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Web Programming Fundamentals

Problem Solving

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

**1) Define the problem**

a) A man needs to transport a cat, a parrot and a bag of seed to the other side of the river without the cat eating the parrot or the parrot eating the seed.

b) The parrot might be able to fly to the other side

c) The overall goal is to get the parrot, the cat and the bag of seed to the other side of the river.

**2) Break the problem apart**

a) In the mans absence, the cat could eat the parrot and the parrot would eat the seed

b) Prevent the cat from eating the parrot and prevent the parrot from eating the seed

**3) Identify potential solutions**

a) Have the parrot fly to the other side or take the parrot first to prevent the cat from eating the parrot and to prevent the parrot from eating the bag of seed

**4) Evaluate each potential solution**

a) No, each potential does not meet the goals

b) No, each potential will not work for all cases

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

a) He can take the cat across first and then go back to get the seed and have the parrot fly across

**Socks in the Dark**

**1) Define the problem**

a) It is dark and you cannot see which socks you are choosing

b) Just pick some socks

c) Pick at least one matching pair and pick at least one matching pair of each color

**2) Break the problem apart**

a) You cannot see

b) Pick the amount of socks you need to guarantee you will get a matching pair of each color

**3) Identify potential solutions**

a) Pick the minimum amount of socks needed to guarantee you will get a matching pair of each color of socks

**4) Evaluate each potential solution**

a) Yes, each solution meets the goals

b) Yes, each solution will work in all cases

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

a) When you choose 12 socks, you have picked enough socks to guarantee you will have at least one matching pair of socks and when you choose 18 socks, you have picked enough socks to guarantee you will have at least one matching pair of socks of each color

**Predicting Fingers**

**1) Define the Problem**

a) Figuring out which finger she lands on

b) You alternate between the index finger and the ring finger every other time

c) Figuring out which finger she will land on when she counts to 10, 100 and 1000

**2) Break the problem apart**

a) I don’t have enough fingers

b) To determine a pattern to make it easier

**3) Identify potential solutions**

a) Make a hand chart to make counting easier and to easily identify the pattern used when counting

**4) Evaluate each potential solution**

a) Yes, each solution meets the goals

b) Yes, each solution works for all cases

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

a) Make a hand chart and count to 10 and pay attention to the pattern as you count. Do the same as you count to 100 and then there will be no need to count to 1000