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Web Programming Fundamentals

Problem Solving Assignment

**5 Step Problem Solving**

1. Define the Problem
2. Break the problem apart
3. Identify potential solutions
4. Evaluate each potential solution
5. Choose a solution and develop a plan to implement it.

**Problem 1:**

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

A Cat, a Parrot, and a Bag of Seed: A man finds himself on a riverbank with a cat, a parrot and a bag of seed. He needs to transport all three to the other side of the river in his boat. However, the boat has room for only the man himself and one other item (either the cat parrot or seed). In his absence, the cat could eat the parrot, and the parrot would eat the bag of seed. Show how he can get all the passengers to the other side, without leaving the wrong ones alone together.

**5 Step Problem Solving**

1. **Define the Problem**

A man needs to get three things across the river on his boat that only has space for himself and 2 of his 3 items: a Cat, a Parrot, and a bag of seed. However, he cannot leave the bag of seed with the parrot or the parrot with the cat alone. The problem is how will this man do this without leaving either pair alone with one another. At first it seems that this would be an impossible issue. I even considered that perhaps it would be okay that the parrot could eat the bag of seed, but ultimately found that would not solve the problem, but was actually a part of it. The overall goal is to get these 3 items across the river without leaving them alone with one another.

1. **Break the problem apart**

*The constraints are the following:*

1. There are 3 items with only 2 spaces available
2. Parrot and Seed can’t be left together
3. Cat and Parrot can’t be left together

*Sub Goals are as follows:*

1. Make sure not to leave the 2 pairs alone with each other
2. Figure out how to transfer all 3 items successfully without having one eat the other
3. **Identify potential solutions**

Potential solutions could include the following:

1. The man could transfer one at a time.
2. The man could take 2 items at a time, then bring back one of them with him on the boat, and pick up the third and take it with him across the river.
3. **Evaluate each potential solution**
4. *Thought Process:* If the man takes the parrot across the river then returns for the cat and the seed, he would be able to successfully transfer all of the items across the river without leaving the **parrot/cat** or **seed/parrot** alone together.
5. *Though Process:* The man could also be safe by not leaving any items alone together at all including: parrot/cat - parrot/seed - cat /seed

He would do this by first taking the cat and parrot on the boat with him. He would then leave only the cat across the river and take the cat back with him. Then he would go back and pick up the bad of seed and take transport it along with the parrot. This would also make it possible to transfer all 3 without ever leaving any 2 alone together.

1. **Choose a solution and develop a plan to implement it.**