

# CSC/MAT-220: Discrete Structures

EFY 9

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**Alice and Bob.** Alice and Bob are flipping fair coins. Alice may stop as soon as she gets a head immediately followed by a tails, and Bob may stop as soon as he gets two heads in a row. Who should expect to make fewer flips?

*Please do each of the following.*

- i. Provide a brief justification for who can expect to make fewer flips.*
- ii. Provide a formula for the probability that Bob stops on the  $n$ th flip.*
- iii. Provide an answer and justification to the following question:  
Who (if anyone) has a better probability of finishing first?*