The CI-M Side of 6.111 Lab 3:

Writing the Design Report

Donald N.S. Unger, PhD
Writing Across the Curriculum
Fall 2008

DigiAlarm'08

Sands Hotel, Las Vegas

26-28 September 2008

I’m on the MIT website. . . .

LAST NAME	FIRST NAME	OFFICE PHONE	EMAIL	LOCATION OF MIT OFFICE	LOCATION OF MIT MAILBOX	CI-H, CI-M or Both
Abbanat	Cherie	617-324-1570	abbanat@mit.edu	9-367	9-367	CI-M
Banuazizi	Atissa	617-324-2172	atissa@mit.edu	12-111	12-133	CI-M
Boiko	Karen	617-253-2408	boiko@mit.edu	14N-328	14N-328	CI-M
Breindel	Harlan	617-324-2218	breindel@mit.edu	12-111	12-133	CI-M
Brophy	Stephen	617-253-3581	stephbr@mit.edu	14N-437	14N-407	CI-H
Caulfield	Mary	617-324-2494	mcaulf@mit.edu	12-113	12-133	CI-M
Connor	Jane	617-253-3039	jconnor@mit.edu	54-314	12-133	CI-M
Craig	Jennifer	617-452-3841	jcraig@mit.edu	33-406	33-406	CI-M
Custer	David	617-253-7787	custer@mit.edu	24-611	24-611	CI-M
Delaney	Thomas	617-324-3081	tdelaney@mit.edu	12-113	12-133	Both
Delaney	Kate	617-324-3813	kdelaney@mit.edu	14N-416	12-133	CI-H
Delaney	Nora	617-324-3813	ndelaney@mit.edu	4-164	12-133	CI-H
Dush	Lisa	617-324-2494	dush@mit.edu	12-113	12-133	CI-M
Fox	Elizabeth	617-253-3090	emfox@mit.edu	12-132	12-132	CI-H
Haas	William	617-324-1429	wjhaas@mit.edu	14N-233	12-133	CI-M
Harrison Lepera	Elizabeth	617-324-3813	LHL3@mit.edu	4-164	12-133	CI-H
Hendrix	Diane	617-625-8881	dhendrix@mit.edu	E38-223	12-133	CI-H
Irwin	Robert	617-324-4858	irw@mit.edu	12-132	12-134	CI-H
Jackson	Nora	617-452-3597	norajack@mit.edu	14N-432	14N-409	CI-H
Jhaveri	Sonal	617-253-5717	sonal@mit.edu	46-6023a	46-6023a	CI-M
Lerner	Neal	617-452-2939	nlerner@mit.edu	68-150a	12-133	Both
MacArthur	Kathleen	617-452-5009	kmacarth@mit.edu	12-118	12-133	CI-H
Melvold	Janis	617-258-6561	melvold@mit.edu	14N-338	14E-301	Both
Miller	Ben	617-324-2302	bjmiller@mit.edu	12-112	12-133	CI-M
Ogren	Marilee	617-253-2940	ogren@mit.edu	68-120	68-120	CI-M
O'Toole	Matthew	617-253-3039	motoole@mit.edu	12-117	12-133	Both
Pepper	Karen	617-324-2218	kpepper@mit.edu	12-111	12-133	CI-M
Perelman	Les	617-253-3375	perelman@mit.edu	12-119	12-133	Both
Poe	Mya	617-253-7893	myapoe@mit.edu	14N-229B	12-133	CI-M
Roldan	Leslie Ann	617-324-2401	lroldan@mit.edu	12-113	12-133	CI-M
Rubio	Thalia	617-253-3090	trubio@mit.edu	12-132	12-132	CI-M
Ruff	Susan	617-324-1983	ruff@mit.edu	38-583	12-133	CI-M
Snodgrass	Ann	617-253-3090	annarlen@mit.edu	12-132	12-132	CI-H
Sobel	Amanda	617-253-3090	asobel@mit.edu	12-132	12-133	CI-H
Sutliff	Linda	617-324-2371	lsutliff@mit.edu	12-112	12-133	CI-M
Unger	Donald	617-324-2371	donunger@mit.edu	12-112	12-133	CI-M
Vaeth	Kimberly	617-324-3813	kjvaeth@mit.edu	4-164	12-133	CI-H
Volaitis	Lydia	617-324-2302	lydiav@mit.edu	12-112	12-133	CI-M
Zoll	Mary	617-324-2172	mzoll@mit.edu	12-111	12-133	CI-M

Really. . .

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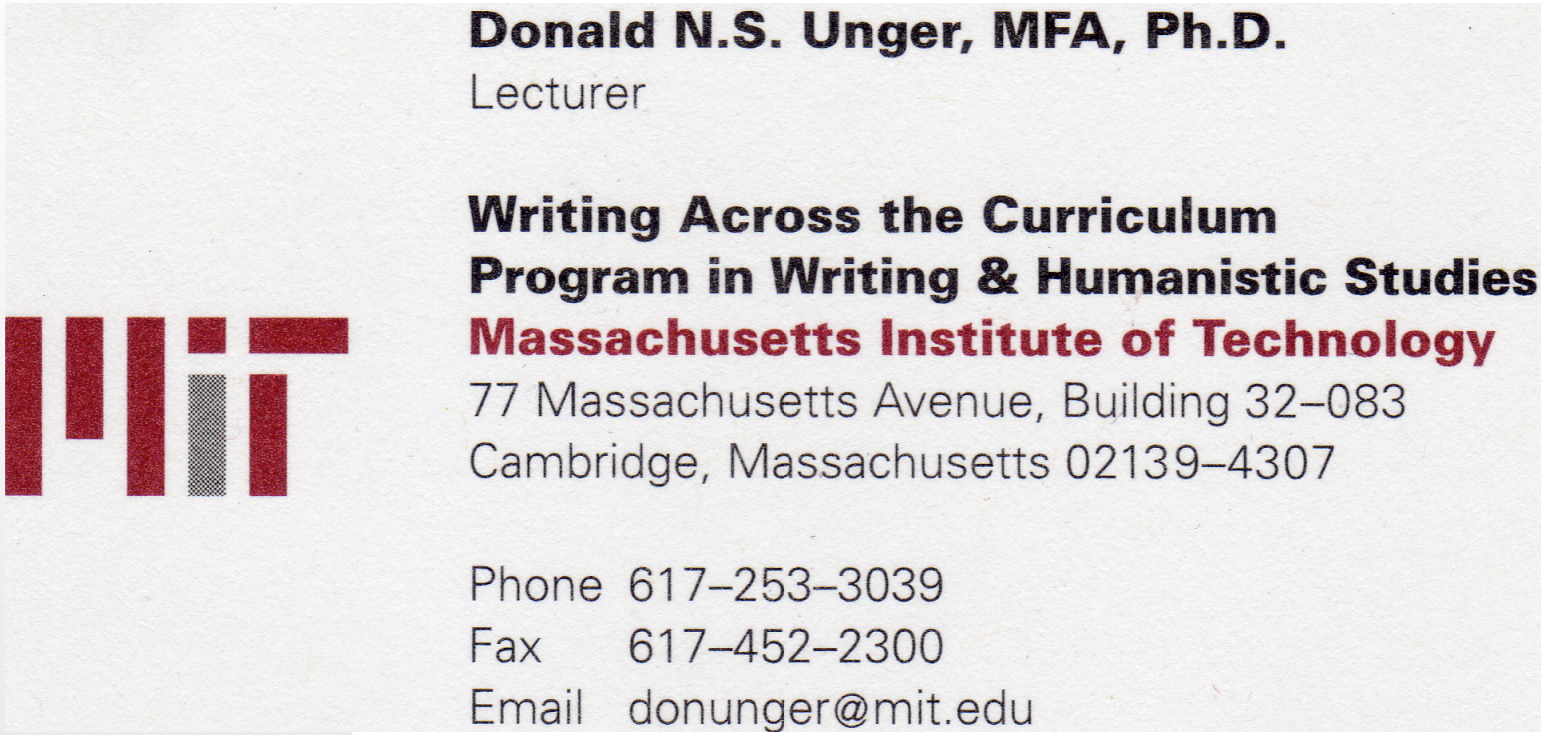
Does the “envelope” really matter?

“I gave you the information.

What’s the problem?”

This might be a better way. . .



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Lecturer

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Program in Writing & Humanistic Studies
Massachusetts Institute of Technology
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Cambridge, Massachusetts 02139–4307

Phone 617–253–3039
Fax 617–452–2300
Email donunger@mit.edu

The information on the business card is:

Clear
- Easy to understand

Complete

Concise

Well Organized
- Logically laid out
- In a familiar form

Giving you the card does more than simply convey contact information, it demonstrates:

1. Attention to detail
2. Quick follow-through
3. Reliability
4. Genuine interest
5. Collegiality

. . . . The characteristics of someone with whom you would want to work.

Your Design Report does something similar:

1. Accurately and efficiently delivers the information you wish to convey: “Here’s our alarm design; it meets your specifications; it has been thoroughly tested.”

2. The *manner* in which it is presented makes clear that your design team would be the best group to work with: meticulous, thorough, attentive to details.

Grades Don’t Matter (!)

Is your design report so good that it would *get you the job*?

BOR Enterprises
Memo

To: Jane Porsche
From: Bob O'Reilly
Date: October 10, 2007
Re: Porsche Carrera GT Anti-Theft System

Hi Jane,

Attached you'll find the reports you requested from our office. As you can see, not only were we able to design a system to your specifications, we managed to add an additional safety measure that will keep car thieves from driving away with your vehicle.

Please let me know if you have any questions. My direct line is (617) 555-1212.

We look forward to working with you in the near future.

Sincerely,
Bob O'Reilly
BOR Enterprises, President

Enclosure: Proposal

Digital Design Solutions, Incorporated
Automotive Electronics Division

Don Unger
Senior Engineer
6111 Massachusetts Avenue
Cambridge, MA 02139

October 10, 2008

Ms. Jane Porsche
CEO, Macrosoft Corporation
One Kendall Square
Cambridge, MA 02139

Dear Ms. Porsche,

I submit herewith a proposal for the design of a car alarm system entitled “A Digitally-Implemented Custom Car Alarm.” Any questions relating to the proposal may be sent directly to me.

Your consideration of this proposal is greatly appreciated.

Sincerely,
Don Unger

Enclosure: Proposal

Caulfield Engineering, LLC
Mary Caulfield, Principal
(617) 324-2494
mcaulf@mit.edu

Mary Caulfield
Caulfield Engineering
3 Ames St.
Cambridge, MA 02142

10 October 2008

Ms. Jane Porsche
312 Technology Square
Cambridge, MA 02142

Dear Ms. Porsche:

I submit herewith a proposal in support of my design for an anti-theft system for your new Porsche.
The design complies with your specifications, and has both a standard alarm as well as a special fuel pump lockout feature.

Should you have any questions regarding this proposal, I can be reached at the phone number or email address above.

We greatly appreciate your considering our firm and look forward to working with you.

Sincerely,
Mary Caulfield

Enclosure: Proposal

Testing and Debugging

Testing and debugging was not too difficult for this project.

First of all, the signals of the included florescent display in the labkit are driven using a hexadecimal display driver such that numbers passed in as inputs to the driver will determine the numbers display on the 16-character florescent display. Using the code supplied in the Appendix, the least significant digit shows the current state of the FSM (see the Anti-Theft FSM module Description for number to state correspondence). The second to the last digit shows the time left in the Timer module. The third right-most digit is driven by the time_param_selector inputs while the next two digits are the time values to be reprogrammed into the Time Parameter module. The next two digits are driven by the Siren generator to display the current siren frequency.

Testing

A wide range of tests and debugging techniques were employed on our prototype model in order to ensure proper functionality of the hardware and software.

First, the prototype was set up to display four sets of numerical values on an external LCD display. These values coincided with the FSM's state at any given moment, the interval being outputted from the FSM to the Time Parameters module, the value being sent from the Time Parameters module to the Timer, and the countdown clock in the Timer (see Figure 2). By monitoring these numbers, we were able to ensure that the software was functioning within specifications.

Next, our engineers tested the re-program functionality of the delay times. Random values were preset and tests were performed to verify that the respective countdowns changed accordingly. Finally, all delay times were set to zero. This was considered to be the ultimate test because if the system was working properly it would mean that the siren would turn on at the moment any door was opened and turn off immediately upon shutting the door. The system passed with flying colors.

Your submission will consist of:

Letter of Transmittal

Design Report

- Title and Abstract
- Table of Contents
- List of Figures
- Overview ← Focus on this
- Description
- Conclusion
- References
- Appendices

Issues of Format

If it's not yours (even if that's "obvious") or it's not common knowledge, give credit—using IEEE citation format

Page Set-Up: one column, single spaced, justified left, ragged right, 1" margins,12 point font (of a professional sort, f. ex. Times Roman or Helvetica)

Graphics should be: labeled, self-contained, explained in the text

Less is More: We Don't Grade by Weight

Your report should run 4000-6000 words, not including appendices

As long as you convey all the information you need to convey (ask your TA), and do so clearly and in good prose (ask your writing instructor), you do better to aim for concision

Problems We Often See:

1. Failure to follow guidelines—if unsure, ask.
2. Problems w/ tone, either hype: “Our design completely blows away the competition!” or lab-speak: “Then tested module B by running a simulation in which. . .”
3. Failure to properly credit sources.
4. Clumsy use of graphics.

Time Line:

MIT UNDERGRADUATE COMMUNICATION REQUIREMENT

- First Draft due 6 October; returned 23 October
  - Comments are representative
  - Meant to facilitate re/vision, not merely editing
  - Ask for clarification if comments are not clear

- **Revise**

- Peer Workshop on Thursday, 30 October, 2:30-4:00, 32-141
  - Attendance is *mandatory*
  - Bring two hard copies of your paper

- **Revise**

- Final Draft due 7 November

Resources

- Writing and Communication Center
  - http://web.mit.edu/writing
- *Online Mayfield Handbook*
  - https://web.mit.edu/21.guide/www/home.htm
- This presentation
  - 6.111 Website
- donunger@mit.edu or mcaulf@mit.edu

Questions?