Assignment 1: Getting Started

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Introduction

Welcome to 600.112: Introduction to Programming for Scientists and Engineers, and welcome to your very first assignment for the course! No worries, this assignment is extremely straightforward: you’ll just have to be a little patient, but you won’t have to think a whole lot yet.

There are three things to do: You’ll register for Piazza and fill out a short survey, you’ll install the development environment for the course, and you’ll use Python as a simple calculator to find a very special number.

To submit your assignment, please follow the instructions posted on Piazza!

1 Piazza and Survey (10%)

Go to the Piazza website for the course and register/enroll as a student. Find the post entitled “Start of Semester Survey” and follow the link there. The survey should not take more than a few minutes and you’ll help us a lot by doing it.

In your submission, clearly state that you registered/enrolled in the course on Piazza and that you actually filled out the survey.

2 Python Environment (60%)

Go to the Piazza website for the course, find the post entitled “Preparing your Development Environment,” and follow those instructions to install (in order) VirtualBox, Lubuntu (or Ubuntu or Xubuntu or Kubuntu), and the Python development environment IDLE on the laptop you’ll use for the course.

In your submission, discuss how the installation process went for you, what problems you encountered and how you solved them, and what you think of Linux so far. Don’t write a long essay, keep your comments short and to the point.

3 Find the Power (30%)

Consider the powers of 2, that is the integer numbers $2^0 = 1$, $2^1 = 2$, $2^2 = 4$, $2^3 = 8$, and so on. It turns out that the first power of 2 that contains the digit 0 four times is $2^{79} = 604462900807314587353088$. Fascinating, isn’t it? Your task is to find the first power of 2 that contains the digit 7 four times.

For now, the easiest way to approach this problem is to simply use Python as a calculator, just like we did in lecture. If you start IDLE, you can type expressions like
>>> 2 ** 79

into the Python Shell and Python will compute the integer result, namely

60462909807314587353088

in this case. What you should do is try out various exponents and see for which one you get a number that contains the digit 7 four times.

In your submission, clearly state the number itself as well as the exponent that goes along with it.

**Hint:** The number you’re looking for is somewhere between \(2^{40}\) and \(2^{50}\). 