

15-410

How to Ask Questions Jan. 20, 2012

Dave Eckhardt

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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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

- 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 _____?

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?
 - » 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

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

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”!**