Quant
Technical Interview Hints

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Hint: what is the standard deviation of the number of heads?

3.5

Hint: How many states are there? Can you reduce it? How much can you reduce it?

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3.16

Hint: If you answered 0.75, consider your answer if you flipped just once, and got one head. Try Bayes' Theorem to get expected value by conditioning on the observed outcome.

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Hint: one solution is to use something akin to the Running Median problem, which uses a pair of max and min heaps.

6.13

6.14

Hint: This is similar to the LeetCode Two Sum problem, so use a dictionary.

6.15

Hint: Use a boolean array of length one million.

6.16

Chapter 7

Fixed Income

7.1

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Chapter 8

Brain Teasers

8.1

Hint: it doesn't say the number of heads must remain at 10, so you can flip coins over.

8.2

Hint: suppose there were only two pirates.

8.3

Hint: the slow people need to cross together.

8.4

Hint: imagine the penny is impossibly dense, weighing so much that the canoe is on the verge of sinking.

8.5

Hint: where is the treasure after an even number of moves?

8.6

You don't need a hint.

8.7

Hint: play a smaller version of the game to gain insight. Bigger hint: look up the game of Nim.

8.8

Hint: Can you benefit from weighing only some of the coins?

8.9

Hint: Once weighed, you know where there are coins that weigh the same. Can you swap those in to determine where the odd coin is?

8.10

Hint: what do you get if you combine the amount of wine in one glass with the amount of wine in the other glass?

8.11

Hint: whether a coin gets flipped is related to the number of factors of the coin's number. What kind of numbers have an odd number of factors?

8.12

Hint: If you raced winners against each other, what can you conclude about the horses that initially ran against the winners?

8.13

Hint: Try with a smaller number of floors to gain insight.

8.14

Hint: what happens if you light both ends of a string?

8.15

Hint: You are at the center of a circle of radius 1 mile. Consider a single tangent to that circle. Your objective must include reaching that tangent, travel around and touch the tangent again.

8.16

Hint: we don't say that roads meet in a village. There could be a junction outside of the town where roads meet.

8.17

Hint: Does it matter whether Betty is a programmer or non-programmer?

8.18

Hint: Change the problem abstraction, treating the first passenger's seat as the equivalent of drawing a particular marble (say black) out of a jar. Treat the last passenger's seat as a white marble. Everyone else's seat corresponds to a gray marble. Now treat this as a problem where we draw marbles from the jar.

8.19

Hint: The implication is that the first captain may not survive. What is the largest number of pirates where the captain will survive?

8.20

Hint: We don't say the marbles will be distributed evenly between the jars.

8.21

Hint: parity.