In [2]:
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# Title :- Write a program for analysis of quick sort by using deterministic and randomized variant
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In [12]:
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import random

def quicksort(arr, start, stop):
    if start < stop:
        pivotindex = partitionrand(arr, start, stop)

        quicksort(arr, start, pivotindex - 1)

        quicksort(arr, pivotindex + 1, stop)

def partitionrand(arr, start, stop):
    randpivot = random.randrange(start, stop + 1)

    arr[start], arr[randpivot] = arr[randpivot], arr[start]

    return partition(arr, start, stop)

def partition(arr, start, stop):
    pivot = arr[start]
    i = start + 1
    j = stop

    while i <= j:
        while i <= stop and arr[i] < pivot:
            i += 1
        while j >= start and arr[j] > pivot:
            j -= 1

        if i <= j:
            arr[i], arr[j] = arr[j], arr[i]
            i += 1
            j -= 1

    arr[start], arr[j] = arr[j], arr[start]
    return j

if __name__ == "__main__":
    array = [10, 7, 8, 9, 1, 5]
    quicksort(array, 0, len(array) - 1)
    print(array)
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[1, 5, 7, 8, 9, 10]
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