

CSE 20

Lecture 1: Introduction

Instructor: Sourav Chakraborty

TAs and Tutors

- Instructor:
Sourav Chakraborty (chakraborty.sourav@gmail.com)
- TAs:
 - 1 Cameron Helm (chelm@ucsd.edu)
 - 2 Rossana Motta (rmotta@ucsd.edu)
 - 3 Yan Yan (yayan@ucsd.edu)
- Tutors:
Will be announced next class

Classes

- Lecture: Mon, Wed, Fri 12PM-12:50PM (LEDDN AUD)
- Discussions: Wed, Fri 3PM-3:50PM (YORK 2622)
- Office Hours:
Instructor office hour: by appointment
Other office hours to be announced in next class.

Evaluation Process

- Assignments (no marks)
- Quizes
 - Around 6 quizzes.
 - 5% each.
 - Everything will be done on WeBWork.
- MidTerm 30%.
- Endterm Term 40%.

Books and references

Textbook for the course is

- A short course in Discrete Mathematics, by E.A.Bender and S.G.Williamson

Also one may refer to the following books:

- Essentials of Discrete Mathematics, by David Hunter.

Course Outline

A short course in discrete mathematics:

- Boolean functions
- Logic
- Number Theory
- Sets and functions
- Equivalence and Order
- Induction
- Graph Theory

What is Discrete Mathematics?

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“Discrete” is something that is not continuous.

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Example of discrete objects

- The integers
- The rational numbers
- People, chairs, tables, balls, ...
- “Countable” objects.
- Number of hairs on your head

Most important discrete object

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Integers

Representation of integers

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Digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

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Representation of integers

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What does 217 read like?

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Like: $217 = 2 * 10^2 + 1 * 10 + 7$

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Base b representation of a number x is the unique way of writing

$$x = x_0 * b^0 + x_1 * b^1 + \dots + x_k * b^k,$$

where $x_0, x_1, \dots, x_k \in \{0, 1, \dots, (b - 1)\}$

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$$[121]_3 + [22]_3 = [220]_3$$

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- Computer talks in this language.