Quiz 4 Preparation

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Problem 3: What is the probability in the bus rider problem of 4 people leaving the bus after bus stop 2?

```
set.seed(123)

# Number of repetitions and stops
nreps <- 10000000
stops <- 2
count <- 0
# Define the simulation function
for (i in 1:nreps) {
  riders <- 1
  for (j in 1:stops) {
    if (riders > 0) {
      for (k in 1:riders) {
        if (runif(1) < 0.12) {
          riders <- riders - 1
        }
      }
    }
    # New passengers board the bus
    new_riders <- sample(0:2, 1, prob = c(0.5, 0.4, 0.1))
    riders <- riders + new_riders
  }
  if (riders == 4) count <- count + 1
}

# Print the result
cat("The probability of having exactly 4 riders left after bus stop 2 is: ", count / nreps)
```

Can you augment the code to test your analytical result, given the code in the book.

```
## The probability of having exactly 4 riders left after bus stop 2 is:  0.0547837
```