



Data Structures Algorithms:

(Slides to be Adopted from Goodrich
and aligned with Weiss' book)

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<http://www.cse.iitb.ac.in/~cs213m/>

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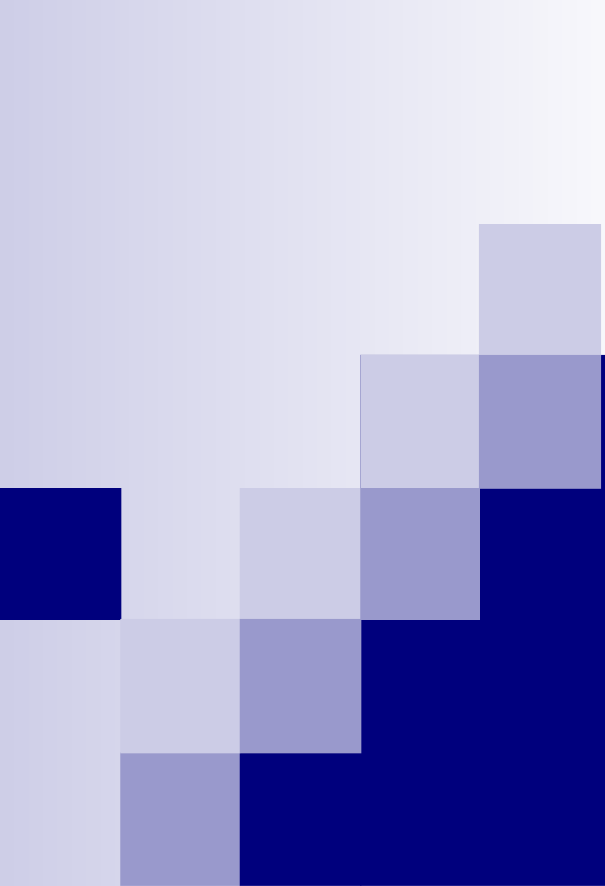
What is the course about?

- Learning to represent data required for a program in a proper *structure* and designing an *algorithm* that *uses* this structure such that
 - Program runs fast
 - Program uses minimal memory
- E.g. consider an online dictionary –
 - How should we store the words?
 - What is the fastest way to search for the meaning of a word?
- E.g. Routing in Maps
 - How should we represent the Map?
 - How should we find the route?



...What is the course about

- You will learn about various known *data structures*
 - You will learn how to *use* the right one for your application
 - You may also develop your own data structures
- You will learn various *algorithms* for common problems
 - You will develop your own algorithms (in homeworks, exams)
- You will learn how to *analyze* these algorithms for efficiency



This course is the
heart and soul of
Computer Science

Very critical prerequisite, all
subsequent CS courses
depend on this course



Specifics

The rules, policies etc



Attendance

- Compulsory

- This allows me to get a mental picture of each student

- Each class will begin with discussion of a homework problem

- Students exchange their answers

- TA will choose a student to present the answer

- will put pressure to attend classes.

Evaluation Scheme (CS 213m)

(Tentative – subject to change)

- 1 “mid-sem”
 - 20%
 - Two hours
- 1 end sem of 40% weight.
- 5 % for class participation
- 20 % for homework assignments and final project
- 15 % for quizzes (best two of three quizzes used for grading.)
- Dates of quizzes:
 - 29th January, 8:30-9:25 AM
 - 12th March 8:30-9:25 AM
 - 2nd April 8:30-9:25 AM

Homework

- Given frequently: Mix of reinforcement & creative problems
- Class divided into 10 focus groups
- Each homework will be assigned to one *focus group*
 - Will not be graded but compulsory to be done (Will be counted in class participation marks)
 - Solutions to be given by focus group on class discussion forum: *piazza*
 - All members of the focus group should post answers (for enthusiasm mark credit)



Introduction to *Piazza*

- Class discussion forum website
- But much, much more than an unstructured discussion forum
- Sort of like a “facebook group”, but customized for class interaction



...*Piazza*

- Instructors can post “questions” (and announcements)
- Students can post solutions
- Other students can improve on solutions posted by others or mark them as “good”
- Instructor can improve on solutions posted by others (or mark them as “good”)



...*Piazza*

- Students can post questions
 - ☐ Can do so with name or anonymously also
 - ☐ Instructor can answer
 - ☐ Other students can mark it as “good question”
- Instructor sees record of online activity by students



...Piazza

- I will encourage the use of Piazza in a big way for this class!! I will
 - redirect e-mails to me which are of general interest to Piazza
 - Put homework problems on Piazza which must be solved by a focus group
 - However, I will use moodle for e-mail announcements



“Enthusiasm”

- Active class attendance
 - ☐ Answering my questions
 - ☐ Asking doubts/questions
 - ☐ Making useful comments
 - ☐ Sitting attentively near the front benches
- Interacting with me outside class (in my office hours)
- Active on Piazza
 - ☐ Important for those who are just shy speaking up in a class



Summary about online course resources

- “Permanent stuff” on moodle: All slides, other files, important instructions, lecture schedules.
- “Temporal stuff” - “discussion” type activity, question/answers, or announcements, on Piazza.