1. Draw a ternary decision tree of height at most two, representing the following problem. Suppose you have access to the international prototype kilogram. The weight of the international prototype kilogram is the definition of a kilogram.

   You are presented with four other weights which are supposed to each be exactly one kilogram. However, you suspect that one of them is not a kilogram in weight but you can't tell which one it is. You don't have access to a weighing scales, but you do have access to a balance. This balance can be used to compare the weights of various objects and combinations of objects.

References

[1] Norman Biggs, *Discrete Mathematics*, Oxford University Press, 2nd edition, 2002.