**Control Strategies**

**We will now consider the problem of deciding which rule to apply next during the process of searching for a solution for a solution. This question arises when more than one rule will have its left side match the current state.**

**The first requirement of a control strategy is that it must cause motion. The second requirement of a control strategy is that issue must be systematic. We will explain these two with respect to water jug problem. If we have implemented choosing the first operator and then the one which matches the first one, then we would not have solved the problem. If we follow any strategy which can cause some motion then will lead to a solution. But if it is not followed systematically , and then got the solution. One day to follow a systematic control strategy is to construct a tree with the initial state as its root. By applying all possible combinations from the first level leaf nodes. Continue the process until some rule produces a goal state. For the water jug problem a tree can be constructed as given in following diagram.**

**The control strategy for the search process is called breadth first search. Other systematical control strategies are also available . for example, we can select one single branch of a tree until it yields a solution or until some pre specified depth has been reached. If not we go back and explore to other branches . this is called depth – first – search. The water jug problems will lead to an answer by adoption any control strategy because the problem is simple. This is not always the case.**