

CS 475: Formal Models of Computation

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Instructional Staff

- **Instructor:** Mahesh Viswanathan (vmahesh)
- **Office Hours:** After lecture. Also by appointment.

Electronic Bulletin Boards

- **Webpage:** General information, course policies, lecture notes
`courses.grainger.illinois.edu/cs475/fa2023`
- **Campuswire:** Announcements, online questions and discussion, contacting course staff.
- **Gradescope:** All assigned work (Warm Up exercises and homework) submission
- **Moodle:** Everything related to grade calculation, homework solutions, additional textbook chapters (if needed)

Resources for class material

- **Prerequisites:** All material in CS 173, and CS 374
- **Textbooks:** Available online through university library.
 - Automata and Computability by Dexter Kozen
 - Theory of Computation by Dexter Kozen.
- **Video Recording of Lectures:** See course website for link.

Grading Policy: Overview

Total Grade and Weight

- **Warm Up** exercises: 20%
- **Homework**: 25%
- **Midterms**: 30% (2×15)
- **Finals**: 25%

Warm Up Exercises

- Once every week on Gradescope, except the week before exams and Thanksgiving break
- Released by Thursday night, and due the following Monday (midnight)
- Autograded multiple choice and short answer questions
- Not timed. Multiple attempts allowed, with the last attempt being graded
- 11 warm ups in total. Drop lowest 4 scores (3 credit) or lowest 3 scores (4 credit)
- Schedule on course webpage

Homework

- One homework every two week: Due on Thursday at midnight on Gradescope. Assigned two weeks in advance on Thursday.
- **No late homeworks.** Lowest 2 homework scores (3 credit) or lowest homework score (4 credit) will be dropped.
- Homeworks may be solved in groups of size at most 3 and each group submits **one** written solution on Gradescope.
- Homework schedule on course webpage.

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- Homework schedule on course webpage.
- Read Homework Guidelines and Academic integrity policies on course website.

Examinations

- First Midterm: Tuesday, September 26, 3:30pm to 4:45pm
- Second Midterm: Tuesday, October 31, 3:30pm to 4:45pm
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- **No conflict exam offered unless you have valid excuse.**
- Midterms will only test material since the previous exam
- Final Exam will test **all** the course material

Part I


Course Overview

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Computational Complexity

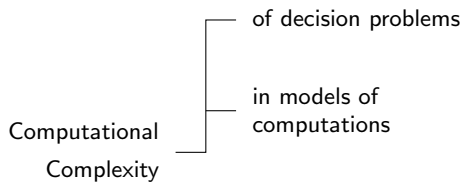
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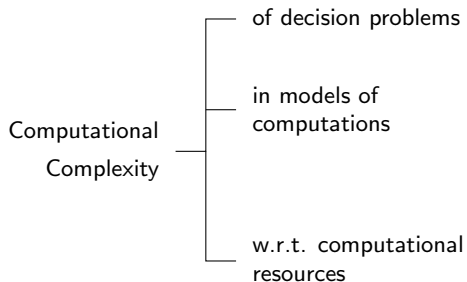


of decision problems

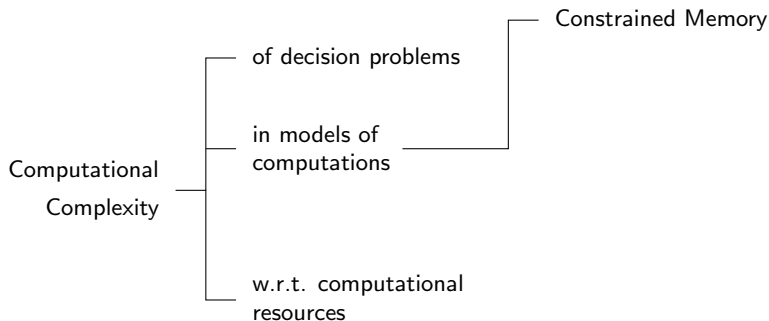
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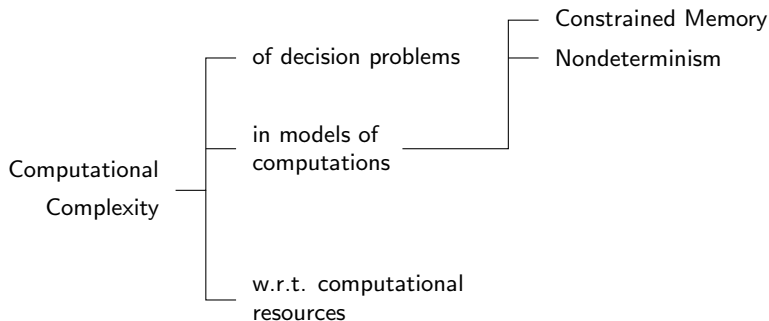
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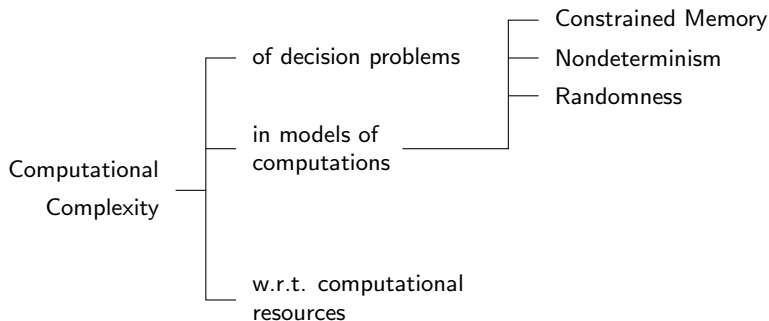
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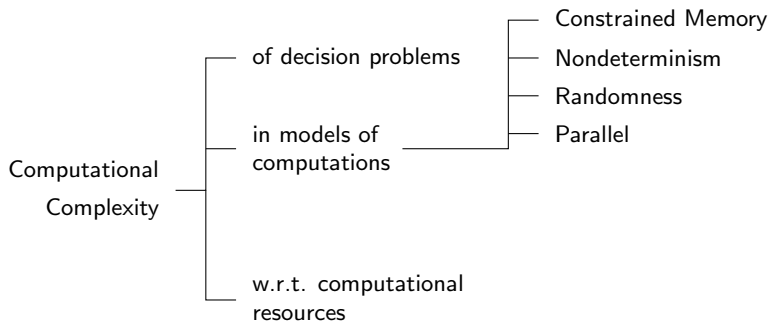
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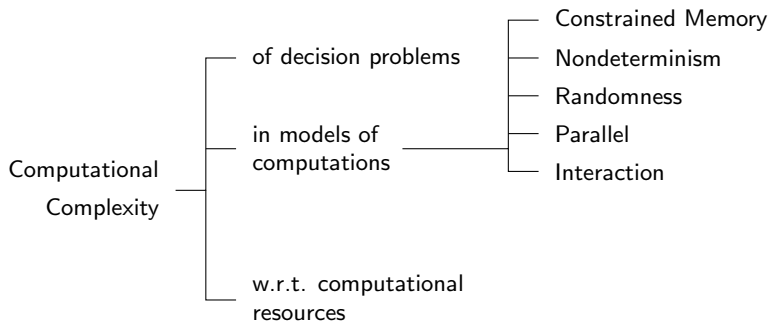
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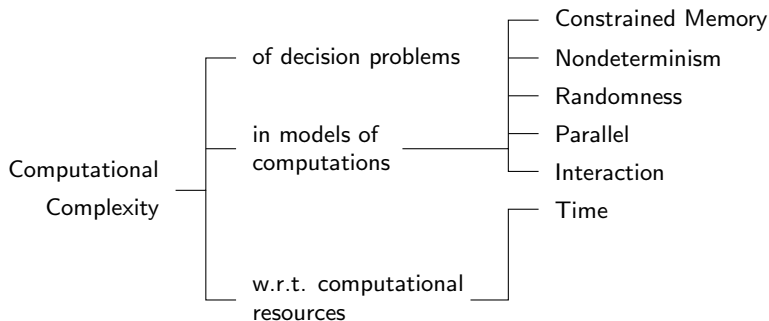
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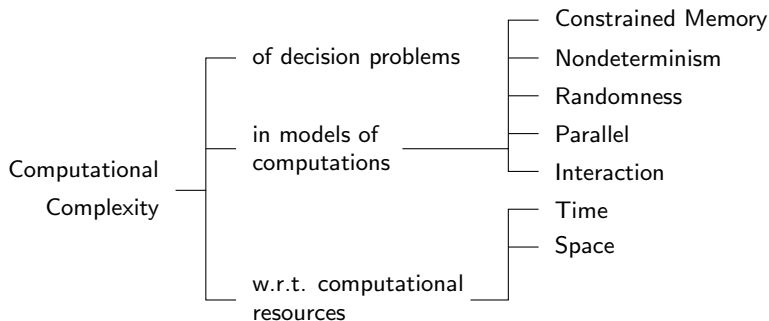
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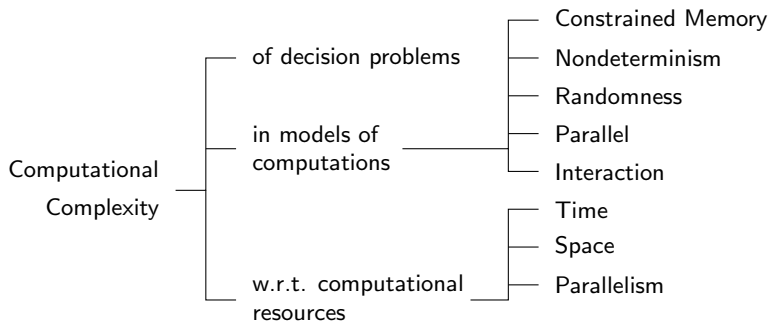
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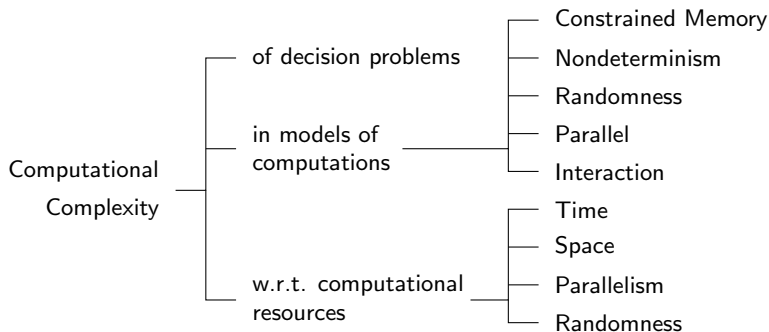
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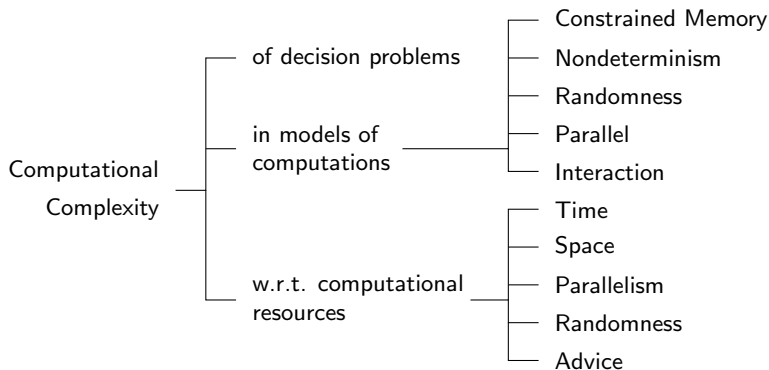
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- Is every efficient sequential algorithm parallelizable?
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- Can every efficient randomized algorithm be converted into an (efficient) deterministic one?