Problems

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.

Define the problem

The problem is a man needs to get a cat, parrot and a bag of seed across a lake. The boat has a capacity for one person and one carryons. If the man leave any of the animals alone, the animal will eat anything lower on the food chain.(i.g. cat eat parrot, parrot eats seeds, seed is bottom of food chain.) The goal is to get all carryon across the lake without the carryon eating each. The key to solving this problem is the man will have to choose carefully which carryon to take back across the lake after transport to the other side.

Break the problem apart

cat < Parrot

Parrot < Seed

<Seed at bottom of food chain=seed eat nothing>

Constrains

1.boat can only hold one carryon and man at a time
2. All animals will eat anything lower on food chain
3. Man will be said if anything gets eaten

Identify Potenial Solutions

1.Man takes bird across lake.
2.Man cross lake with no carryon.
3.man takes cat across lake to other side with bird.
4.man cross lake with parrot, leaving cat on other side.
5.man takes seeds across lake, leaving parrot at starting point
6.man cross lake with no carryon
7.man returns to end point with parrot, the cat and seed were already transported to end point.

Evaluate each potential solution

The steps in 1-7 meet all constrains identified. Their are no other solution that meet the constrains. If the man takes the cat first, the bird will eat seeds. If the man takes seeds first the cat will eat the bird.