SUBSET SUM PROBLEM IMPLEMENTATION USING DFS

In [5]:
```python
result = []

def DFS( node, graph, target, visited, result ):
    if node in visited: #checks if node is visited or not
        return result

    visited.add(node) #add node to visited

    for neighbour in graph[node]: #traverse neighbouring nodes of node
        if neighbour not in visited: #checks if neighbour is visited node or not
            print(f"Checking if { node } + { neighbour } equals to { target }")
            if node + neighbour == target: #checks if node + neighbour = target
                print(f"{ node } + { neighbour } = { target }")
                result.append(( node, neighbour )) #returns the pair

            DFS( neighbour, graph, target, visited, result ) #function call

def SUBSETSUMDFS( graph, target ):
    visited = set()
    result = []
    for node in graph: #for keys in the graph
        print("------------------------------------")
        print(f"Current node is { node }")
        print("------------------------------------")
        if node not in visited: #checks if node is not in visited
            DFS( node , graph, target, visited, result )
    return result

graph = { 1: [ 2, 3 ] , 2: [ 5 ], 3: [ 7, 6 ], 4:[ 5 ], 5: [ 2, 4 ] , 6:[ 3 ], 7 : [ 3 ] }
target = 9
result = SUBSETSUMDFS( graph, target ) #function call
print( result )
```

```
------------------------------------
Current node is 1
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Checking if 1 + 2 equals to 9
Checking if 2 + 5 equals to 9
Checking if 5 + 4 equals to 9
5 + 4 = 9
Checking if 1 + 3 equals to 9
Checking if 3 + 7 equals to 9
Checking if 3 + 6 equals to 9
3 + 6 = 9
------------------------------------
Current node is 2
------------------------------------
------------------------------------
Current node is 3
------------------------------------
------------------------------------
Current node is 4
------------------------------------
------------------------------------
Current node is 5
------------------------------------
------------------------------------
Current node is 6
------------------------------------
------------------------------------
Current node is 7
------------------------------------
[(5, 4), (3, 6)]
```