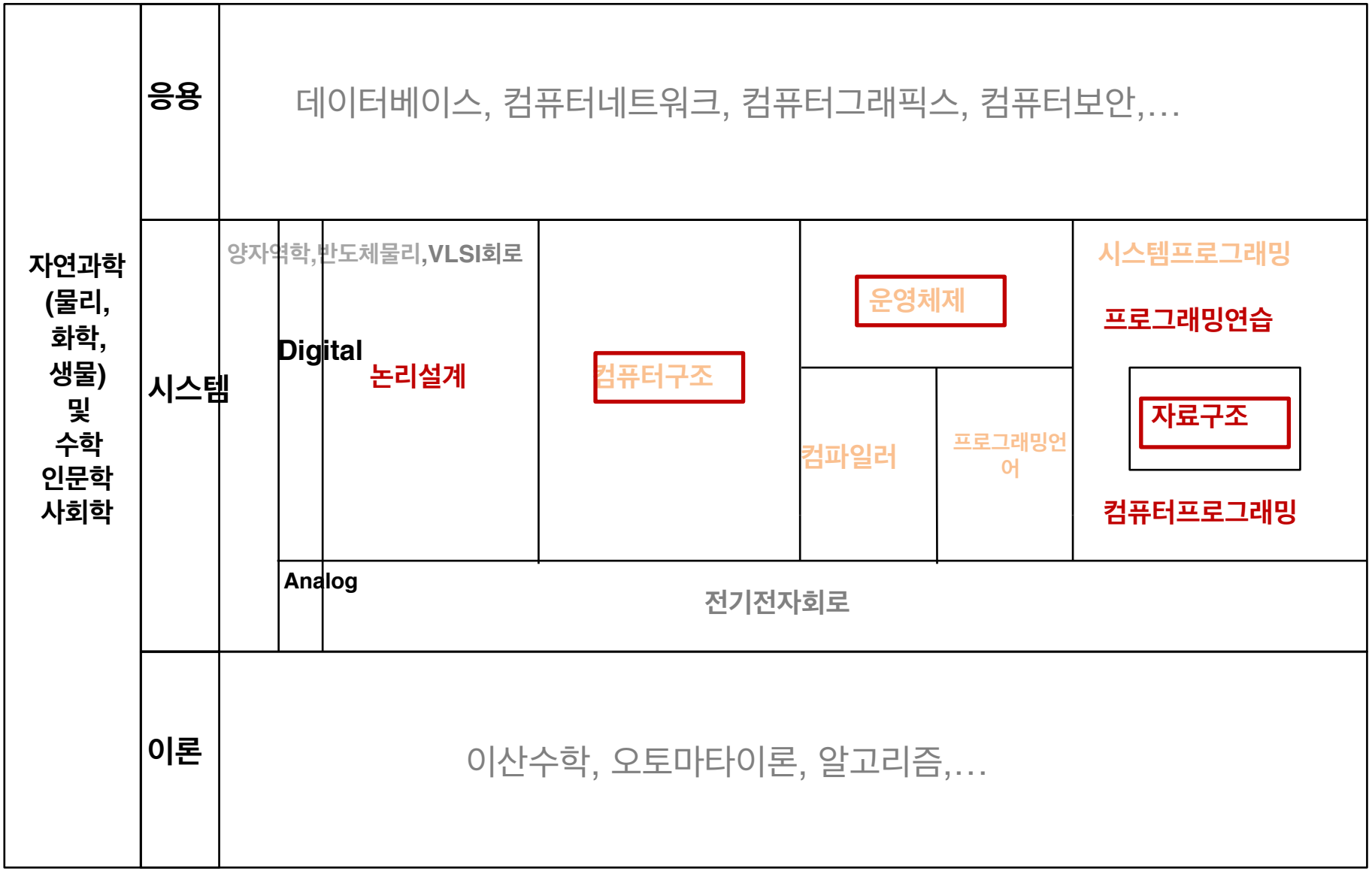
- 수업

  월요일, 수요일 14:00~15:50 (301동 203호)
- Web page

  http://archi.snu.ac.kr/courses/under/16_spring_computer_concept/

컴퓨터공학부 교과과정


자연과학
(물리,
화학,
생물)
및
수학
인문학
사회학
응용
데이터베이스, 컴퓨터네트워크, 컴퓨터그래픽스, 컴퓨터보안,…
시스템
양자역학,반도체물리,VLSI회로
Digital
논리설계
컴퓨터구조
운영체제
컴파일러
프로그래밍언어
시스템프로그래밍
프로그래밍연습
자료구조
컴퓨터프로그래밍
Analog
전기전자회로
이론
이산수학, 오토마타이론, 알고리즘,…

What is semiconductor (반도체)?

- 도체 (conductor), 부도체 (insulator), 반도체 (semiconductor)

- Dr. Walter Brattain on Semiconductor Physics

  https://www.youtube.com/watch?v=EWZsnLvL400

- Homework #1

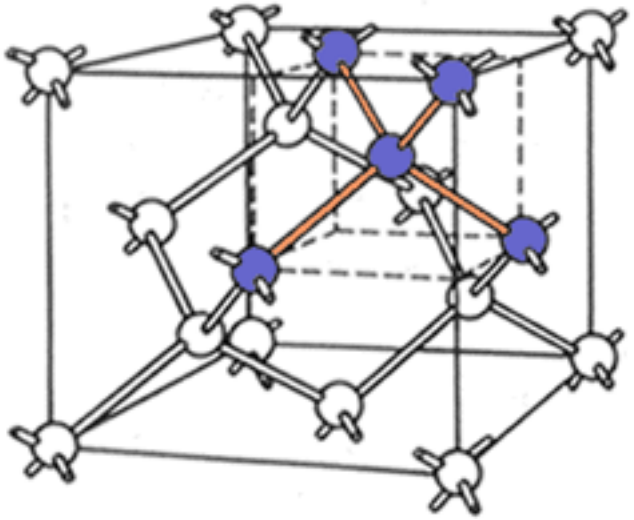
  Introductory Lectures on Solid State Physics #1 (without equations) by Professor Kohei M. Itoh (Keio University) 보고 + 이해하고 오기

  https://www.youtube.com/watch?v=aOVSOIAtjoA

Semiconductor: Silicon

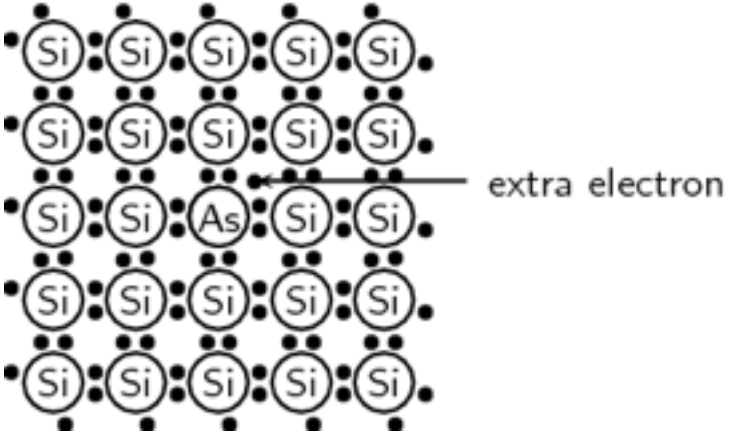
Conceptually….

In Reality….

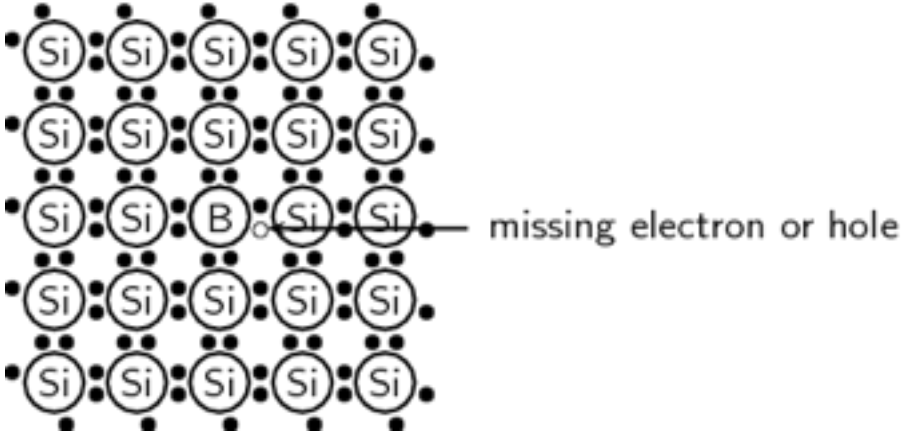


n-type and p-type Semiconductor

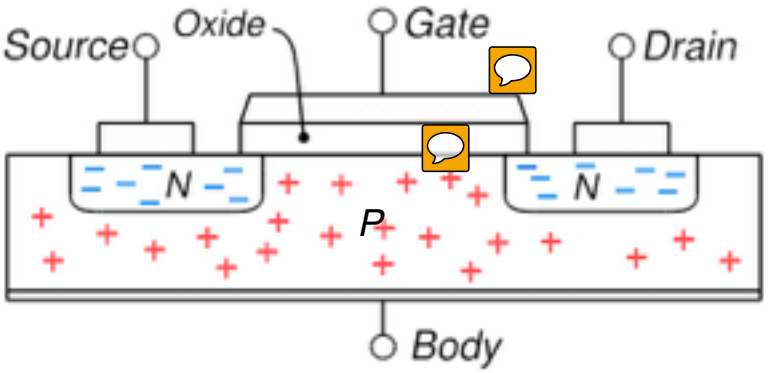
n-type semiconductor

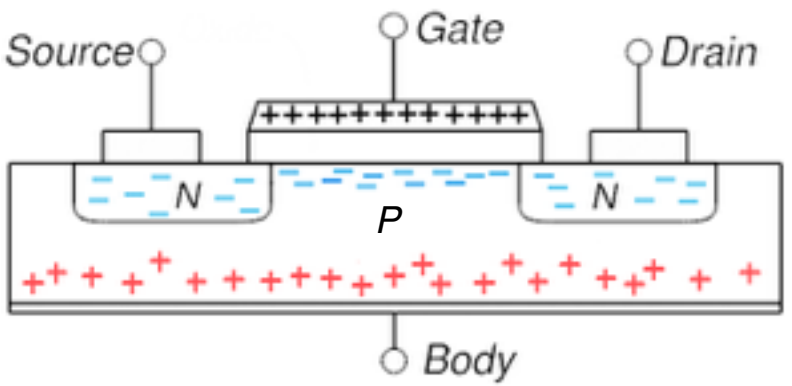


p-type semiconductor

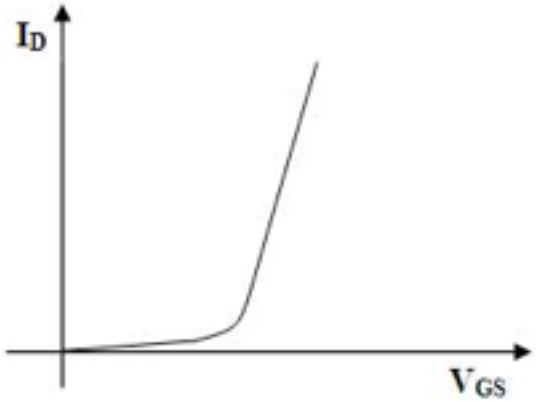


MOS(Metal-Oxide-Silicon) Transistor: n-type

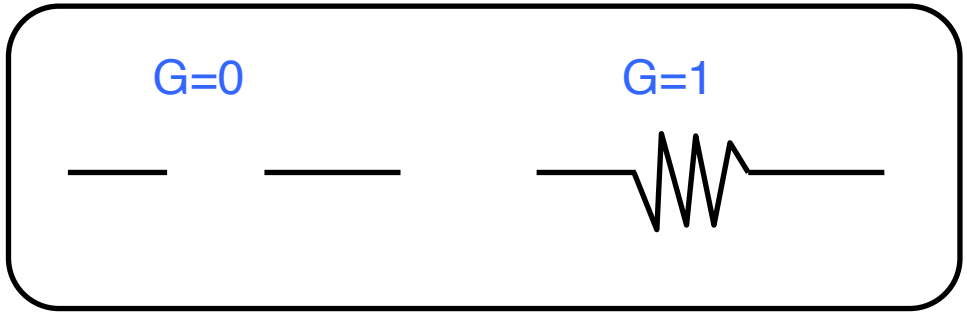




Plot V_{DS} across X-axis
Plot I_D across Y-axis

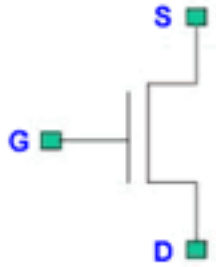


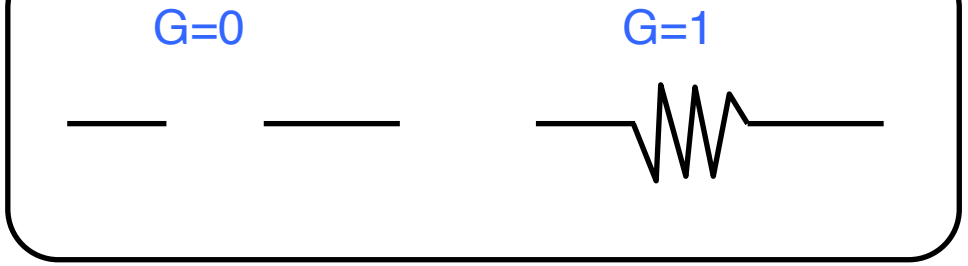
n-type transistor as a switch



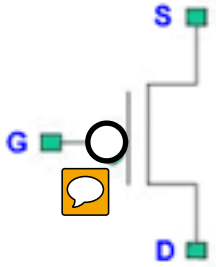
n-type and p-type MOS Transistors as Switches

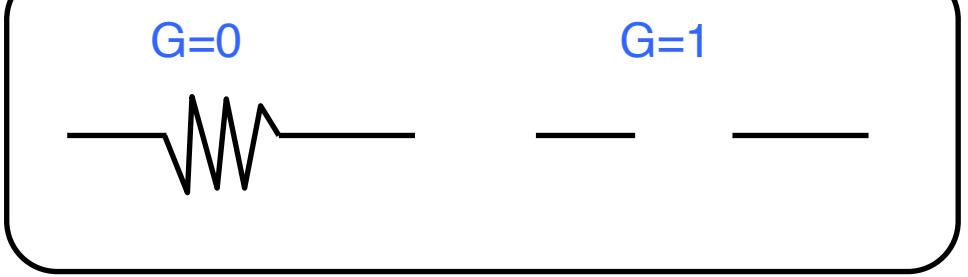
n-type transistor as a switch



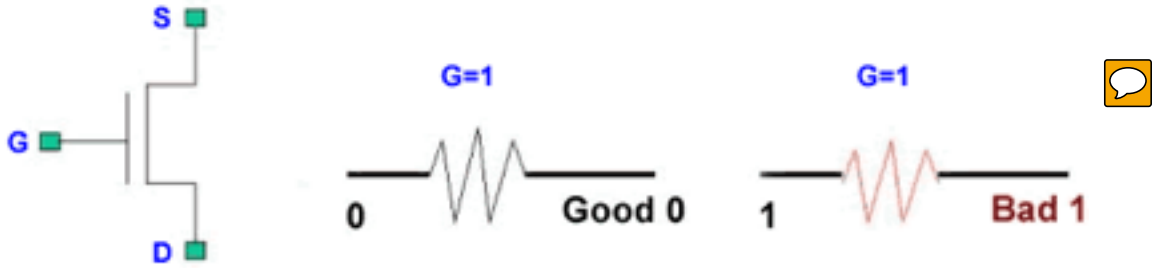


p-type transistor as a switch

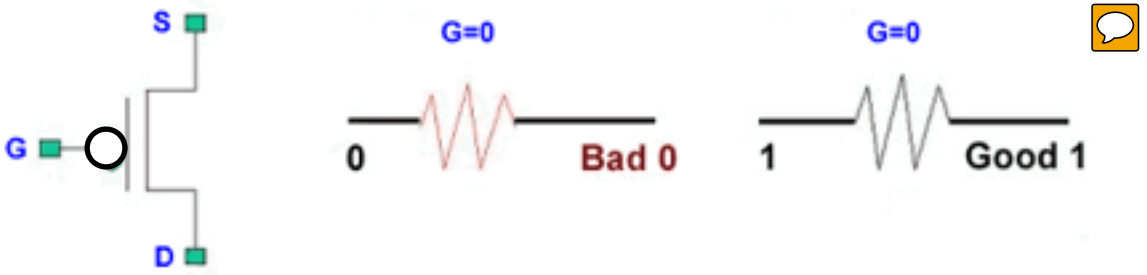




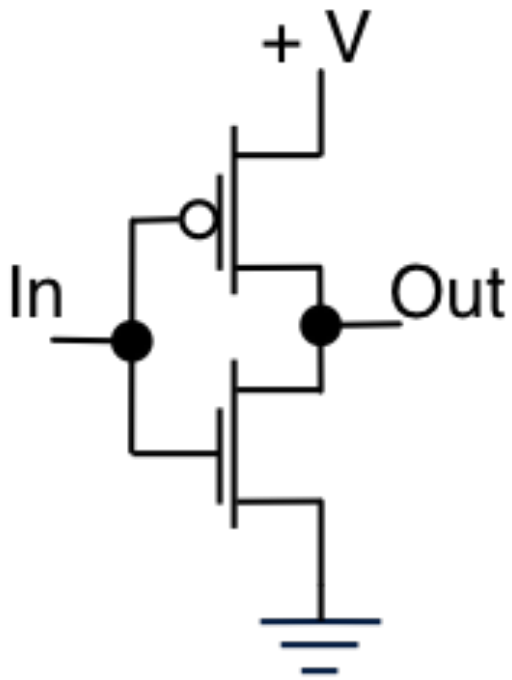
n-type and p-type MOS Transistors as Switches (more detail…)



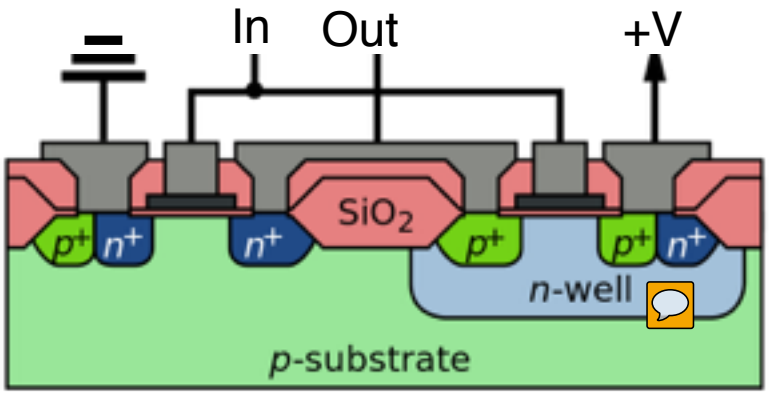
Similarly….



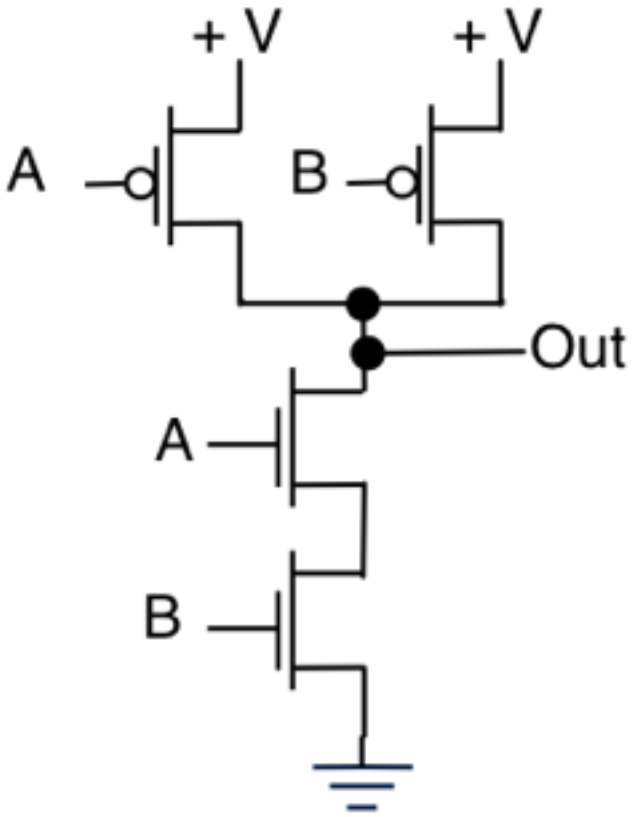
Primitive Gate: NOT gate



In	Out
0	1
1	0



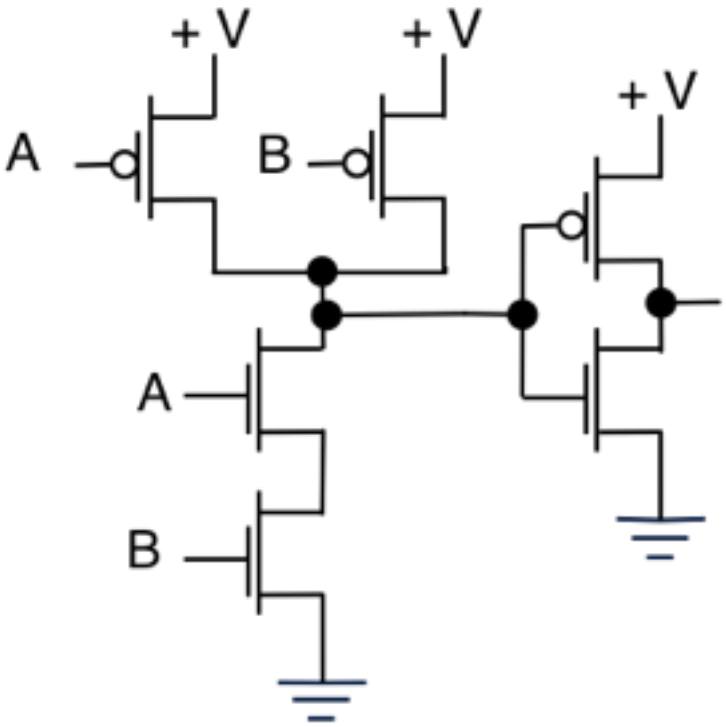
Primitive Gate: NAND gate



A	B	Out
0	0	
0	1	
1	0	
1	1	

Primitive Gate: AND gate

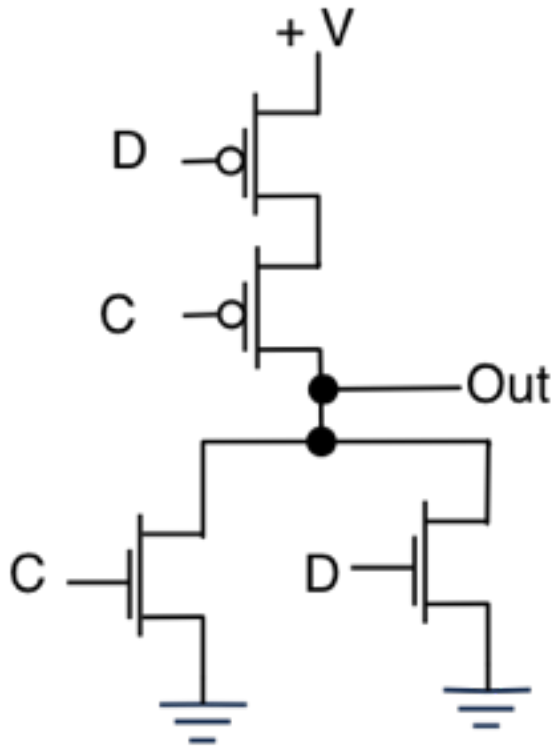
Composition!!



A	B	Out
0	0	
0	1	
1	0	
1	1	

Primitive Gate: NOR gate

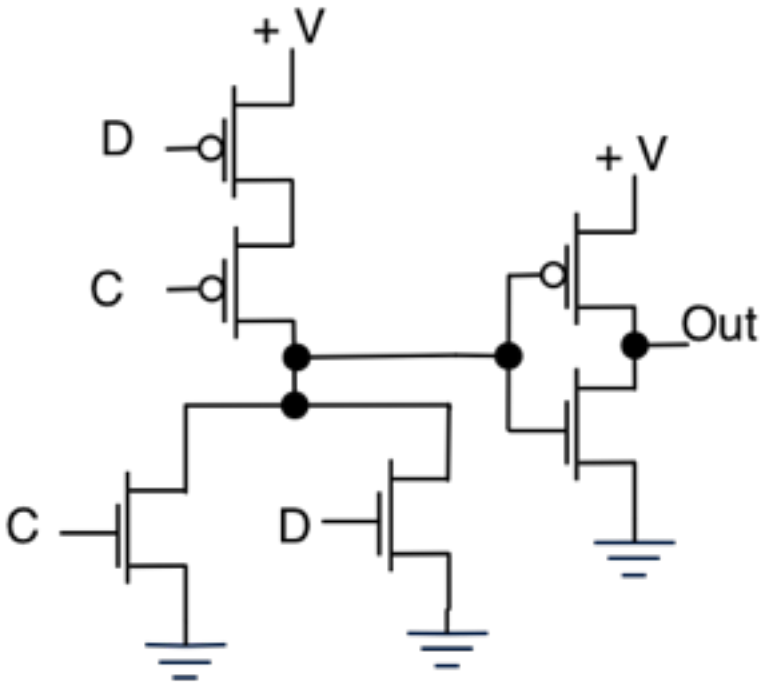
Duality!!



C	D	Out
0	0	
0	1	
1	0	
1	1	

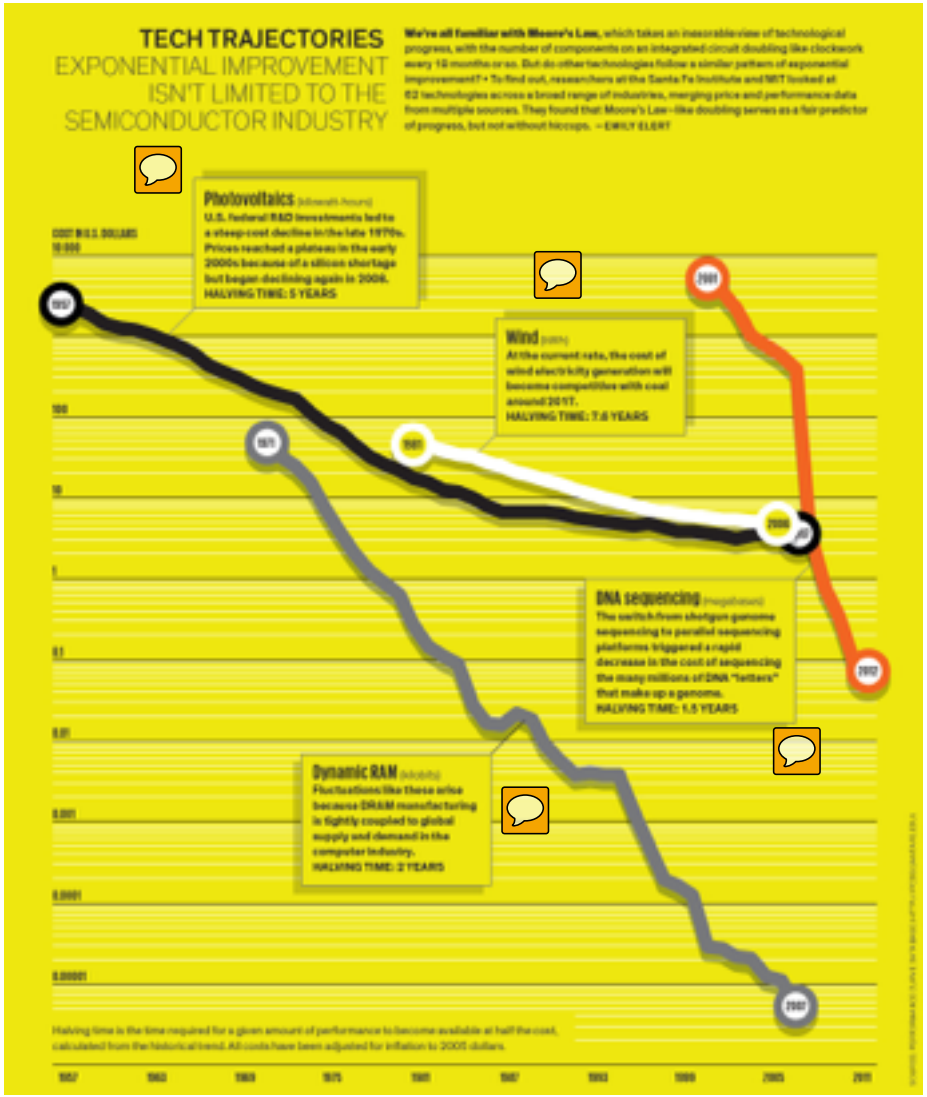
Primitive Gate: OR gate

Analogy!!



C	D	Out
0	0	
0	1	
1	0	
1	1	

Food for Thoughts



- 수학 분야가 mature
  -> physics
  -> chemistry
  -> biology
- 컴퓨터 분야가 mature ?
  -> ??

Top Five Regrets (by Bronnie Ware)

1. I wish I'd had the courage to live a life true to myself, not the life others expected of me.
2. I wish I hadn't worked so hard.
3. I wish I'd had the courage to express my feelings.
4. I wish I had stayed in touch with my friends.
5. I wish that I had let myself be happier.

- Homework #2

  Start with why – how great leaders inspire action by Simon Sinek 보고 + 이해하고 오기

  https://www.youtube.com/watch?v=u4ZoJKF_VuA

  (with caption)

- Homework #3

  Why leaders Eat last by Simon Sinek 보고 + 이해하고 오기 (optional)

  https://www.youtube.com/watch?v=ReRcHdeUG9Y

  (with caption)

추천 Web Site

- Nobel Foundation (www.nobelprize.org)
- TED (www.ted.com)
- MIT Technology Review (www.technologyreview.com)
- Phys.org (phys.org)