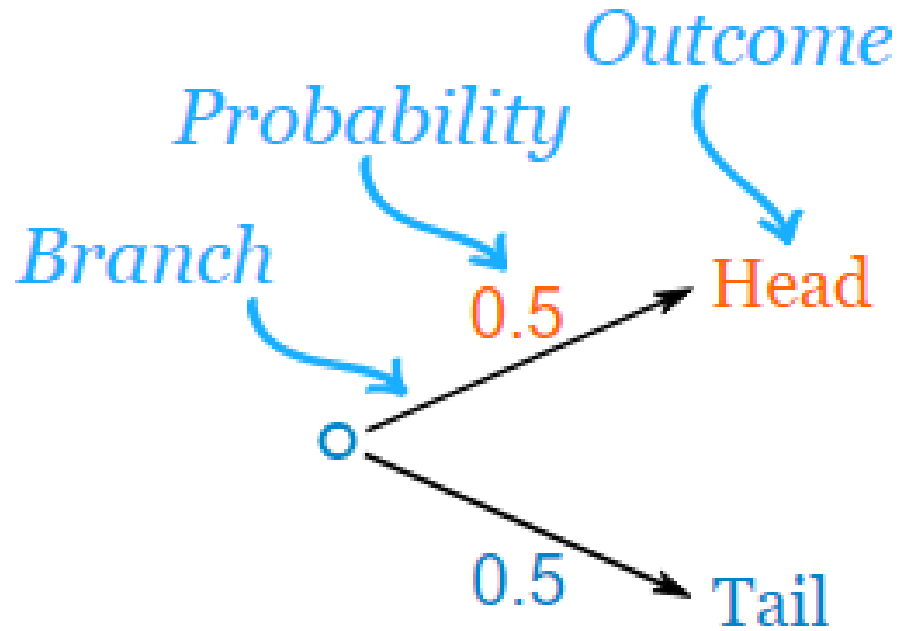


# Tree Diagrams

Practice

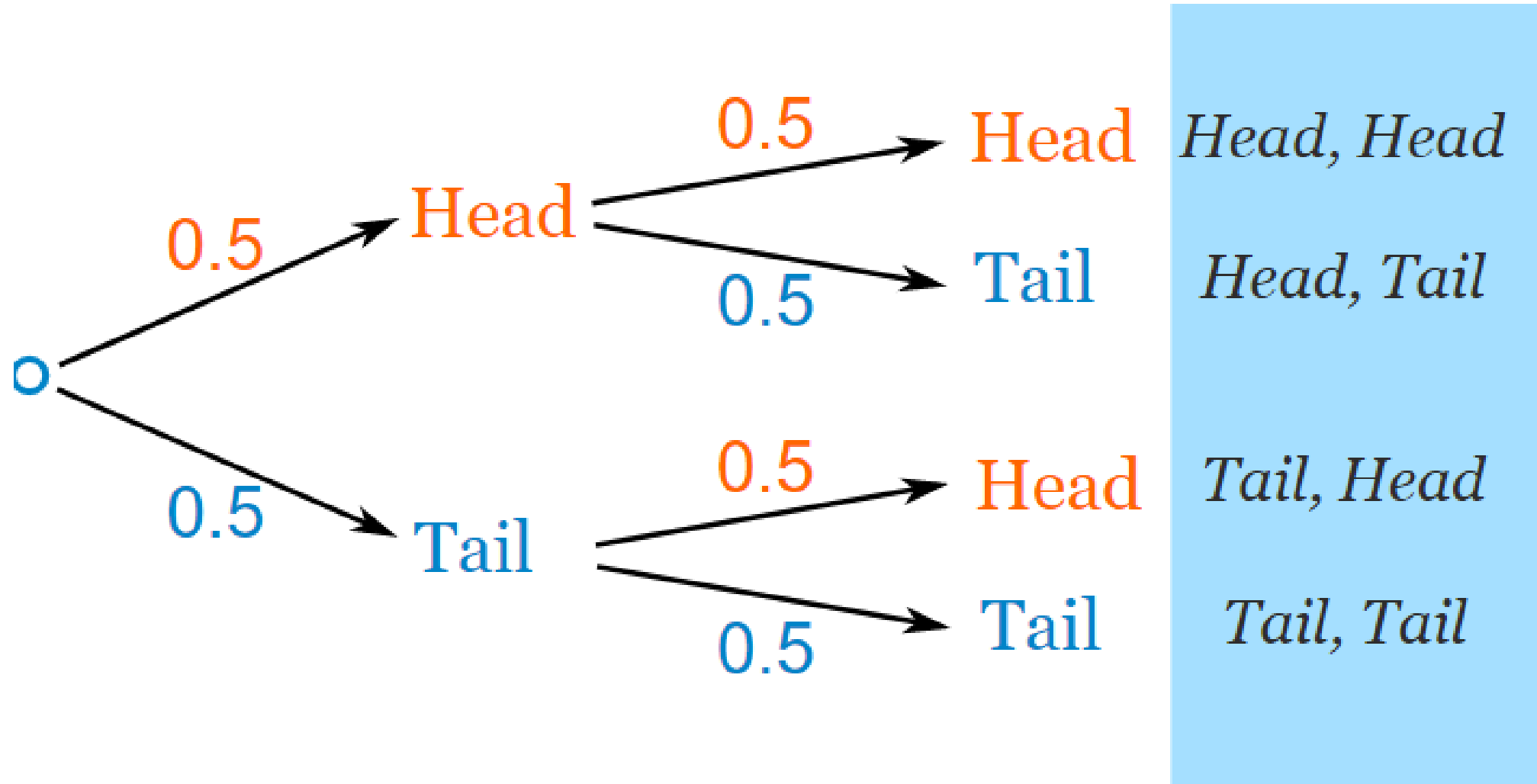


There are two "branches"  
(Heads and Tails)



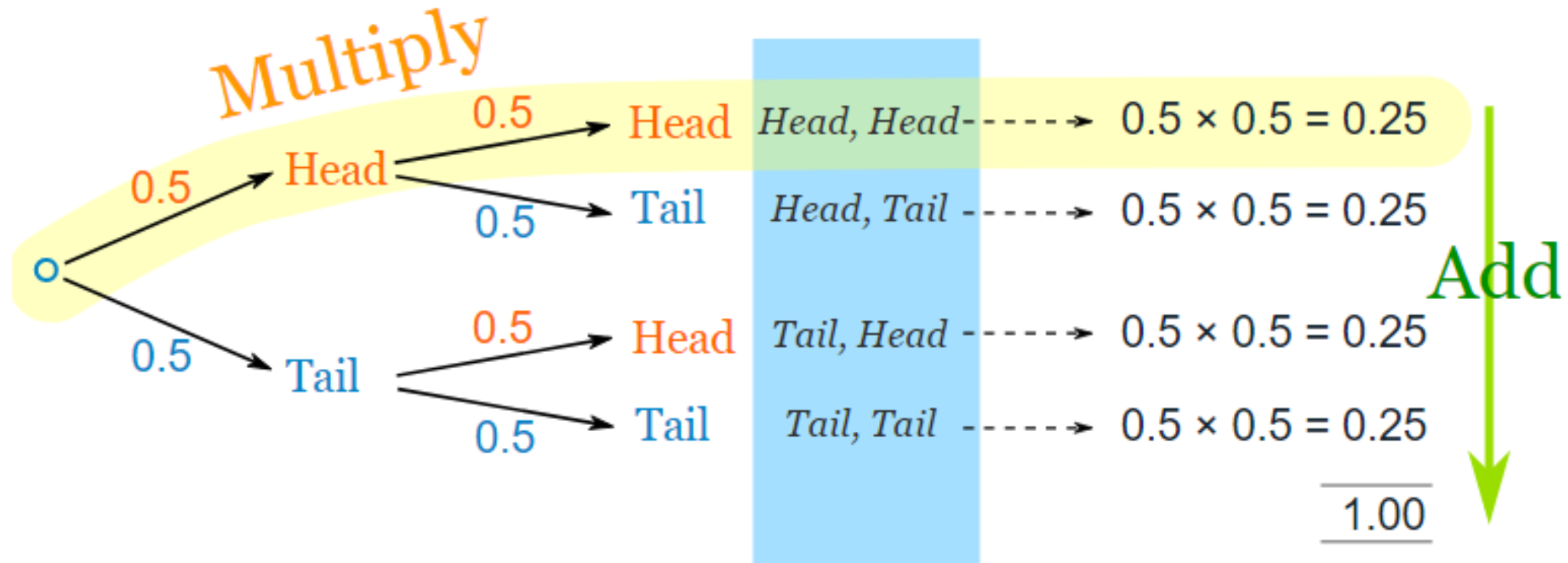
- The probability of each branch is written on the branch
- The outcome is written at the end of the branch

We can extend the tree diagram to two tosses of a coin:



How do we calculate the overall probabilities?

- We **multiply** probabilities **along the branches**
- We **add** probabilities down **columns**



1. An archer always hits a circular target with each arrow fired, and hits the bullseye on average 2 out of every 5 shots. If 3 arrows are fired at the target, determine the probability that the bullseye is hit:

a) Every time

b) The first two times, but not on the third shot

c) On no occasion

2. A box contains 7 red and 3 green balls. Two balls are drawn one after another from the box **without replacement**. Determine the probability that:

a) Both are red

b) The first is green and the second is red

c) A green and red are obtained.

3. A lottery has 100 tickets which are placed in a barrel. Three tickets are drawn at random from the barrel, **without replacement** to decide 3 prizes. If John has 3 tickets in the lottery, determine his probability of winning:

- a) First prize
- b) First and second prize
- c) None of the prizes