Learning Goals for Today

- Build curiosity for quantum computers + what they can do
- Develop ideas for productive group problem solving
- Familiarity with course structure

Announcements

- Office Hours: T/Th: 12:30-1:30, 3:30-4:00
- Upcoming Assignments: Rough Draft, Getting to know you quiz, exit tix
- Lecture notes, video ← Private
- Weekly schedule
- What I did over the summer
- Course Assistant Drop-in Hours TBD

Exit Tickets

What do you know about quantum computers?

- Which can solve more problems?

A) A regular (classical) computer with n bits + T time steps/cycles

B) A quantum computer with n (qu)bits + T time steps/cycles

C) Each can solve problems the other can not.

What do you know about quantum computers?

- There are problems a quantum computer can solve that no classical computers can solve.

A) True B) False C) Unknown

What do you know about quantum computers?

- Quantum computers can solve NP-Hard problems, like traveling salesperson

  A) True B) False **C) Unknown**

What do you know about quantum computers?

- There are problems for which there is an exponential time advantage for a quantum computer

A) True B) False C) Unknown

Course Learning Goals
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Learning Goals

- Use standard terminology and mathematical tools of quantum computing to effectively describe and analyze quantum algorithms and protocols for cryptography, game-playing, disturbance-free detection, factoring, searching, and error correction.
- Describe properties of quantum mechanics (like entanglement, measurement, no-cloning, superposition, negative and complex phases), and build intuition as to why these properties lead to advantages over standard computation in computing and information tasks.
- Appreciate the limits of quantum computation and recognize when hype is used to minimize those limitations.
- Develop strategies to become a better learner and collaborator

Learning Goal: Become a better learner + collaborator

Think of something you are good at.
How did you get good at it?
Did you ever make mistakes?
What did you do when you made a mistake?

→ • Quiz + Exams → Revision
• No credit / credits

Group work: in class, not graded for correctness

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Announcements ↰