SUBSET SUM PROBLEM IMPLEMENTATION USING BFS

In [2]:

```
def SUBSETSUMBFS( graph, target ):
    queue = [ i for i in graph ] #creating a queue using the keys of the dictionary 'graph'
    visited = set()

    while queue: #while queue not empty
        currentnode = queue.pop(0)
        visited.add(currentnode)
        print("----------------------------------")
        print(f"Current node is { currentnode } ")

        for neighbour in graph[currentnode]: #neighbouring nodes of current node
            if neighbour not in visited: #checks if neighbouring nodes are visited or not
                print(f"Checking if { currentnode } + { neighbour } equals to { target }")
                if currentnode + neighbour == target: #checks if currentnode + neighbour node equals target
                        print(f"{ currentnode } + { neighbour } = { target }")
                        result.append(( currentnode, neighbour )) #return the pairs
                queue.append( neighbour ) #add neighbour to the queue if not already visited

    return None

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

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

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