***ALGORITHM OF THE DECISION TREE***

The algorithm for the decision tree uses Entropy & Information gain to build the tree.

Let:

S = Learning Set  
A = Attibute Set  
V = Attribute Values

Begin  
Load learning sets  and create decision tree root node(rootNode), add learning set S into root not as its subset  
For rootNode, compute Entropy(rootNode.subset) first  
If Entropy(rootNode.subset) == 0 (subset is homogenious)  
      return a leaf node  
  
If Entropy(rootNode.subset)!= 0 (subset is not homogenious)  
     compute Information Gain for each attribute left (not been used for spliting)  
     Find attibute A with Maximum(Gain(S, A))  
     Create child nodes for this root node and add to rootNode in the decision tree  
  
For each child of the rootNode  
   Apply ID3(S, A, V)  
   Continue until a node with Entropy of 0 or a leaf node is reached  
End

***STEPS TO BUILD DECISION TREE***

1 : Determine the decision column.

2 : Calculating Entropy for the classes.

3 : Calculate Entropy for other attributes after split.

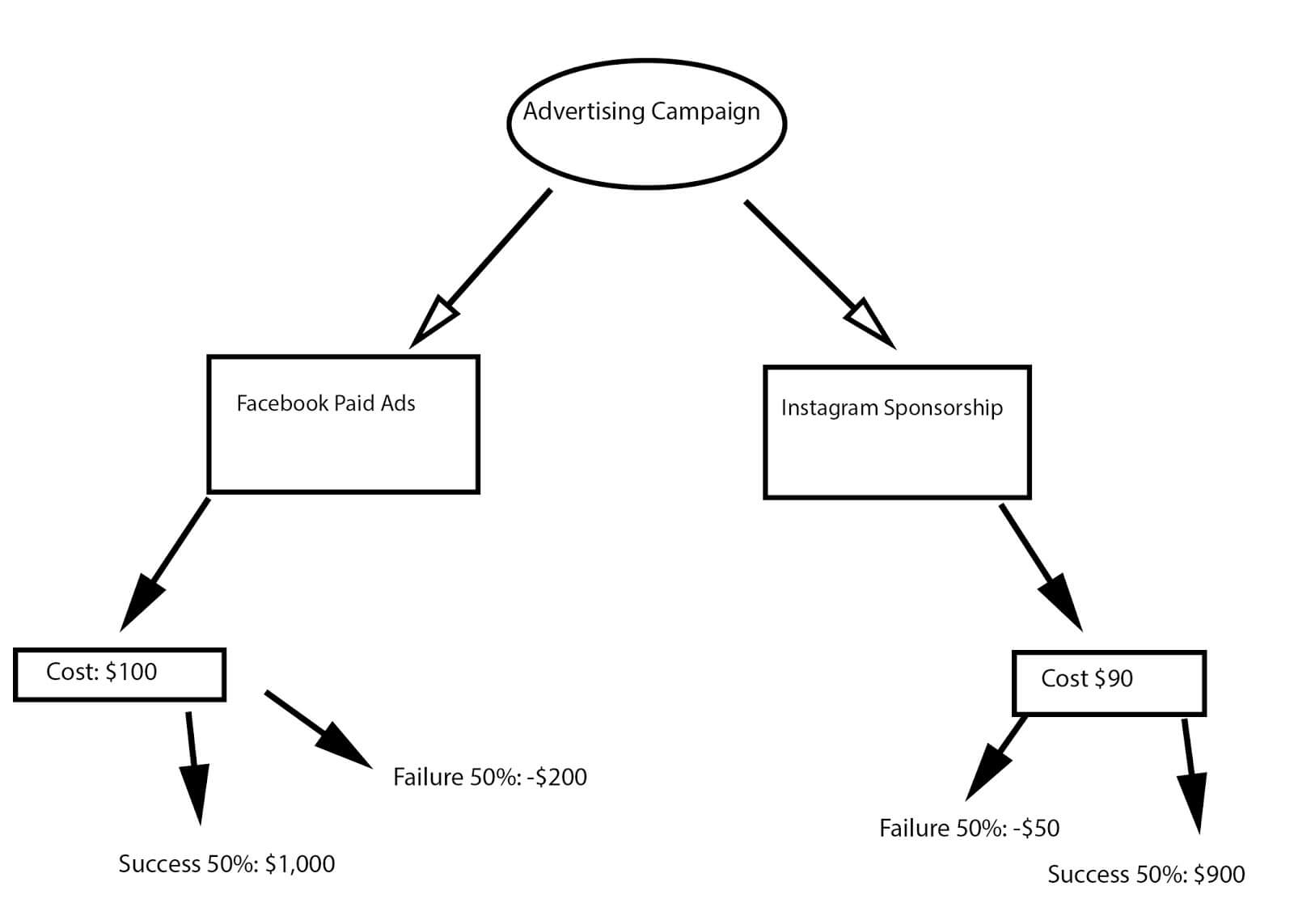
4 : Calculating Information Gain for Each split.

5 : Perform the first split.

6 : Perform further splits.

7 : Complete the decision tree.

***EXAMPLE***

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