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Class: Web Programming Fundamentals

Assignment: Problem Solving

**Problem: A Cat, A Parrot, and a Bag of Seed**

1. The problem is that the man needs to get the cat, parrot and the bag of seed across to the other side of the river on his boat; however, his boat will only allow him to take one at a time. He’s afraid that if he leaves the cat with the parrot, the cat will eat the parrot, and if he leaves the parrot with the bag of seeds, the parrot will eat the bag of seeds. He also has to avoid this problem at the other side of the river when he transports them over. The goal is to transport all of them over without losing any of them.
2. The constraints are only one item can be taken on the boat at a time, the parrot cannot be left with the bag of seeds, and the cat cannot be left with the parrot. The sub-goals are to take the cat to the other side of the river, to take the parrot to the other side of the river without eating the bag of seeds or being eaten by the cat, and to take the bag of seeds across without being eaten by the parrot.
3. The possible solutions for the sub goals are to take the parrot, leaving the cat with the bag of seeds. Take the cat leaving the bag of seeds, bring the parrot back and take the bag of seeds, leaving the cat with the bag of seeds again. Go back and get the parrot. Another solution would be the same exact scenario but taking the bag of seeds instead of the cat, and then get bring back the parrot, leave it and bring back the cat, then go back for the parrot.
4. These solutions all meet the goals, and work in all cases.
5. The solution is for the man to take the parrot across the river on the boat first. This will keep the bird safe from the cat, and the bag of seeds safe from the bird. He will need to go back to the other side and get the cat, bring it across the river. To keep the parrot safe from the cat, he will need to bring the parrot back to the other side of the river, leave it there, and get the bag of seeds and bring it across the river. This will leave the cat with the bag of seeds. Then he can go back and get the parrot across the river again, and he will have all three across the river safe and sound.