

Python Programming Interview Problem

Please code a Python program for the below problem. The expected time to complete the problem is no more than 4-5 hours. Keep the program as *simple as possible*. There are no extra points for unnecessary complexity.

The Python program should run as a standalone command line application and output an answer in the console. There are no input arguments required. The program should:

- Have working functionality
- Have a few unit tests (don't go overboard)
- Sufficiently log to the console (no logging library is required)
- Contain a short readme.txt with how to run the program and tests

Code in Python 3 – any recent version is fine. You are free to use any common Python libraries such as random, numpy, scipy.

Push your Python source code with a public GitHub repo of your choosing. We will review the code and run the tests.

Problem Statement

You have two players, Bob and Alice, that take turns in rolling a fair k -sided die. Whoever rolls a k first wins the game. The Python program should output the probability that Bob wins the game for $k = 6$ thru 99. That is, the output will be an array of probabilities where index 0 is the probability when $k = 6$; index 1 when $k = 7$; etc.

Bonus

If you have time and interest, create a REST server rather than a console program. Flask or FastAPI can be used. The REST endpoint should be a GET, accept no Request Body, accept an optional Header for "k", and return:

- The array of probabilities in JSON format if no "k" is provided in the Header
- A single probability in JSON format if a "k" is provided in the Header

This is an *optional* part of the development.