Math Foundations of Computing

CS 200
Learning Goals (for today):

- Familiarize yourself with course basics
- Be able to describe learning
- Understand motivation for technology and group policies
- Describe inductive proofs at a high level
Learning Goals (for this Class):

- Ability to think like a computer scientist (using the tools of mathematics).
- Ability to communicate like a computer scientist (using the language of mathematics).
- Proficiency using common mathematical tools of computer science.
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Outline…
About Me

• Shelby Kimmel (call me Professor Kimmel, Professor, she/her pronouns)

• **My research:** Quantum Computing

• **Academic Background:** Williams undergrad, MIT grad school, University of Maryland postdoc

• **Non-academic Background:** internships at Raytheon, Fulbright (English Teaching Assistant) South Korea
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Learning from biological perspective

- Learning is the process of developing new connections between neurons in your brain.
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• New connections are created by repeatedly practicing new behavior. By practicing any task, can rewire your brain to become “smart” at that skill.
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Learning Take-aways

• Give yourself time
  – No cramming
  – Start problem set early (Rough Draft!)
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• Learning is Uncomfortable (at first)
  – Don’t give up
Learning Take-aways

• Practice the skills you need
  – Practice problems are better than reading over notes to study
  – We’ll do a lot of in-class problem solving (not graded for correctness!)
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• My role is not so much teacher as guide
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Computers or devices in class generally negatively affect learning

- *Studies* show students who write notes on paper learn more than those who type.
- *Studies* show students who use laptops/phones spend up to 1/3 of their time “zoning out” (using Instagram, checking e-mail, etc) and consequently have lower exam scores.
- *Studies* show if you use a laptop, your classmate’s exam scores will be lower.
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Policy: Use technology judiciously. Avoid unless there is a good reason for it.
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Group Problem Solving
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- Working in a group improves learning
- I don’t care whether you get to the solution
- I care about whether groups are functioning in a way that helps you to learn
What behavior should I look for in a group that is maximizing learning?

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What behavior should I look for in a group that is maximizing learning?

- Active listening: rephrase what a group mate said
- Ask questions if you don’t understand
- Be skeptical of what others say – suggest alternate approaches.
- Encourage participation
- Make sure everyone in the group understands a point before moving forward
Website tour!

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