How to Write a 6.033 Design Report

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Why are you here today?

1. Proposal → report

2. Show you how a computer designer "thinks through" a design problem.

3. Explain what we look for when grading reports.

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   - Proposal is not the report!
   - "A" on proposal may not = "A" on report

Steps in the Writing Process

1. Read comments on your proposal
2. Re-read the assignment
3. Make a priority list of design 'fixes'
4. "Fix" your design
5. Write design description
6. Write introduction & conclusion
7. Write front & end matter
8. Double-check design specs
9. Clarify and refine report -- peer review!
10. Proofread

Step #1   Read comments on your proposal

- What information was missing or unclear?

- What was good?

- Can you build off existing design or do you need to "start from the ground up"?

You wrote:

"The master process cycles through all 1,000 cameras in a round-robin fashion, reading 2 seconds of data from each connection."
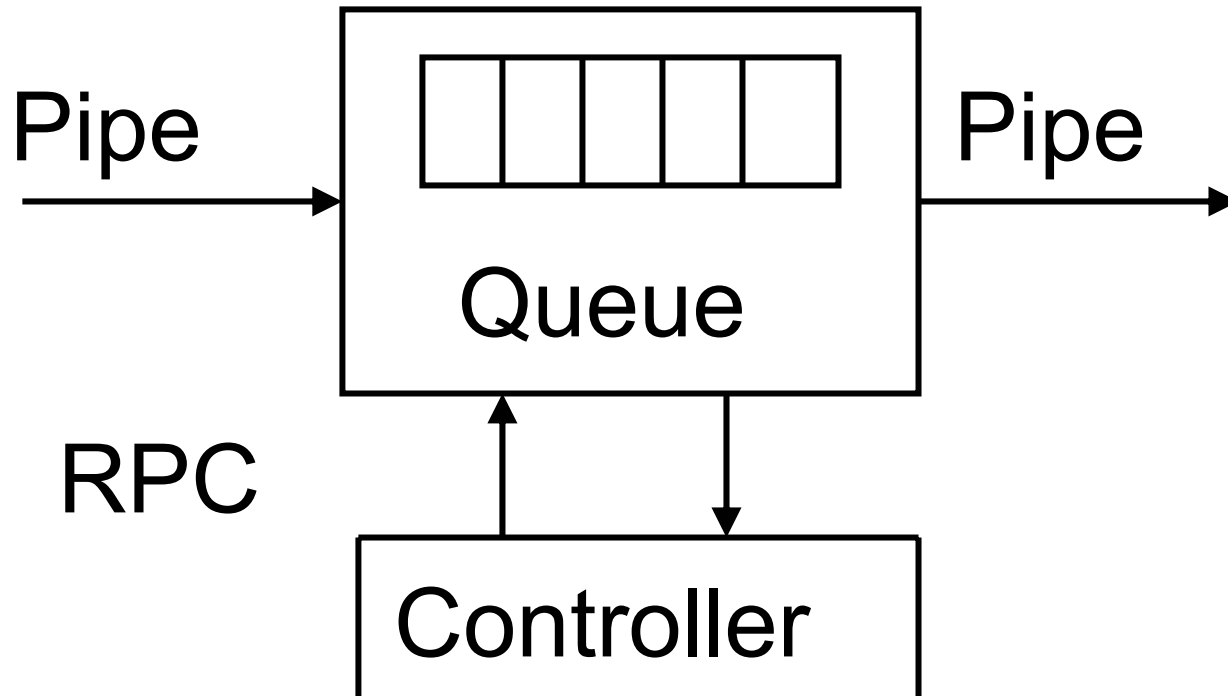
You wrote:

"The master process cycles through all 1,000 cameras in a round-robin fashion, reading 2 seconds of data from each connection."

TA responded:

What happens if network congestion prevents a camera from responding?

Pipe

Queue

Pipe

RPC

Controller
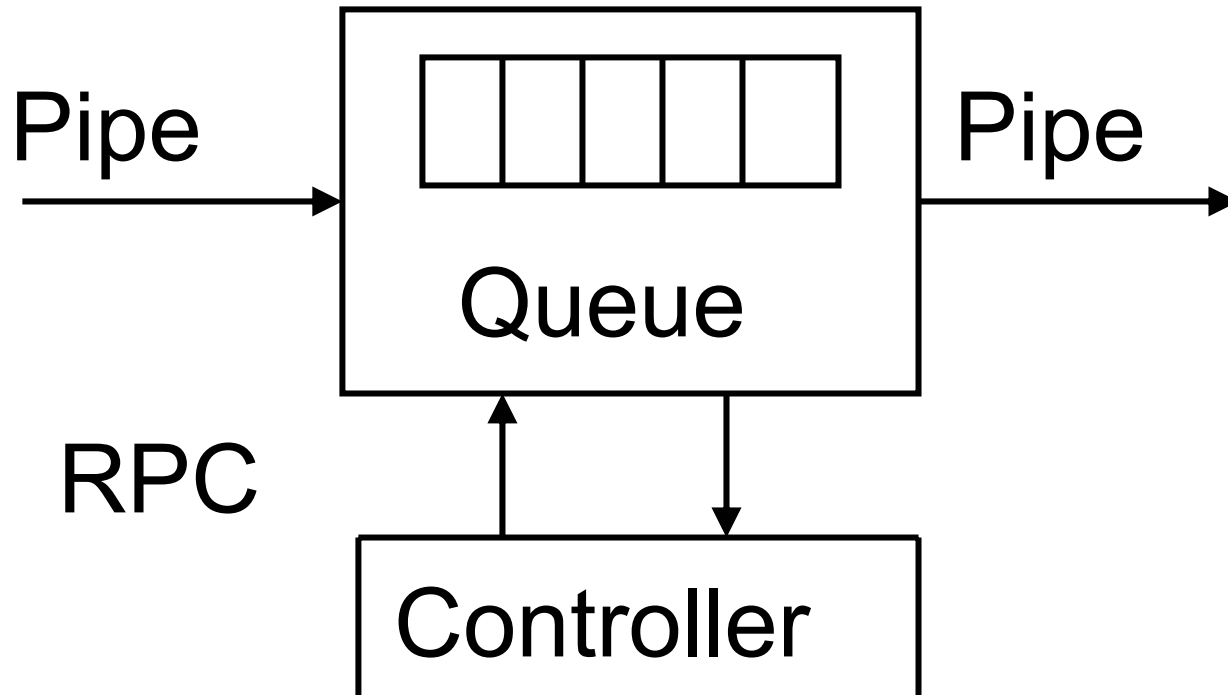
What code implements this structure?

Step #2 # Re-read the assignment

Proposal did not address all aspects of the assignment:

- What's missing?

- What about format? Document specs?

- FAQ & Proposal Feedback Guide

Step #3   Identify priorities

1. Make the system work.
   o Is part of the system undefined?
   o Can you actually build it?

2. System should continue to work under normal faults in transcoder or AI

3. Resilience to overload

Ω Performance

Fix your design!

Identify problem

↓

Fix design

↓

Simplify design

↓

Update schematic

Write the design description

1. Uses Apache.

2. Operates in the MP [or MT] model.

3. Spawns a new thread to handle each request; each thread pulls a response from a shared pool of images.

Develop description from general to specific

Write the design description

- Use section headings to show hierarchy of ideas

- Chunk information into readable sections

- Use figures, tables, and pseudo-code to illustrate concepts

Sections are organizing tool

Write introduction

- State design purpose

- List specific design considerations

- State your approach to the problem

Each design problem has a consideration

Example

1.0 Design Overview

The goal of this design is to provide . . . We accomplish this goal by . . . . We achieve fault isolation by . . Our concurrency model . .

Step #6

Write conclusion

Evaluate your design!

- Summarize design problems you solved,

- Identify problems in your design, &

- Justify why your design does not address these problems

5.0 Conclusion

Our Surveillance@Home design uses processes to . . . This design does not cope well with long term overload because . . .[explain why you did not address this issue]

Step #7

Write the <u>front</u> and <u>end</u> matter

- Executive Summary
- Title Page

Title
Your name
ID#
Recitation instructor
Section time

Date

- Acknowledgements
  - Anyone who helped you with design

- References
IEEE style

Acknowledgements

References

[1] F. Cavalieri, T. Ruscio, R. Tinoco, S. Benedict, C. Davis, and P. K. Vogt, "Isolation of three new avian sarcoma viruses: ASV9, ASV17, and ASV 25," Virology, vol. 143, pp.680-683, 1985.

Double-check design specs

- Ensures that you have not missed any design specs

Identify problem

↓

Fix design

↓

Simplify design

↓

Update schematic

Step #9

Refine, clarify, & peer review

- Give your report to a peer for review

- Refine writing:
  Writing tutors are available to help you.

- DP1 graded on writing & content:
  6.033 is CIM course

Proofreading Checklist

❑ Did you chunk information into expected sections?

Executive Summary

Title Page

1.0 Design Overview   Organize by function:

2.0 Design Description   Fault Isolation

                                       Resource Allocation

                                       Alternatives

3.0 Conclusion

Acknowledgements

References

Proofreading Checklist

❑ Did you chunk information into expected sections?

Executive Summary

Title Page

1.0 Design Overview

2.0 Design Description   Organize by Modules

3.0 Conclusion

Acknowledgements

References

Proofreading Checklist

❑Did you number the pages?

❑Is your name on every page?

❑All figures/tables labeled & referenced in the text?

❑All sources cited?

❑Did you avoid:

- ❑ naked "this"
- ❑ "the reason is because . . "
- ❑ "the fact that . . ."
- ❑ over-use of "I"
- ❑ passive voice

❑Did you proofread a printed copy?

Report Format

- 11 or 12 point font
- Single-spaced
- No more than 5,000 words, including executive summary
- Submit 2 copies
- Not stapled—paper clipped

Writing Help

- Model DP1 papers on 6.033 website
- Readings in your course packet
- Writing Center http://web.mit.edu/writing
- *Mayfield Handbook of Technical and Scientific Writing*

- Writing Tutors available:
  To make an appointment online
  http://web.mit.edu/course/other/practicum/www/6.033/

How do we grade DP1?

Technical staff:

1. Is the design described unambiguously?

2. Does the design achieve design goals?

3. Are your design decisions well justified?

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Writing Staff:

1. Is the report well-organized within and across sections?

2. Is it professionally presented?

3. Are text and figures integrated?

4. Is the writing clear? Edited prose?