CS 145 – Foundations of Computer Science

Professor Eric Aaron

**Lecture** – T Th 9:00am  
**Lab** – F 10:30am

**Lecture Meeting Location:** SP 309  
**Lab Meeting Location:** SP 309

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**Instructor Info**

- **Professor Eric Aaron**

  **Website:** [http://www.cs.vassar.edu/~eaaron](http://www.cs.vassar.edu/~eaaron)

  **Office:**  
  SP 305

  **Office Hours:**  
  Tu 2:00-3:00pm, Th 12:00-1:00pm, and by appointment (see my website).

  **Phone/Voicemail:**  
  (845) 437-7293

  **E-mail:**  
  eaaron@cs.vassar.edu

  *NB: The above email address is the best way to contact me*

  **Course Website:**  
A tiny bit about the course

• Your textbook:
  – *Sets, Logic and Maths for Computing 2nd Edition*, by David Makinson
  – See the course website’s *Some Useful Links* page for how to access the book for free(!) online

• A Scheme reference:
  – Scheme summary from Prof. Luke Hunsberger
  – also available from the course website’s *Some Useful Links* page

A tiny bit more about the course

• What we’ll cover
  – Mathematical foundations: Sets, relations, functions, …
  – Proofs: logic, induction, sets …
  – (Program correctness)
  – Programs: programming in Scheme, but (almost certainly) nothing you haven’t seen before
    • See our *Some Useful Links* page for notes about the version of Scheme for this course, and the related DrScheme software
Proofs

• What makes proofs important to Computer Science?
  – Do we need proofs? What benefit do we get from them?

<table>
<thead>
<tr>
<th>Here’s a proof (or “proof”) now!</th>
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<tbody>
<tr>
<td>It shows that 2=1, which is a somewhat non-intuitive result!</td>
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<tr>
<td>• Start with two non-zero numbers x and y, such that x = y</td>
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<tr>
<td>• Then, multiplying by x, we get: x² = xy</td>
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<tr>
<td>• Subtracting the same thing from both sides: x² - y² = xy - y²</td>
</tr>
<tr>
<td>• Factoring, and dividing both sides by (x-y), we get: x + y = y</td>
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<tr>
<td>• Since x = y, x + y = 2y, so we see that: 2y = y</td>
</tr>
<tr>
<td>• Dividing both sides by y, we get: 2 = 1</td>
</tr>
</tbody>
</table>

Is there a problem with this reasoning?

Assignments

• Reading: Ch. 1.1-1.4 in our textbook

• Also, email me from the account at which you’d want me to contact you
  – Include a sentence on what you’d like to get out of the course
  – … plus anything else you might like to tell me!
  – Also, in your email, let me know if you were able to access the course website and lecture notes without any difficulties
    • Remember: website is at [http://www.cs.vassar.edu/~cs145/](http://www.cs.vassar.edu/~cs145/)
Business

• We will have a lecture this Friday in our lab time

• How many of you have previously worked with Racket? with Scheme?

• How many of you do not have a Vassar CS computer account?