# Expected Time Example:

Consider the code below:

```
c = 0
for i = 1 to n:
    h = 1
    while random (1, 3) ≠ 1:
        h += 1
    if h == 3:
        c += 1
return c
```

What is the expected value of c upon exiting the loop?

Soln:

For an iteration, there is a $(\frac{2}{3})$ chance that random $(1, 3)$ does not equal 1 on the first try, a $(\frac{2}{3})$ chance that random $(1, 3)$ doesn't equal 1 on the second try and a $(\frac{1}{3})$ chance that random $(1, 3) = 1$ on the 3rd time.

$$\left(\frac{2}{3}\right)\left(\frac{2}{3}\right)\left(\frac{1}{3}\right) = \frac{4}{27}$$

Since there are n iterations, the expected value of c upon terminating from the loop is $\frac{4n}{27}$.