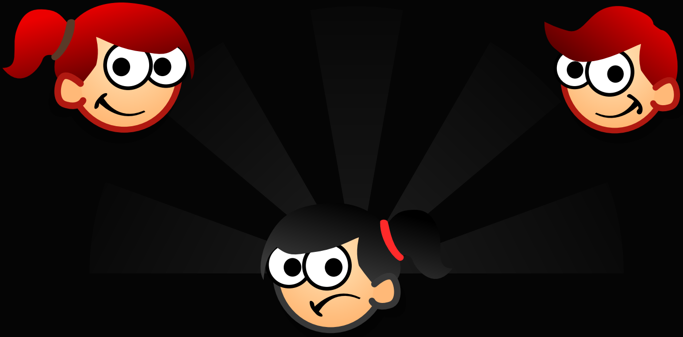
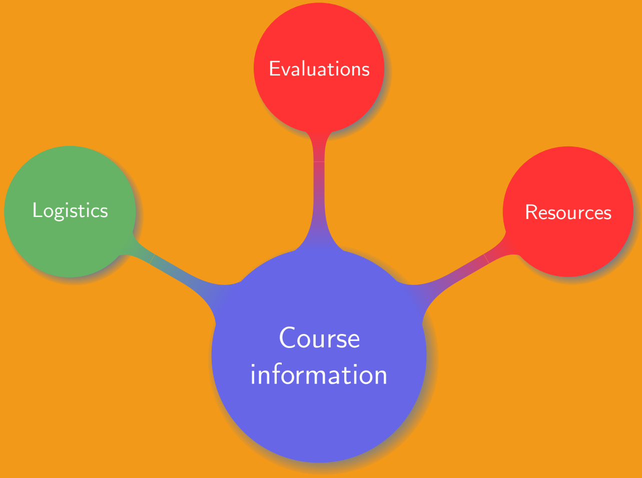


Introduction to Cryptography

0. Course information

Manuel – Summer 2019

Chapter organisation



Basic information

Teaching team:

- Instructor: Manuel (charlem@sjtu.edu.cn)
- Teaching assistants:
    - Weiji (stephen_huang@sjtu.edu.cn)
    - TBA (tba@sjtu.edu.cn)

Basic information

Teaching team:

- Instructor: Manuel (charlem@sjtu.edu.cn)
- Teaching assistants:
  - Weiji (stephen_huang@sjtu.edu.cn)
  - TBA (tba@sjtu.edu.cn)

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)

Basic information

Teaching team:

- Instructor: Manuel (charlem@sjtu.edu.cn)
- Teaching assistants:
  - Weiji (stephen_huang@sjtu.edu.cn)
  - TBA (tba@sjtu.edu.cn)

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)

Never send large files by email

Course schedule

Course arrangements:

- Lectures:
  - Tuesday 10:00 – 11:40
  - Thursday 10:00 – 11:40
  - Friday 8:00 – 9:40 (odd weeks)
- Office hours: Tuesday 15:40 – 17:50

Appointments outside of the office hours can be taken by email

Course objectives

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

Course objectives

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

Decide on the validity and security of given cryptographic solutions

Course workflow

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

Course workflow

Learning strategy:

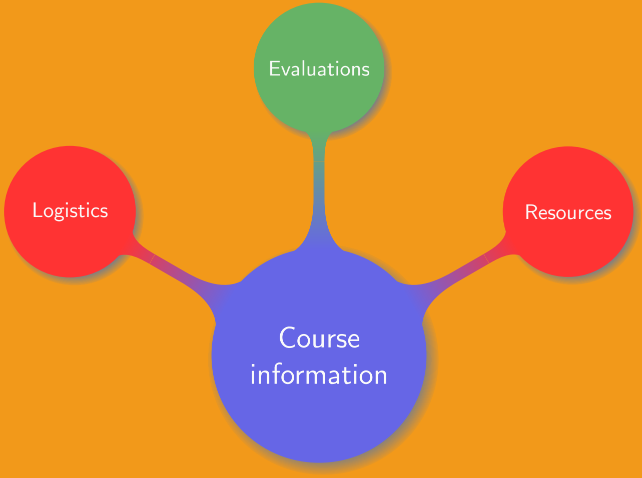
- Course side:
  1. Understand the basic concepts of cryptography
  2. Know the most common problems and their solutions
  3. Get an overview of many subfields of cryptography
- Personal side:
  1. Perform extra research
  2. Relate known strategies to new problems
  3. Read and write some code

Course outcomes

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

Chapter organisation



Assignments

Homework:

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

Projects:

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

Challenges:

- Total: 3
- Content: code breaking

Grading policy

Grade weighting:

- Homework: 15%
- Projects: 25%
- Final exam: 30%
- Midterm exam: 30%

Grading policy

Grade weighting:

- Homework: 15%
- Projects: 25%
- Final exam: 30%
- Midterm exam: 30%

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 3 days

Grading policy

Grade weighting:

- Homework: 15%
- Projects: 25%
- Final exam: 30%
- Midterm exam: 30%

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 3 days

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

Honor code

General rules:

- Not allowed:
    - Reuse the code or work from other students or groups
    - Reuse the code or work from the internet
    - Share too many details on how to complete a task

Honor code

General rules:

- Not allowed:
  - Reuse the code or work from other students or groups
  - Reuse the code or work from the internet
  - Share too many details on how to complete a task
- 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

Honor Code

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

Special circumstances

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

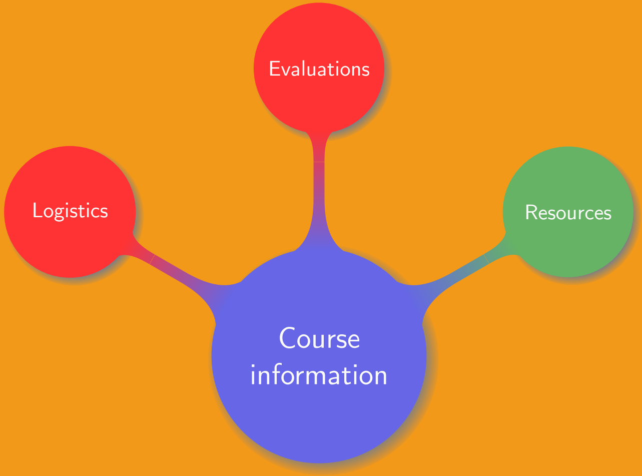
Special circumstances

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

Any late request will be rejected

Chapter organisation



Canvas

Information and documents available on the Canvas platform:

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

References

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. $\{\textit{websites} \setminus \{\textit{local Chinese network}\}\}$

References

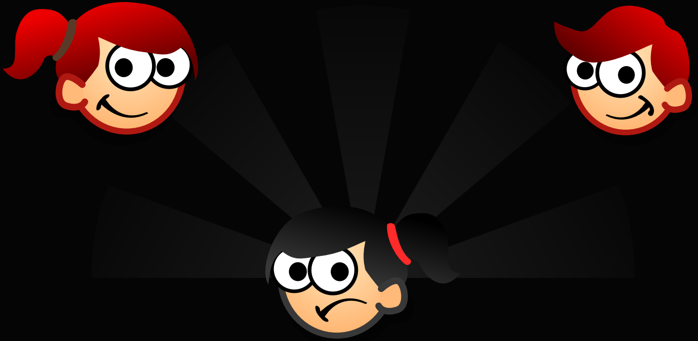
Useful places where to find information:

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

Never use Baidu in any course

Key points

- Work regularly, do not wait the last minute/day
- Respect the Honor Code
- Go beyond what is taught
- Do not learn, understand
- Keep in touch with us
- Advice and suggestions are always much appreciated



Thank you!