Puzzle – 11

Q- Mislabelled Bags Interview Puzzle

There are three bags. The first bag has two blue rocks. The second bag has two red rocks. The third bag has a blue and a red rock. All bags are labelled but all labels are wrong. You are allowed to open one bag, pick one rock at random, see its colour and put it back into the bag, without seeing the colour of the other rock. How many such operations are necessary to correctly label the bags ?

My Approach and Solution –

Bag 1 Bag 2 Bag 3

If you choose bag 2 or 3, you may be in trouble. For example, suppose you choose bag 2 (the bag labelled "blue") and you see a red rock - then you won't know if that bag contains only blues or a mix of blue and red. You face a similar dilemma if you choose bag 3 (the bag labelled "red") and you see a blue rock.

But if you choose Bag 1 (the bag labelled "blue & red"). Let's assume you see a blue rock when drawn from Bag 1. You therefore know that bag 3 contains only blues as it cannot contain a mix (because you already know it's mislabelled) and it can't contain only red (because you now know it contains at least one blue). There's only one possibility left i.e, Bag 1 contains only blues.

Now think about bag 3, which is labelled "red". Since we know it's mislabelled, it can't contain only red and we just discovered that bag 1 contains only blue so bag 3 must contain a mix of red and blue. By the process of elimination, we then know that bag 2 contains only red.

Solution: Just one operation is necessary to correctly label the bags