

Introduction to Cryptography

0. Course information

Manuel – Summer 2020



Teaching team:

- Instructor: Manuel (charlem@sjtu.edu.cn)
- Teaching assistants:
 - Zhiyuan (xzy242215@sjtu.edu.cn)
 - Niyiqiu (lnyq10@sjtu.edu.cn)

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Important rules:

- When contacting a TA for an important matter, CC the instructor
- Add the tag [VE475] to the subject, e.g. Subject: [VE475] Grades
- Use [SJTU jBox service](#) to share large files (> 2 MB)

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Never send large files by email

Course arrangements:

- Lectures:
 - Monday 14:00 – 15:40 (weeks 1-5)
 - Tuesday 14:00 – 15:40
 - Thursday 14:00 – 15:40
- Office hours:
 - Anytime (Piazza)
 - On appointment (Zoom)

Primary goals:

- Understand the basics of cryptology and security
- Become familiar with the most common cryptographic protocols
- Be able to relate theory and practice in cryptology

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Decide on the validity and security of given cryptographic solutions

Learning strategy:

- Course side:
 - ① Understand the basic concepts of cryptography
 - ② Know the most common problems and their solutions
 - ③ Get an overview of many subfields of cryptography

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- Course side:

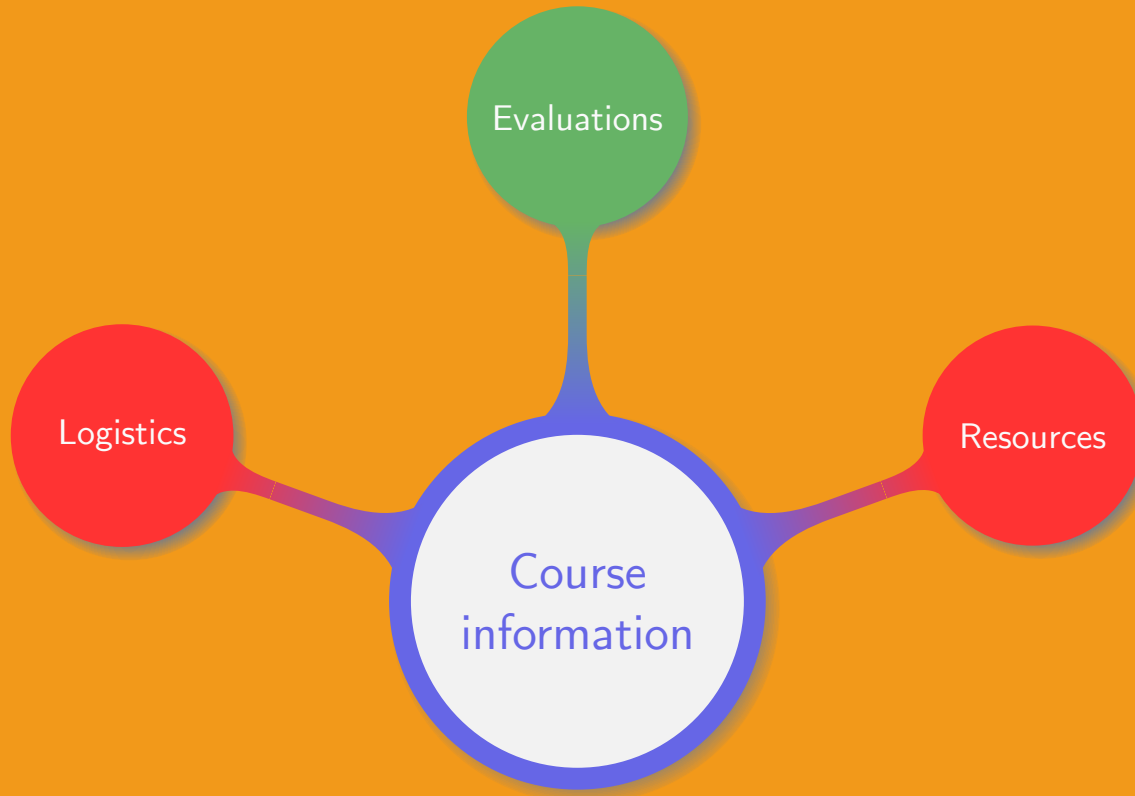
- mid* — ① Understand the basic concepts of cryptography
- final* { ② Know the most common problems and their solutions
- ③ Get an overview of many subfields of cryptography

- Personal side:

- ① Perform extra research
- ② Relate known strategies to new problems
- ③ Read and write some code

Detailed goals:

- Know the most common symmetric key cryptography protocols
- Know the most common public key cryptography protocols
- Understand the importance of true randomness in cryptography
- Understand the basics on hash functions in cryptography
- Know the various security levels and be able to derive their corresponding key length depending on the most efficient attacks available
- Know the basic algorithms to solve real life problems such as digital signatures, secret sharing, or traitor tracing
- Be able to perform basic programming in a cryptographic context, i.e. using large numbers or low level logical operations
- Get a high level overview of the various sub-fields of cryptography
- Understand the mathematics used in cryptography



Homework:

- Total: 10
- Content: basic concepts, coding, mathematics

Projects:

- Total: 2
- Content: discover new areas of cryptology

Challenges:

- Total: 3
- Content: code breaking

Grade weighting:

- Homework: 10%
- Projects: 25%
- Quizzes: 25%
- Final exam: 20%
- Midterm exam: 20%

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Latex 有加分!!!

Assignment submissions:

- Bonus: +10% for a work fully written in \LaTeX , limited to 100%
- Penalty: -10% for a work not written in a neat and legible fashion
- Late policy: -10% per day, not accepted after three days

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Grades will be curved with the median in the range $\llbracket B, B+ \rrbracket$

General rules:

- Not allowed:
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- Allowed:
 - Reuse part the course or textbooks and quoting the source
 - Share ideas and understandings on the course
 - Provide hints on where or how to find information

Documents allowed during the exams:

- Part A: a mono or bilingual dictionary
- Part B:
 - The lecture slides with **notes on them** (paper or electronic)
 - A mono or bilingual dictionary

Group works:

- Every student in a group is responsible for his group's submission
- If a student breaks the Honor Code, the whole group is guilty

Contact us as early as possible when:

- Facing special circumstances, e.g. full time work, illness, etc.
- Feeling late in the course
- Feeling to work hard without any result

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Any late request will be rejected



Information and documents available on the **Canvas** platform:

- Course materials:
 - Syllabus
 - Lecture slides
 - Homework
 - Projects
 - Challenges
- Course information:
 - Announcements
 - Notifications
 - Grades
 - Polls

textbooks !

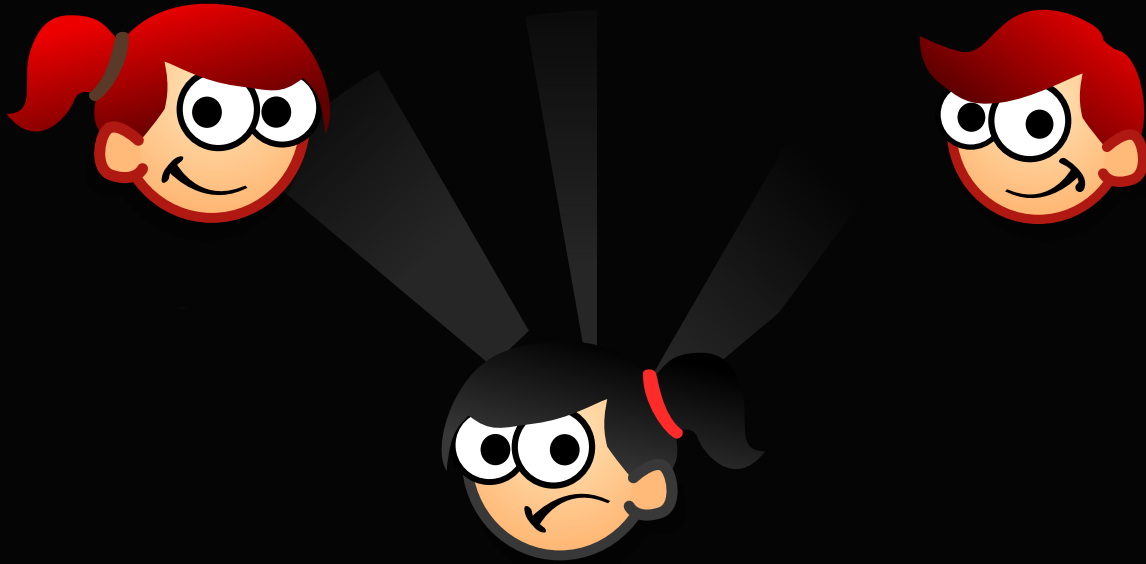
Useful places where to find information:

- Introduction to Modern Cryptography (J. Katz and Y. Lindell)
- Cryptography, theory and practice (D. Stinson)
- Search information online, i.e. $\{\text{websites} \setminus \{\text{local Chinese network}\}\}$

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Never use Baidu in any course



Thank you!