Introduction to Information Systems

– Understanding the digital world

2 Bit, Bytes and Representation of Information

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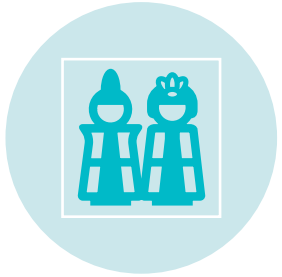
Today's schedule

- Review of lecture 1 (15')
- On the Mini test (5')
- Why you need to understand the digital world (5')
- Review of Chapters 1 & 2 of the textbook (15')
- Mini test #2 and homework (50')

Review: Contact information

liangzhao@acm.org

Office hour: n/a (no office in Doshisha University)



Language: Chinese, Japanese, English

Contact after class: E-mail or you can visit my lab at Kyoto University.

Review: Syllabus (1/3)

NOT for these students.

- Expert level.
- Only interested in the use.

Summary: Provide an **overview** of information systems including hardware and software **fundamentals**, **coding**, effective and secure use of the Internet and other **communication** tools, **Artificial Intelligence** (AI), as well as the **ethical** use of computers in business and society through **hands-on activities** and **assignments**.

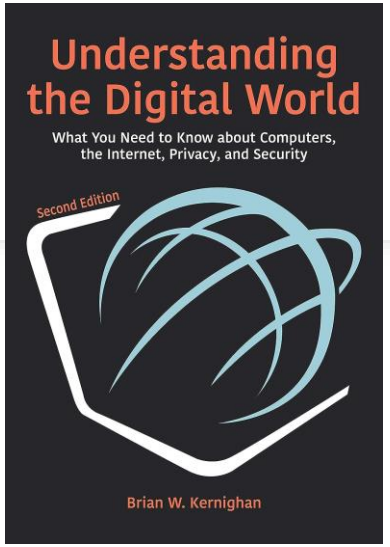
Goal: Learn **basic concepts and knowledge** to **understand** digital computers and communications including hardware, software, Internet, World-Wide Web (WWW), AI, software license, information security and others, as well as coding and web page creation.

Review: Syllabus (2/3)

Style: Hybrid of **normal teaching** and **flip classroom** (i.e., in class: mini tests, reviews, summary videos, and classwork; at home: textbook reading and online learning).

Evaluation Criteria: **Each lecture** has **7pt** (**2 for attendance** and **5 for mini test**). The total is thus 7pt x 15 lectures = 105pt with a max of 100pt. **Bonus** points are given to **challenging** tasks. **General note**: Attendance is evaluated by if the student followed the instructions, while assignment (mini test) is evaluated by the correctness or completeness of the answer.

Review: Syllabus (3/3)



Textbook: B.W. Kernighan, **Understanding the digital world**, Princeton University, 2021 (1st edition is also fine. Both paper and e-book are OK).

Schedule: 1 What is in a Computer, 2 Bit, Bytes and Representation of Information, 3 Inside the CPU, 4 Programming, 5 Algorithms, Programming and Programming Languages, 6 Programming with Python and Scratch, 7 Operating System and Software Systems, 8 Javascript and HTML, 9 Communication and Networks, 10 The Internet, 11 Data and Information, 12 Privacy and Security, 13 The World-Wide Web (WWW), HTML, and Wiki, 14 Artificial Intelligence (AI) and the Future of Computing, 15 The Future of Information System and Overall Review

Review: Information

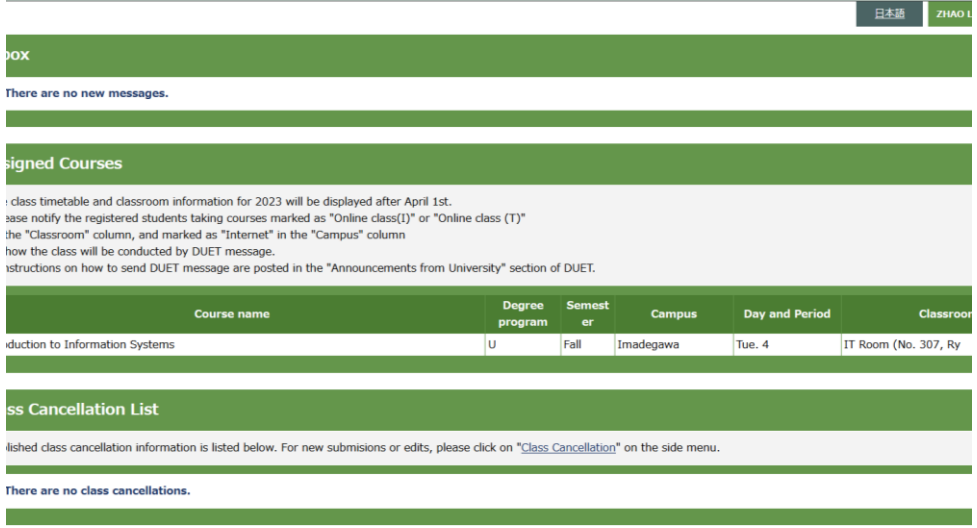
E-Class will be used as the major support platform.
You can find it from the Home Page of Doshisha Univ -> (Visitors menu) Current Students -> e-class.

After-lecture support: See Contact (questions and discussions are welcome).

General note: You are not expected to understand everything. If you find a topic or the textbook is difficult, please ask or skip it. If too simple, please go forward, challenge the bonus task, share with or teach other students - but **please keep your voice low**.

On the use of ChatGPT: By default, NO (for education purpose). Will have some practice with it.

Systems for the class

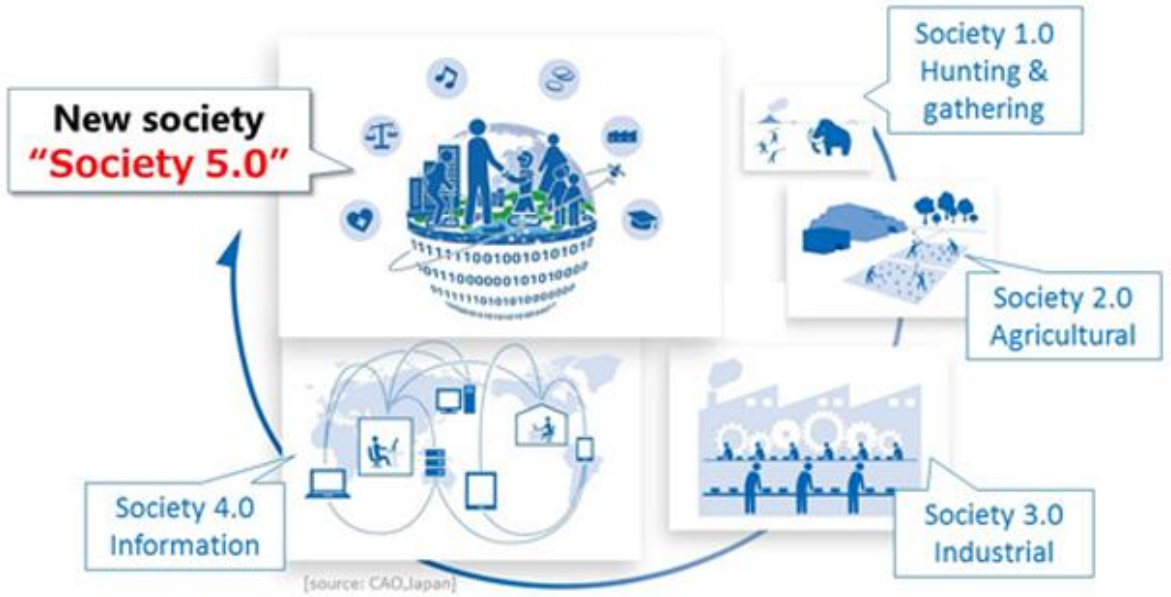


- DUET: messages (emails) for contact
- E-class: lecture information (Doshisha -> Visitors Menu -> Current Students -> DUET or e-class)
- My website: lecture notes

On the Mini test

Randomly assigned numbers are used for anonymous grading. Please remember your assigned number and write the correct one on the paper.

Why you need to understand the digital world

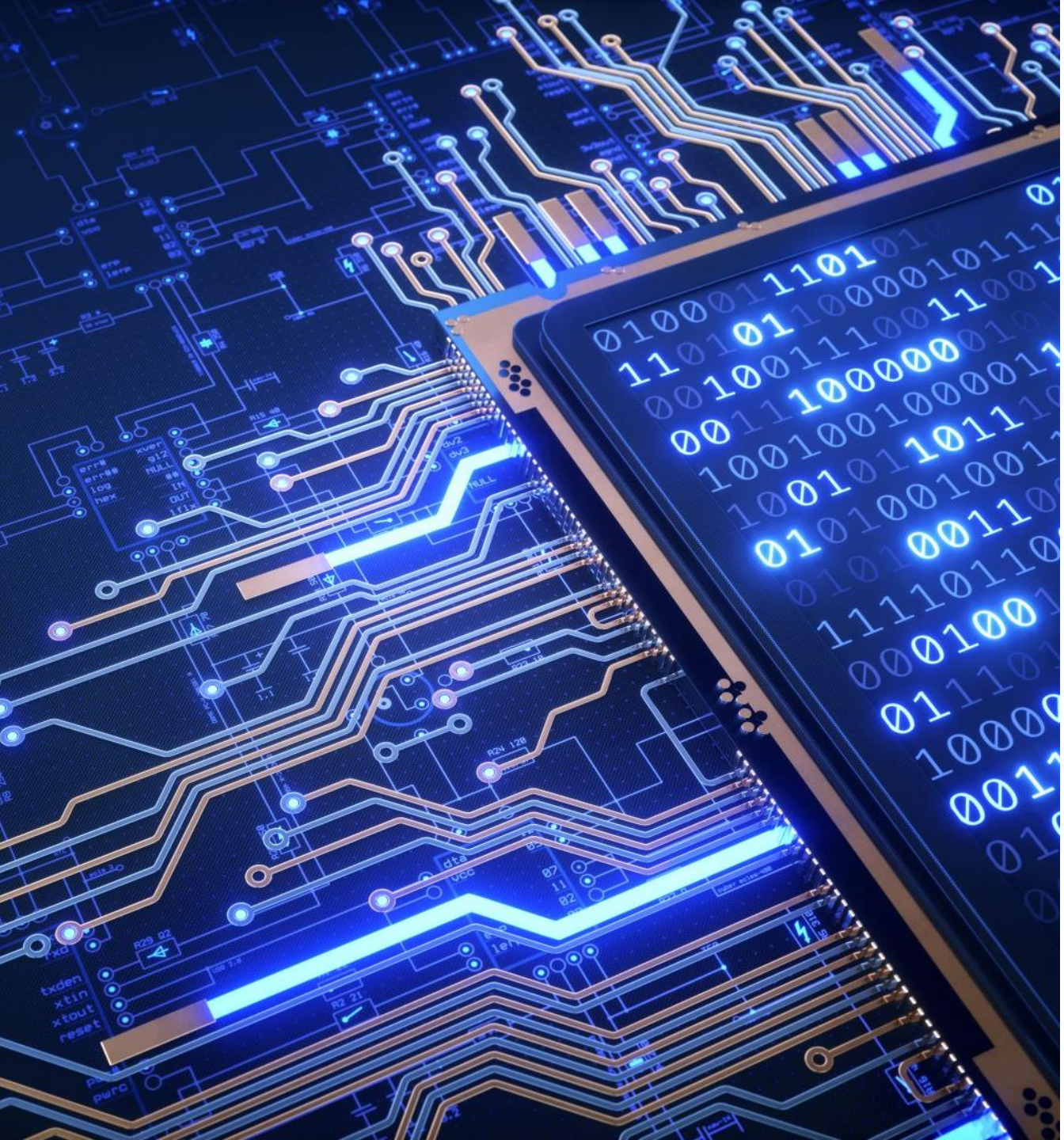


The world is becoming digital (Society 5.0).

As a "digital native," you are expected to understand the digital world :-).

You are with the humanity discipline (culture, economics, law, etc). This human-centered approach is heavily biased, and a non-human-centered approach is needed.

https://www8.cao.go.jp/cstp/english/society5_0/index.html



Review of Chapters 1 & 2 of the textbook

- Part I: Hardware
- Chapter 1: What's in a computer
- Chapter 2: Bit, Byte, and Representation of information

What's in a computer

CPU, RAM, Disk (HDD/SSD), bus, Motherborad, USB, etc

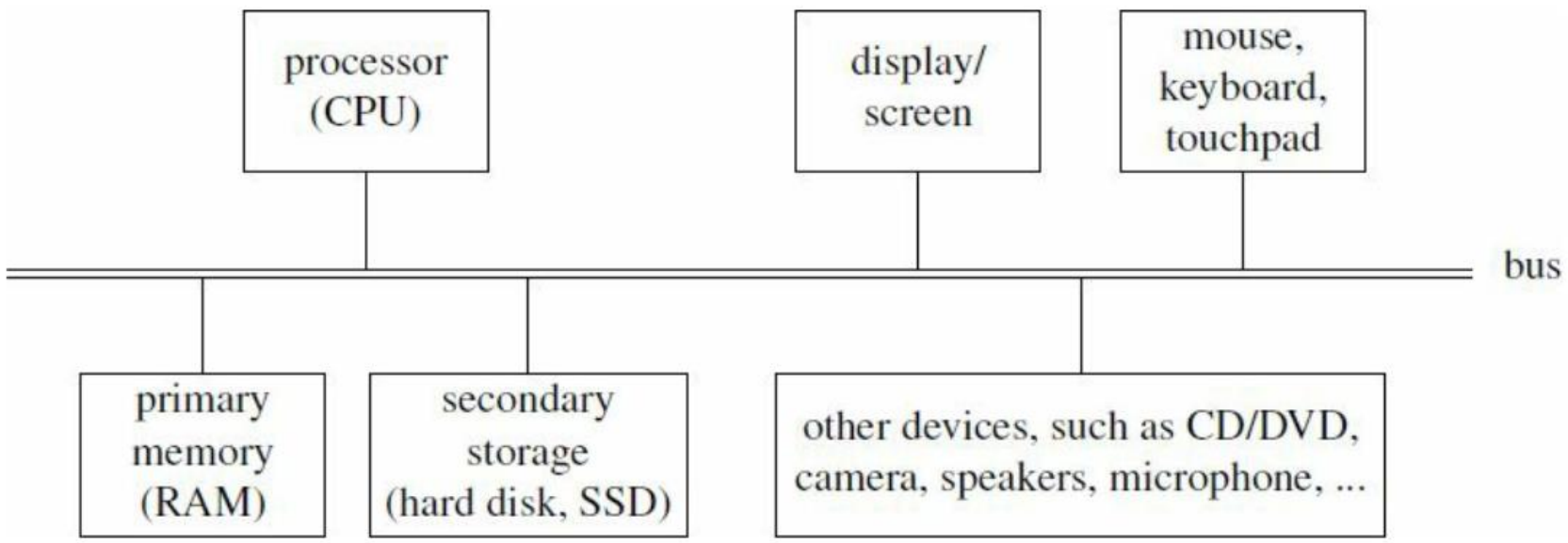
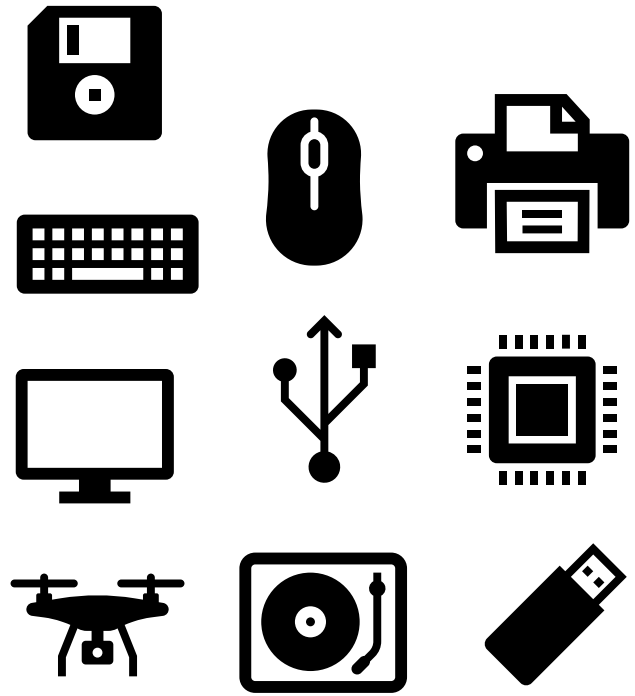
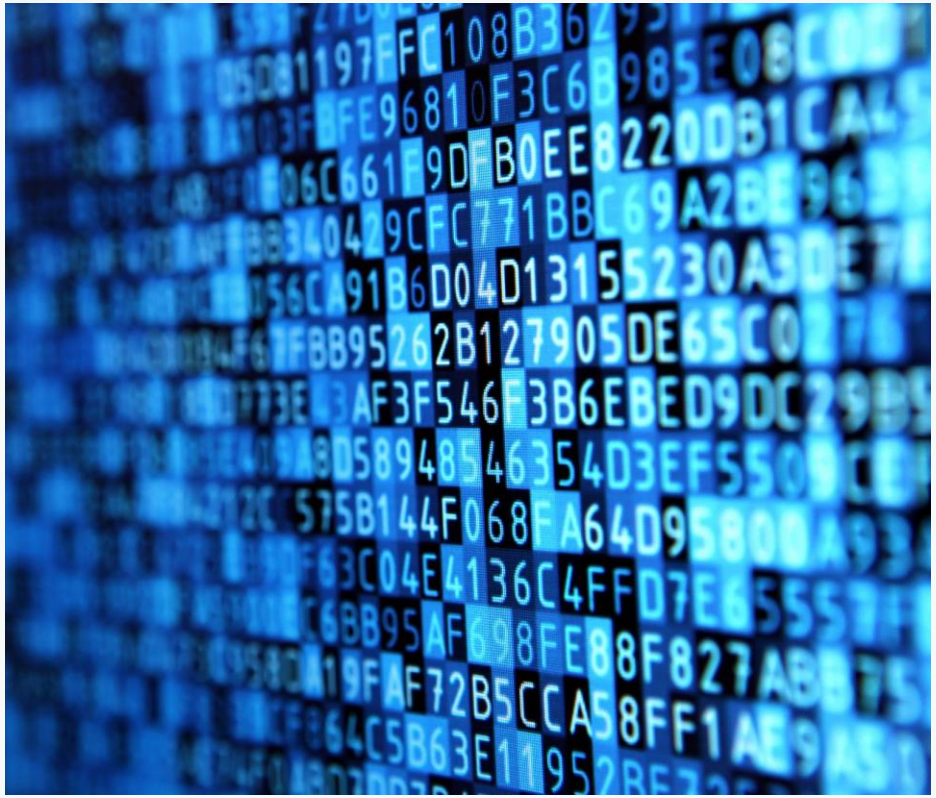


Figure 1.1: Architectural diagram of a simple idealized computer.



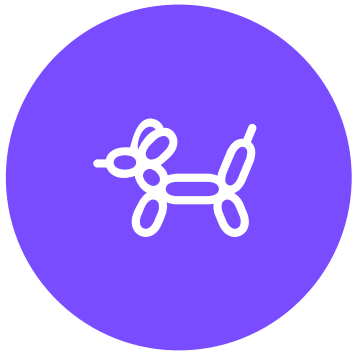
Bit, Byte, and Representation of information



- Analog and digital
- Bit: the smallest unit of information
- Byte: a fixed group (usually 8) of bits
- Base of numbers (binary, decimal, hexadecimal)
- How to convert numbers of different bases
- Why it is said that “There are only 10 kinds of people in the world—those who understand binary numbers and those who don’t.”?

Write the correct assigned number on the paper!

Mini test and homework



MINI TEST (45')

HOMEWORK: READ CHAPTER 3 OF THE TEXTBOOK

The test is open - the use of book, Internet, YouTube, etc, is OK - but please fill it by yourself. Don't worry if you cannot complete all now – You will learn them in this course.