

CS-537: Final Exam (Fall 2011)
The Back of the Envelope

Please Read All Questions Carefully!

There are thirteen (13) total numbered pages.

Please put your NAME (mandatory) and student ID (optional) on THIS page only.

Name and Student ID: _____

“Martin picked up from his desk a proposal for the communication system that his organization was building for the Summer Olympic games, and went through a sequence of basic calculations. He estimated one key parameter by measuring the time required to send himself a one-character piece of mail. The rest of his numbers were straight from the proposal and therefore quite precise. His calculations were simple but revealing. They showed that, under generous assumptions, the proposed system could work only if there were at least a hundred and twenty seconds in each minute. He sent the design back to the drawing board. This was Martin’s wonderful (if eccentric) way of introducing me to back-of-the-envelope calculations.”

Paraphrased from “The Back of the Envelope” by Jon Bentley

Estimating how long something takes on the “back of the envelope” is a tried and true engineering technique. The idea is to get a rough estimate of something via paper and pencil, before having to build or analyze a full system. In this exam, you’ll use your paper, pencil, and yes, brain, to do some of these types of calculations, to estimate how long certain operations take in a modern computer system. Read each question carefully, and good luck!

Grading Page

	Points	Total Possible
Q1		10
Q2		10
Q3		10
Q4		10
Q5		10
Q6		10
Q7		10
Q8		10
Q9		10
Q10		10
Total		100