

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

1). Define the problem

The problem is that the man does not know how to get himself and his passengers across the water all at the same time. This problem is just about getting the passengers to one side, but looking at what happens when he gets each item to the other side and has to take a trip back across the water to get the next. The overall goal is to take one trip across the water transporting everyone without losing any of him or her.

2) Break the problem apart

The constraint is the capacity of the boat, which is limiting one trip across the water. Another constraint is the man's inability to make more than one trip due to the probability of losing one or more of his items. The sub goal is decide which passenger to take across first to prevent another from consuming that item.

3) Identify potential solutions

Solution #1: If the man took the parrot first, this would leave the cat and the seeds. The problem does not state the cat's interest in the seeds so it would not eat them.

Solution #2 If the man hid the seeds first, then took the cat across the water this would prevent the cat from eating the parrot. The he could come back, get the seeds and bring them over the water. Lastly he could come back and get the parrot and bring it across the water.

Solution #3. What if he took the cat, and put the bag of seeds in his mouth and went across the water. Then travel back for the parrot.

4) Evaluate each potential solution

a) Does each solution meet the goals? Yes.

b) Will each solution work for ALL cases? No, all but one.

5) Choose a solution and develop a plan to implement it.

The man only has room for himself and one other item, so if he were to transport the two items that are less likely to consume one another first that would be the parrot. The solution is to take the bag of seeds, hold them with his teeth and take the cat across first. Then he should come back for the parrot and bring the parrot across with the bag of seeds still in his mouth.

b) Describe some test cases you tried out to make sure it works.