

600.112: Intro Programming for Scientists and Engineers

Assignment 0: Getting Started

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Due Dates: Wednesdays 9/2 and 9/9, by 3pm

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](#), you'll install the development environment for the course, and you'll use Python as a simple calculator to find a very special number.

In fact, if you followed the instructions in the welcome email, you'll probably be completely done with the first two parts by the time you see this assignment.

In fact, if you attend the first lab session, you'll probably be completely done with the only "complicated" problem by the end of that lab, unless maybe you have a very slow machine; even in that case, however, you should have gotten enough help from us to finish the problem rather quickly on your own.

To submit your assignment, upload and submit a plain text document on Blackboard with required information (see below) before the deadline.

1 Piazza and Survey [2 points]

Go to the [Piazza](#) website for the course and register/enroll as a student.

Find the post entitled "Semester Start 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 document, clearly state when (date/time) you registered/enrolled in the course on

Piazza and when you completed the survey.

2 Python Environment [6 points]

Go to the [main](#) website for the course, find the systems resources section entitled "Preparing your development environment," and follow the instruction links to install (in order) VirtualBox and Ubuntu (or Ubuntu or Xubuntu or Kubuntu), and the Python Tools, on the laptop you'll use for the course.

In your submission document, 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 [2 points]

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 $2^{79} = 604462909807314587353088$. Fascinating, isn't it? Your task is to find the first power of 7 that contains exactly four occurrences of the digit 3.

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 the Python Shell in IDLE, you can type expressions like

```
>>> 2 ** 79
```

and Python will compute the integer result, namely

```
604462909807314587353088
```

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 3 four times.

In your submission document, 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 7^{10} and 7^{20} .