ENGR xD52: Final Prep

Due two weeks before the final exam period. Submit these as you create them. You will submit five over the course of the semester, as scheduled by you.

# This homework is split in two portions. The first portion must be done entirely alone. The second portion can be worked on with as many people as you wish.

Expected time is less than one hour per problem. Submit to [comparch13@gmail.com](mailto:comparch2013@gmail.com) with the subject line “[Final Exam Question] – Brief description”, with the body of the email containing the question. Do not send it to my personal email address.

# Choose Your Own Final Adventure (Solo Work)

Create a question to be used for the final exam of this course, xD52.

Divided in to four sections:

### 1) Problem statement

The actual text posed to the student taking the final exam. Clarity counts! Specify whether access to the following resources are allowed, disallowed, or if you just don’t care: Notes, Calculators, Intarwebs, Humans, Simulators, Emulators, Compilers, Synthesizers, etc. If a diagram is required, include it.

### 2) Subjects covered

Briefly indicate what subject(s) / topic(s) the question covers. Covering multiple related areas is a plus, confusing people is a minus. Don’t bother with grammar here.

### 3) Why it is an awesome question

Why did you select this particular question? Is there reasoning behind the specific values you pose? Does it highlight something you believe to be particularly important?

### 4) The answer

The actual answer, complete with annotated work to get to that answer.

# Share Your Own Final Adventure (Group Work)

After developing the question, but before submitting it, share it with a positive non-zero fraction of your classmates. Revise as appropriate, and credit them in your submitted note.

# Example

To: [comparch2013@gmail.com](mailto:comparch2013@gmail.com) Subject: [Final Exam Question] Easy base conversion & binary addition

**Problem statement:**

Calculate 0x1E + o254 in binary without the aid of a calculator or similar device. Show work, including annotating carries during the binary addition.

**Subjects covered:**

Base notation, Base conversion, binary arithmetic

**Why it is an awesome question:**

The two numbers being added were selected to cover each of the carry logic cases exactly once during the addition. The base conversions are quick to perform with tricks. Three bases are covered.

**Answer:**

x1E -> 0001 1110 o254 -> 010 101 100

1111 Carries

00011110 x1E

+010101100 o254

b011001010 Answer

**Reviewed By:**

Gui Cavalcanti, Nikola Tesla