15-410

How to Ask Questions
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Synchronization

Wait list

- 410 wait list is almost done
  - I think one person *needs to answer mail* from the CSD course administrator
- 605 wait list
  - If you are still on the list, see me after class today.

Office hours

- I think today I will have some, likely 16:00

Motivation

You're here to learn

You ask us questions

Some questions result in better learning than others

- **We have a pedagogical theory**
  - **We would like to train *you* to be self-oracular**

Topic: how to ask the faster-learning questions

Outline

I don't get _____.

Can I assume _____?

Is this the right way to _____?

I can't decide between _____ and _____.

Q1: “I don't get _____”

What you ask us

- I don't get _____

The problem we fear

- Insufficient synthesis

Q1: “I don't get _____”

What you ask us

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The problem we fear

- Insufficient synthesis
  - Textbook
  - “Regular” (inter-project) lectures
  - Project-specific lecture
  - Project specification, project handout
  - Test code (reading during *design* can be good)
  - Material on “projects” web page of course web site

Q1: “I don't get _____”

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How to help us with our fears

- “I read X and Y. I think I understand Z, but I don't see how to apply W.”
- “When the spec says ___, I can't tell whether that means ___ or ___ because ___.”

Q2: Can I assume _____?

What you ask us

- Can I assume _____?

The problem we fear

- Missed opportunity for design

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What you ask us

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How to help us with our fears

- Ask *yourself* these two questions instead
  - Q2': If I assume _____ *and I'm wrong*, what will happen?
  - Q2'': If I *don't* assume _____, what is the penalty?

Q2: Can I assume _____?

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    - A1: "The world will end" ⇒ ...?
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    - A2: "Must do $O(N^{12})$ graph scan" ⇒ ...?

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    - A2: "Must do $O(N^{12})$ graph scan" ⇒ ok?
- Avoid: "World will end" + "save 1 XOR"

Q3: Is this the right way to _____?

What you ask us

- Is this the right way to _____?

The problem we fear

- You believe there is *one* right way to _____.

Q3: Is this the right way to _____?

What you ask us

- Is this the right way to _____?

The problem we fear

- You believe there is *one* right way to _____.
  - Usually, there are several
  - Generally our assignments are designed to have multiple good solutions

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What you ask us

- Is this the right way to _____?

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- You believe there is *one* right way to _____.
  - Usually, there are several
  - Generally our assignments are designed to have multiple good solutions

How to help us with our fears

- Figure out two or three ways to _____
  - Often one will seem clearly better than the other(s)
  - Regardless, you will almost certainly understand the problem better
  - But sometimes you may end up having to make a tough decision...

Q4: I can't decide between X & Y

What you ask us

- I can't decide between X and Y

The problem we fear

- You believe that we believe X (or Y) is “the right answer”
  - Again, we try *not* to do this
- Missed opportunity for design

Q4: I can't decide between X & Y

What you ask us

- I can't decide between X and Y

The problem we fear

- You believe that we believe X (or Y) is “the right answer”
  - Again, we try *not* to do this
- Missed opportunity for design

How to help us with our fears

- Show us a table!

Q4: I can't decide between X & Y

	Proposal 1	Proposal 2
Metric 1	Good	Bad
Metric 2	Bad	Good
Conclusion	This one, because...	

Conclusion

Suggestions

- Make sure you read everything
- Ask detailed questions that refer to handout, spec, etc.
- Ask multi-dimensional questions about assumptions
- Try to find multiple solutions to a tough problem
  - When choosing, try to have a rationale
  - If you write down a summary each time, you have a “design document”!