

**15-410**

**How to Ask Questions  
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# 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
  - 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 \_\_\_\_\_”

## What you ask us

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- Insufficient synthesis
  - Textbook
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  - Material on “projects” web page of course web site

## 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

# Q2: Can I assume \_\_\_\_\_?

## What you ask us

- Can I assume \_\_\_\_\_?

## The problem we fear

- Missed opportunity for design

## 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'': Why do I *want* to assume \_\_\_\_\_?

# Q2: Can I assume \_\_\_\_\_?

## What you ask us

- Can I assume \_\_\_\_\_?

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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?
    - » A1: “The world will end” ⇒ maybe not assume
    - » A2: “Maybe I must complain to user” ⇒ ok?

# Q2: Can I assume \_\_\_\_\_?

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    - » A1: “The world will end” ⇒ maybe not assume
    - » A2: “Maybe I must complain to user” ⇒ ok?
  - Q2'': Why do I *want* to assume \_\_\_\_\_?
    - » A1: “It would be nice...” ⇒ maybe not assume
    - » A2: “Otherwise it takes  $N^{12}$  running time” ⇒ ok?

# Q2: Can I assume \_\_\_\_\_?

## What you ask us

- Can I assume \_\_\_\_\_?

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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?
    - » A1: “The world will end” ⇒ maybe not assume
    - » A2: “Maybe I must complain to user” ⇒ ok?
  - Q2'': Why do I *want* to assume \_\_\_\_\_?
    - » A1: “It would be nice...” ⇒ maybe not assume
    - » A2: “Otherwise it takes  $N^{12}$  running time” ⇒ ok?
- Avoid: “World will end” + “It would be nice...”

# 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

# 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

## 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 and 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 and 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 and 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”!**