

ECE 537 Foundations of Computing

Pradeep Sen
Advanced Graphics Lab

Class 1
August 21, 2007

Introduction

- Instructor: Pradeep Sen
- Office: ECE 225C
- Office hours: Wednesdays 2-4pm
- This class is WebCT enhanced and there is an online section
- Email me through the WebCT e-mail feature
- No TA as of yet...

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The class

- “Foundations of computing”
- Theoretical class – no programming!
- Answer questions such as:
 - How do you formally model a computer?
 - What are the limits of what a computer can and cannot do?
 - How do you analyze algorithms to understand their performance?
 - What kinds of problems are intrinsically hard to solve?

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Class goals

- To be able to understand theoretical topics when reading papers or writing your thesis
- To be able to apply these concepts when structuring programs or analyzing code
- Create efficient algorithms to solve problems

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Syllabus and course logistics

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Texts

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Topics

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Introduction and preliminaries

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Pierre de Fermat

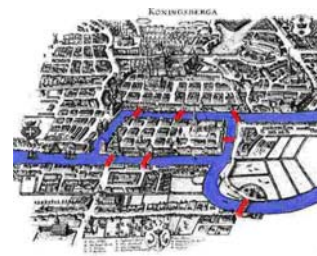


1601-1665

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Koningsberg, 1700



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Leonhard Euler



1707-1783

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William Rowan Hamilton



1805-1865

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David Hilbert



1862-1943

Hilbert's Tenth Problem

- Find an algorithm to determine whether a given polynomial Diophantine equation with integer coefficients has an integer solution.

Kurt Godel



1906-1978

Alan Turing



1912-1954

Preliminaries

- Logic
- Algorithm analysis
- Proof Techniques

Reading

- Know material in Chapters 1-9 of Cormen