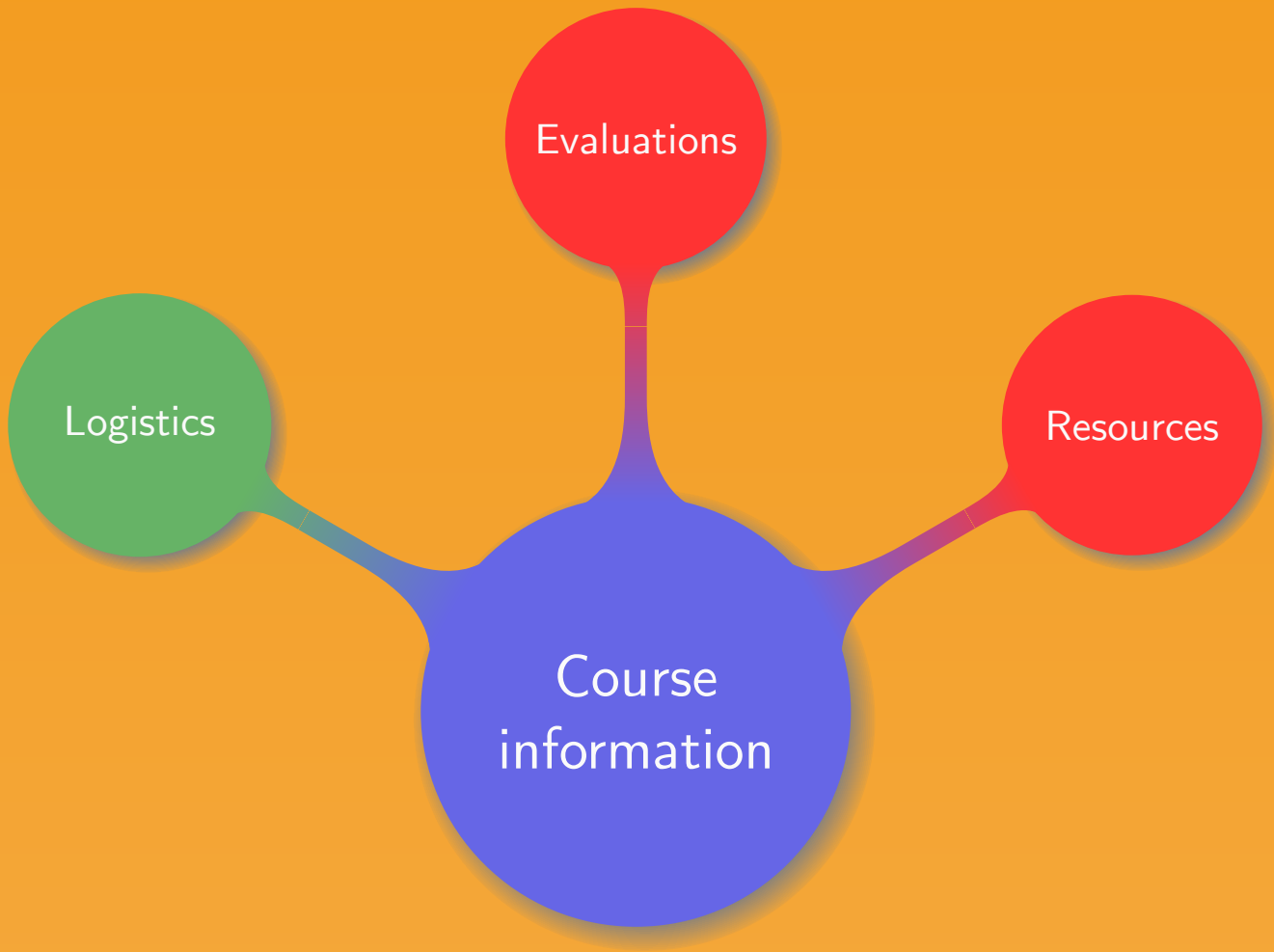
Introduction to Operating Systems

0. Course information

Manuel – Fall 2019

Chapter organisation



Basic information

Teaching team:

- Instructor: Manuel (charlem@sjtu.edu.cn)
- Teaching assistants:
  - Jiayi (jane_chen@sjtu.edu.cn)
  - Minhao (jinminhao@sjtu.edu.cn)

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Important rules:

- When contacting a TA for an important matter, `CC` the instructor
- Prepend [VE482] to the subject, e.g. `Subject: [VE482] Grades`
- Use SJTU jBox service to share large files ($>$ 2 MB)

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Never send large files by email

Course schedule

Course arrangements:

- Lectures:
  - Tuesday 12:10 – 13:50
  - Thursday 12:10 – 13:50
  - Friday 8:00 – 9:40 (even weeks)
- Office hours:
  - Tuesday 9:40 – 11:20
  - Thursday 9:40 – 11:20

Appointments outside of the office hours can be taken by email

Course objectives

Main goals of this course:

- Understand the functioning of operating systems
- Become familiar with the internal structure of operating systems
- Be able to perform basic operating system coding

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Be able to share in the development of an operating system

Course workflow

Learning strategy:

- Course side:
  1. Understand how to efficiently use the CPU
  2. Know how to handle Memory, Input/Output, and Filesystems
  3. Get a basic idea of security and distributed systems

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- Course side:
  1. Understand how to efficiently use the CPU
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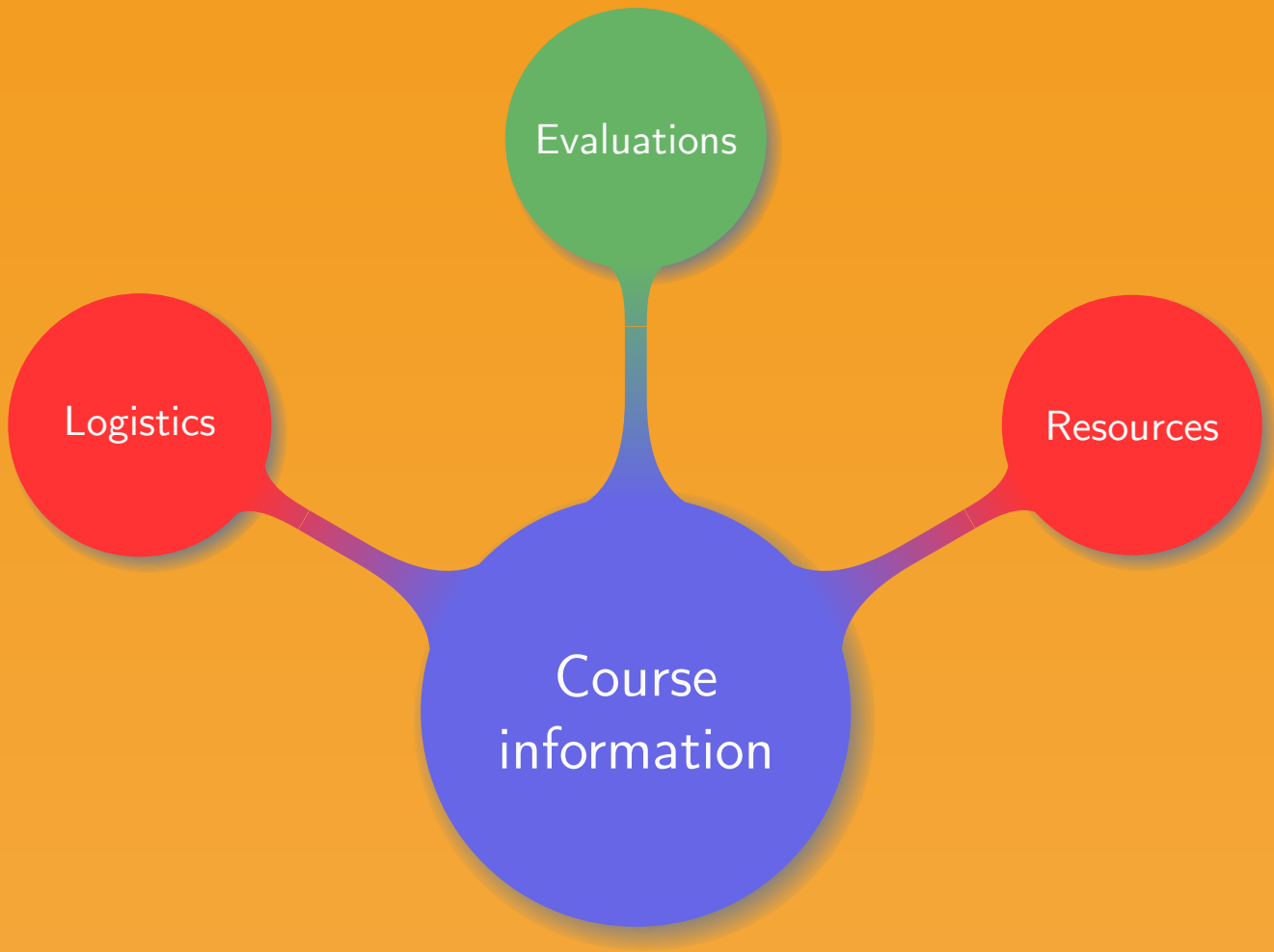
  3. Get a basic idea of security and distributed systems
- Personal side:
  1. Read and write code
  2. Relate known strategies to new problems
  3. Perform extra research

Course outcomes

Detailed goals:

- Understand the general organisation of an OS
- Understand the hardware organisation
- Be familiar with the concept of process and threads
- Be able to solve common problems related to inter-process communication
- Be able to implement the most common scheduling algorithms
- Be able to analyse, prevent or solve deadlock issues
- Be familiar with the memory management and filesystems
- Be proficient at using Unix systems, spot particular parts of the kernel code, and write clean and well shaped code
- Understand the concept of security in an OS

Chapter organisation



Assignments

Homework:

- Total: 8
- Content: basic concepts, programming, scripting

Labs:

- Total: 8
- Content: improve programming skills

Projects:

- Total: 3
- Content: shell, thread communication, scheduling

Extra: Linux kernel challenges

Grading policy

Grade weighting:

- Assignments: 12.5%
- Projects: 40%
- Labs: 7.5%
- Midterm exam: 20%
- Final exam: 20%

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Assignment submissions:

- Late submission: -10% per day, not accepted after three days
- Dirty or hard to decipher: up to -10%

Grades will be curved with the median in the range $[\![B, B+]\!]$

Honor Code

General rules:

- Not allowed:
  - Reuse the code or work from other students
  - Reuse the code or work from the internet
  - Give too many details on how to solve an exercise

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- Allowed:
  - Share ideas and understandings on the course
  - Provide general directions on where or how to find information

Honor Code

Documents allowed during the exams: none

Group works:

- Every student in a group is responsible for his group submission
- If a student breaks the Honor Code, the whole group is sent to Honour Council

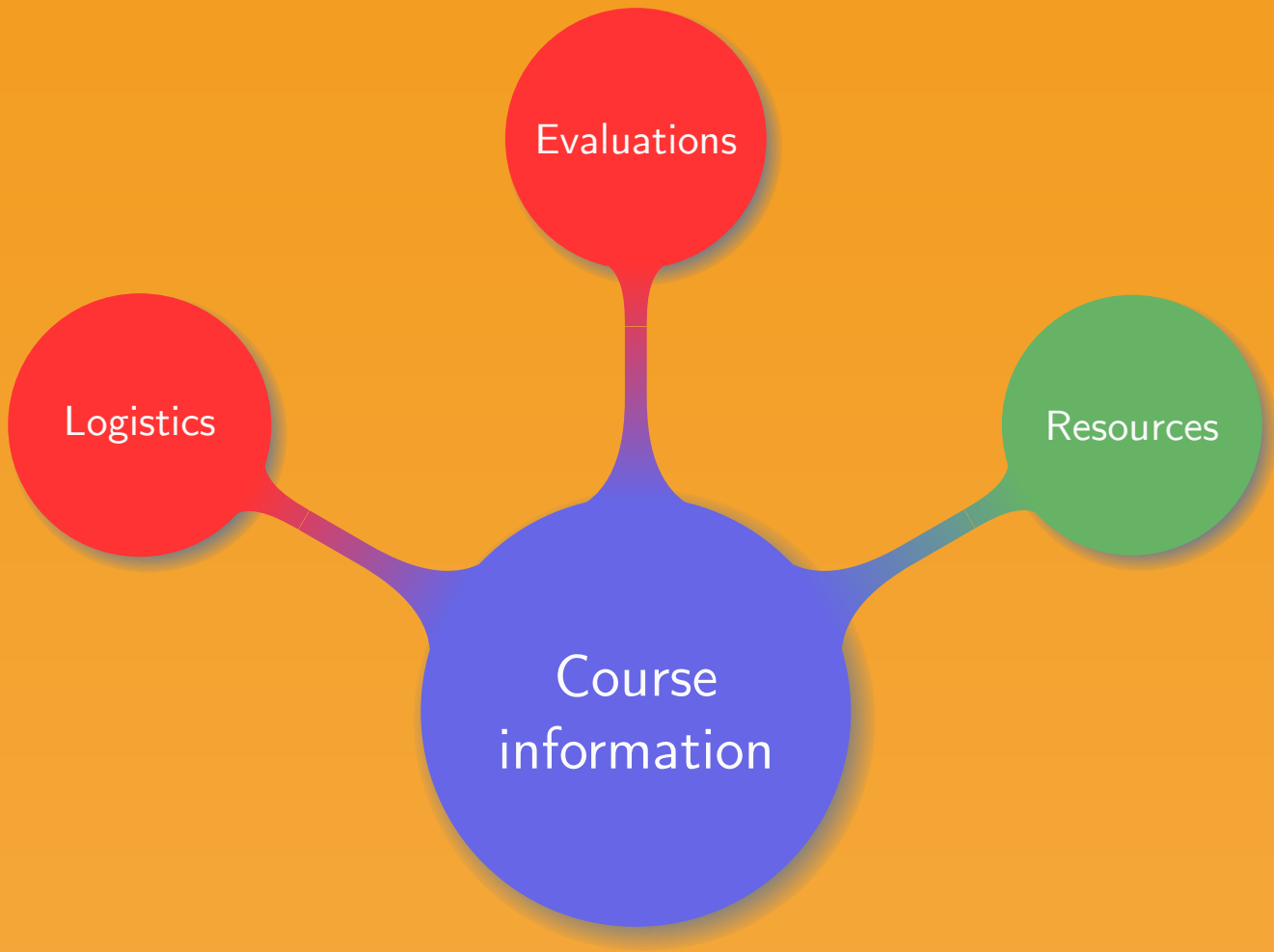
Special circumstances

Contact us as early as possible when:

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

Any late request will be rejected

Chapter organisation



Canvas

On Canvas platform:

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

References

Useful places where to find information:

- *Modern Operating Systems*, A. Tanembaum
- *Operating System Concepts*, A. Silberschatz
- OS creation: `http://wiki.osdev.org/Main_Page`
- Piazza
- Search information online, i.e. $\{websites \setminus \{local\ Chinese\ network\}\}$

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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
- Any advice/suggestions will be much appreciated

Thank you!