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Web Programming Fundamentals

Problem Solving

A cat, a parrot and a bag of seed

1-a. A man has a cat a parrot and a bag of seed he must transport across a riverbank in a boat with only enough room to carry himself and one other item. If he leaves the parrot alone with the cat, the cat will eat it. If he leaves the parrot alone with the seed he will eat that.

1-b. Birds can fly. If the water is not too deep he could simply walk across letting the cat have the boat, carrying the seed and letting the bird fly.

1-c. the overall goal is to get yourself and the three items across the riverbank.

2a. the constraints in this problem are the two items that will eat each other, the size of the boat and the mans emotional attachment to these items.

2b. the sub goals are to do this without getting something eaten along the way and to get the items across as quickly as possible.

3. Possible solutions include the one mentioned above and the obvious simply taking the bird across first as the cat will not eat the bird seed.

4-a. Both solutions have a possibility of success. Possible complications such as the water level and the parrot flying away make the solution of taking the parrot first the safest.

4-b. The only solution that works all around is to take the parrot first.

5-a. Taking the parrot on the boat ride first seems the best. If the bird is caged it will not fly away and ensuring the cat is also caged will prevent it from running away as well. Of course caging the animals solves the original problem of eating each other so this is likely not the case. Assuming that the man has enough control over the animals to ensure that they stay where they are meant to will ensure that this solution works.

5-b. Tests could include taking the bird away from the cat and bird seed but not leaving their sight. This will ensure that the bird will not fly off and the cat will not run away when you actually go for the boat ride. Barring any complications of that the solution will work.

Problem 2

1-a. There are ten pairs of socks in a drawer in a dark room. There are five pairs of black, three brown and two white. You must select at least one matching pair and also one pair of each color.

1-b. Some insight I can input from outside of the word problem is that this question assumes that you are not adept at seeing in the dark. Ability to see dark colors vs white can increase probability of selecting the correct pairs. The socks are also already in pairs, therefore selecting the first matching pair is simple.

1-c. one matching pair and one matching pair of each color.

2-a.