Probability and Simulations

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[1]:
```
import random
```

Problem

- There are two dice called dice A and dice B, both six sided and fair
- Dice A has four 9’s and two 2’s
- Dice B has four 3's and two 11's
- One person has dice A and another dice B. Both of them roll their dice and whoever gets the higher number wins.
- What is the probability that the person with dice A wins?
- What is the probability that the person with dice B wins?

```
4]:
random.seed(1234)
results_b = []
for i in range(10000):
    a = random.choice([9, 9, 9, 9, 2, 2])
    b = random.choice([3, 3, 3, 3, 11, 11])
    if b>a:
        results_b.append(True)
        results_a.append(False)
    else:
        results_b.append(False)
        results_a.append(True)
print("Probability that B wins: ",
sum(results_b)/len(results_b))
print("Probability that A wins: ",
sum(results_a)/len(results_a))
```

```
Probability that B wins:  0.5589
Probability that A wins:  0.4411
```