Daily Coding Problem   Blog

Daily Coding Problem #71

Problem

This problem was asked by Two Sigma.

Using a function $rand7()$ that returns an integer from 1 to 7 (inclusive) with uniform probability, implement a function $rand5()$ that returns an integer from 1 to 5 (inclusive).

Solution

This problem is simpler than going from $rand5()$ to $rand7()$. We'll do something similar:

- Roll $rand7()$.
- If the result is between 1 and 5, then return it.
- If the result is 6 or 7, then reroll.

Since the distribution of $[1, 5]$ is uniform -- each has a 1/7 chance of being rolled, then our $rand5()$ will be uniform.

```
def rand5():
    r = rand7()
    if 1 <= r <= 5:
        return r
    return rand5()
```

This could potentially take forever (although with a very low probability), if we keep on

getting 6 or 7s.