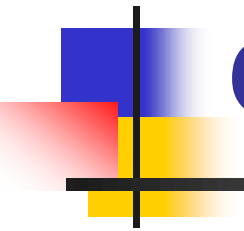
Lecture 00



Computer Organization

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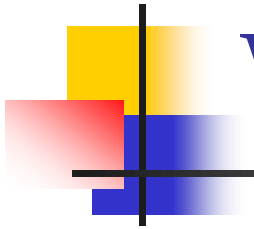
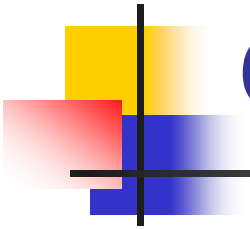


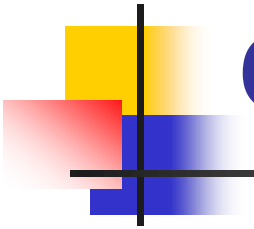
Where to get my slides?

- https://github.com/CGUSystemCourses/ComputerOrg-2015.git



Course Materials

- Text Book:
  - M. Morris Mano and Charles R. Kime, “Logic and Computer Design Fundamentals,” 4/e, Prentice-Hall, 2008
- Reference:
  - your textbooks of “digital circuit”, “physics”, “electronics”
  - … and a lot …
  - read behind syllabus!



Grading

- Quiz/Homework/Q&A(40%)
- Mid-term Exam: 30%
- Final Exam: 30%

What you will expect in this course

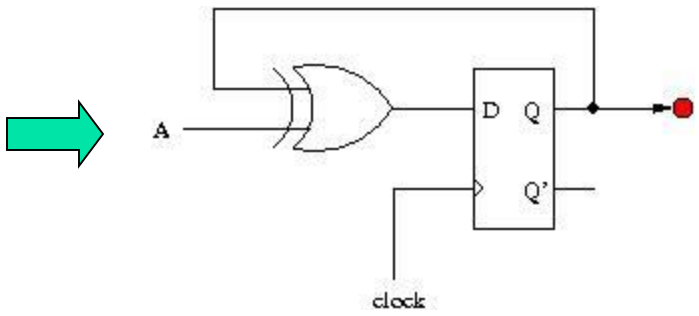
You have to work harder than EE students

(比電機系還操!!!)

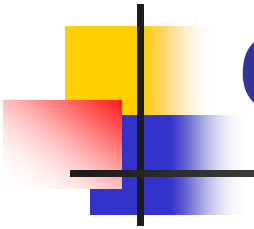
Goals of this course

1. implement a digital IC down-to gate-level
   - using RTL (register-transfer level) design

```
always @(posedge clock) begin
   if (A==1'b1)
      Q <= ~Q;
   else
      Q <= Q;
end
```



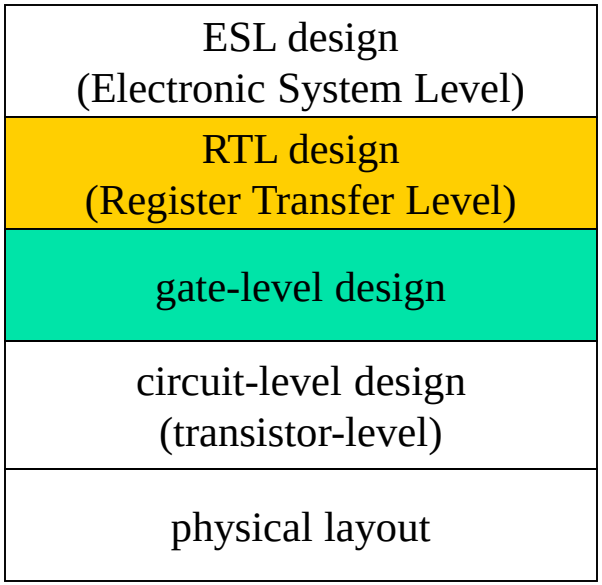
2. implement hardware of a computer
   - especially CPU



Course Outline

- Part 0: recall from “digital circuit course”
  - Chap. 5: sequential circuit
- Part 1: RTL (register transfer level) design
  - Chap. 7
- Part 2: CPU design
  - Chap. 9-11

VLSI design flow



hardware/software codesign

advanced computer architecture

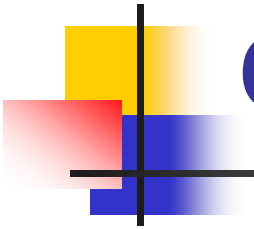
computer architecture

computer organization

digital circuit

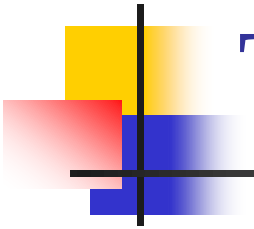
electronics

- Preliminary knowledge of this course:
  - digital circuit
  - electronics (in parallel with this course)



Course Requirements

- In-Class Exercises:
  - quiz may be given without inform you before the class
  - In-class Q&A will be part of your grading
- What you will find in the exam: things you never learned in the class/textbooks
  - training your problem-solving ability is my focus!
- Learn by yourself!
  - at least 9 hours per week! (exclude the class/lab hours)



The next lecture

- Recall: sequential circuit design
  - Chap. 5 of our textbook
  - you can also find similar material in your “digital circuit” textbook

What you should do after this class

- Buy the textbook
- Read the material for the next lecture
- Recall what you learned in digital circuit course
- Give yourself a goal:
  - Electronics products you should be able to design after finishing this course

Quiz at the next meeting

- 9/18 (Friday) 1:10 – 2:00 PM
- Coverage: all content of digital circuit course
  - draw the waveform from circuit diagram
  - circuit design from functional specification