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## Day - 2

1. Anti-clockwise rotate a matrix by 90 deg.
2. Check if a String is Palindromic or not.
3. Convert a sentence into its equivalent mobile numeric keypad sequence.
4. Check if strings are isomorphic or not.
5. Do Tail Call Elimination For Quick Sort.



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### Quick Sort Tail Recursive Function

```

Low -> Starting index, high -> Ending index
quickSort(arr[], low, high) {
    if (low < high) {
        // pivot is partitioning index, arr[pi] is now at right place
        pivot = partition(arr, low, high);
        quickSort(arr, low, pi - 1); // Before pivot element
        quickSort(arr, pi + 1, high); // After pivot element
    }
}

```

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6. Given two strings 'str1' and 'str2' of size m and n respectively. The task is to remove/delete and insert the minimum number of characters from/in str1 to transform it into str2. It could be possible that the same character needs to be removed/deleted from one point of str1 and inserted at some another point.

**Input :**

str1 = "heap", str2 = "pea"

**Output :**

Minimum Deletion = 2 and Minimum Insertion = 1



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## 7. Convert the following function to Tail Recursive Function.



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**Is this a tail recursive function?**

```
#include<iostream>
using namespace std;
int fact(int n)
{
    if (n == 0) return 1;
    return n*fact(n-1);
}

int main()
{
    cout << fact(5);
    return 0;
}
```

It is a **non-tail-recursive** function. Although it looks like a tail recursive at first look. If we take a closer look, we can see that the value returned by fact(n-1) is used in fact(n), so the call to fact(n-1) is not the last thing done by fact(n)

Can we convert it to a tail-recursive function ?

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8. Given two strings s1 and s2, return the **length of their longest common subsequence**. If there is no common subsequence, return 0.
9. Continued from the previous Question, **Print the LCS** of the given two strings.
10. Given two strings str1 and str2, return the shortest string that has both str1 and str2 as subsequences. If there are multiple valid strings, return any of them.

**Input:** str1 = "abac", str2 = "cab"

**Output:** "cabac"

**Explanation:**

str1 = "abac" is a subsequence of "cabac" because we can delete the first "c".

str2 = "cab" is a subsequence of "cabac" because we can delete the last "ac".

The answer provided is the shortest such string that satisfies these properties.