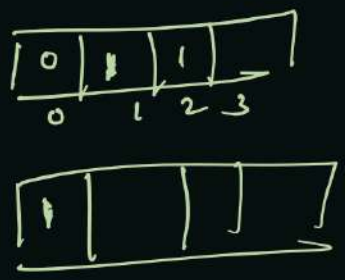
Count Binary Strings

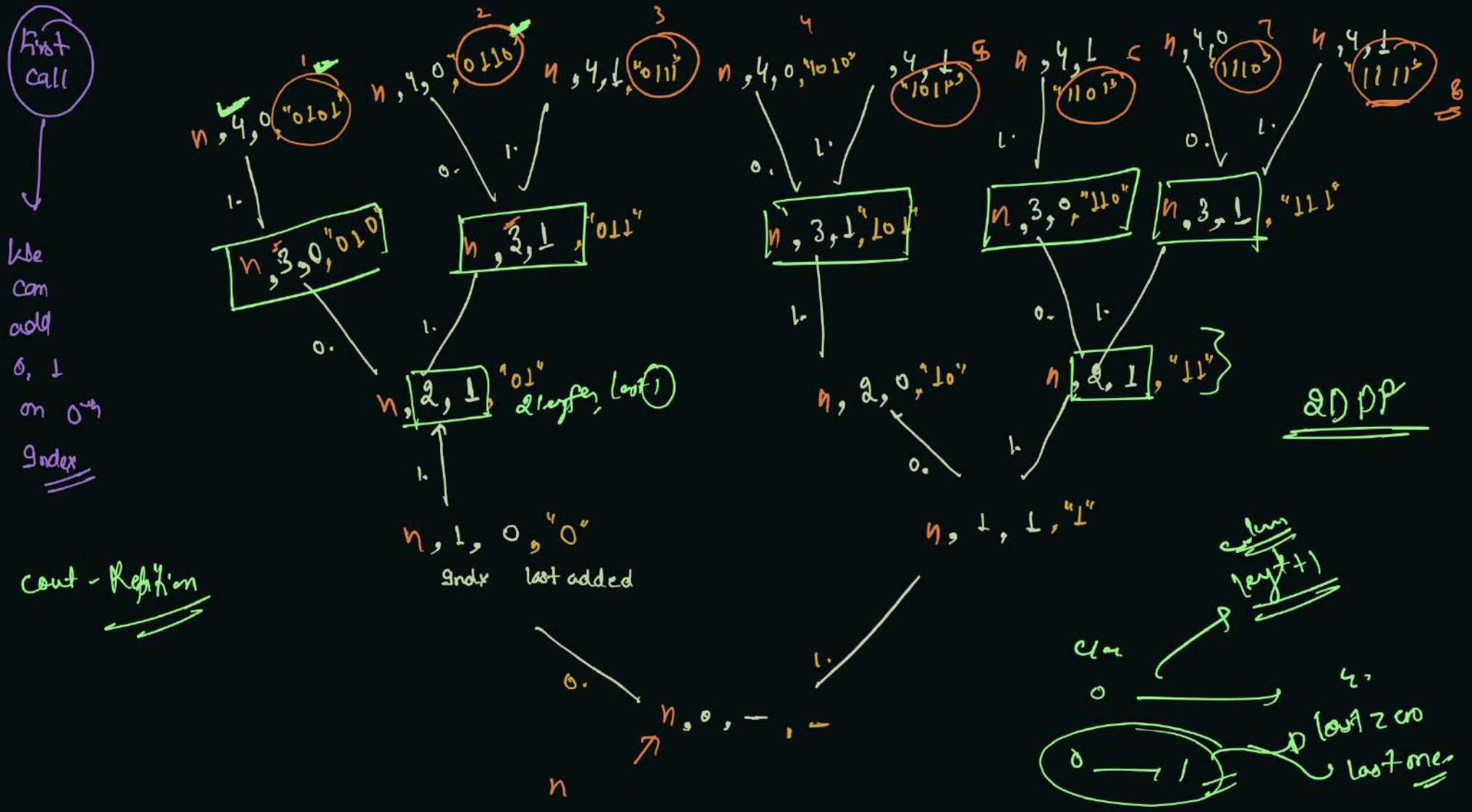
Saturday, 1 May 2021 12:54 PM

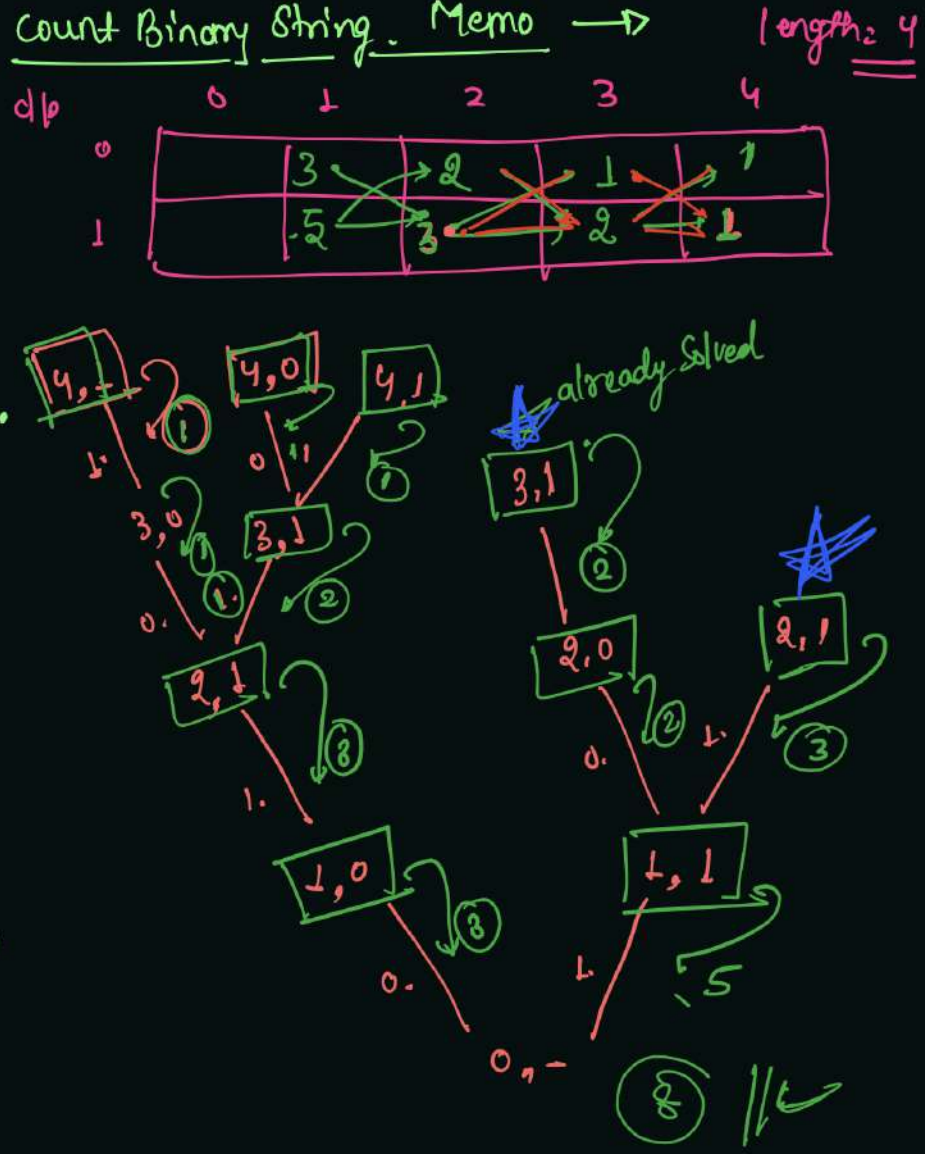
length of String = 4

no. of possible binary string : $2^4 = 16$

Constraint → No two consecutive 0s are allowed







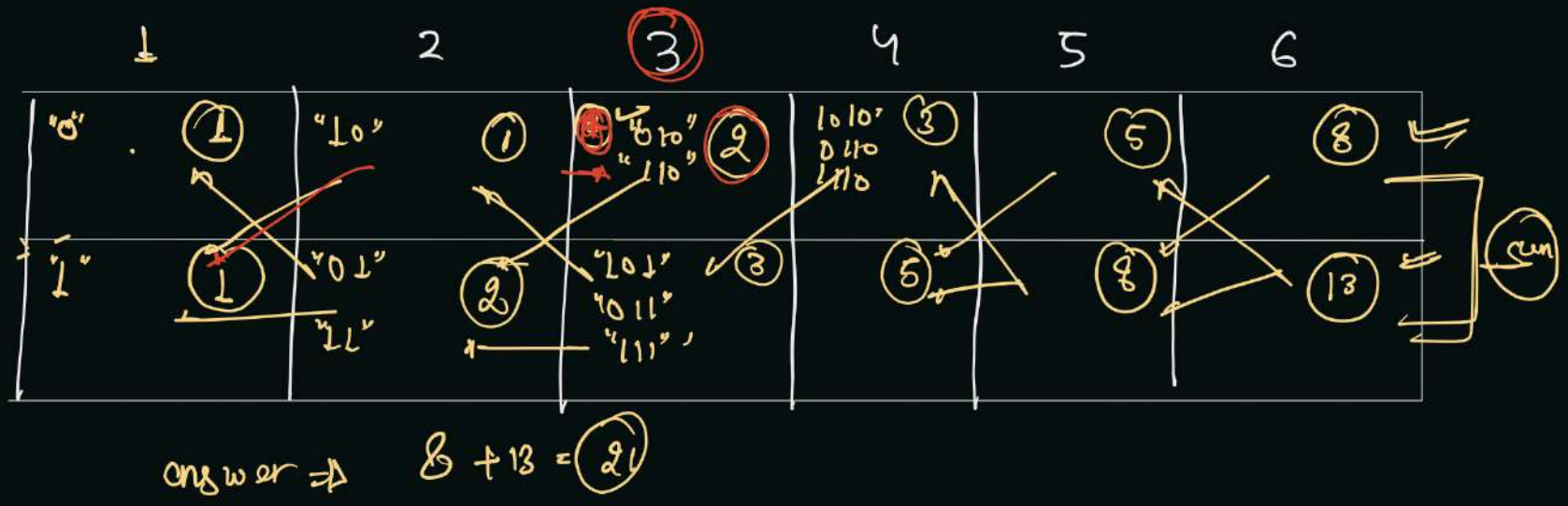

```java
public static int countBinaryStrings_memo(int clen, int n, int le, String str, int[][] dp) {
    if(clen == n) {
        return dp[le][clen] = 1;
    }

    if(dp[le][clen] != 0) {
        return dp[le][clen];
    }
    int count = 0;
    System.out.println(clen + " " + le);
    if(le == 0) {
        count += countBinaryStrings_memo(clen + 1, n, 1, str + "1", dp);
    } else {
        count += countBinaryStrings_memo(clen + 1, n, 0, str + "0", dp);
        count += countBinaryStrings_memo(clen + 1, n, 1, str + "1", dp);
    }
    return dp[le][clen] = count;
}

public static void countBinaryString() {
    int n = 6;
    // int count = countBinaryStrings_rec(1, n, 0, "0");
    // count += countBinaryStrings_rec(1, n, 1, "1");

    int[][] dp = new int[2][n + 1];

    int count = countBinaryStrings_memo(1, n, 0, "0", dp);
    count += countBinaryStrings_memo(1, n, 1, "1", dp);
    System.out.println(count);
}
```

Count Binary String. tabulation -

① DP
② Meaning -
③ travel and fill

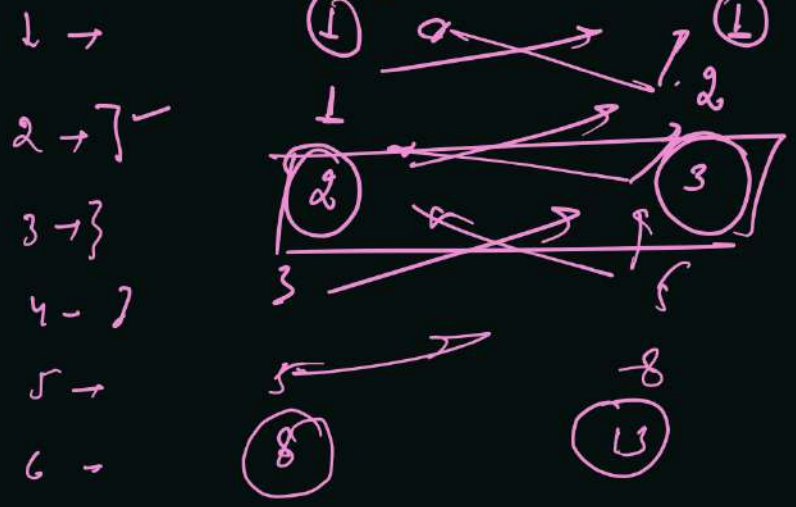
④ → Max. possible answer if length is 3 and last added elem is 0

No need for DP



answer ⇒ 8 + 13 = 21

Last zero Count 00 = old1 Last one Cart 0 = old 2nd



Arrange Buildings

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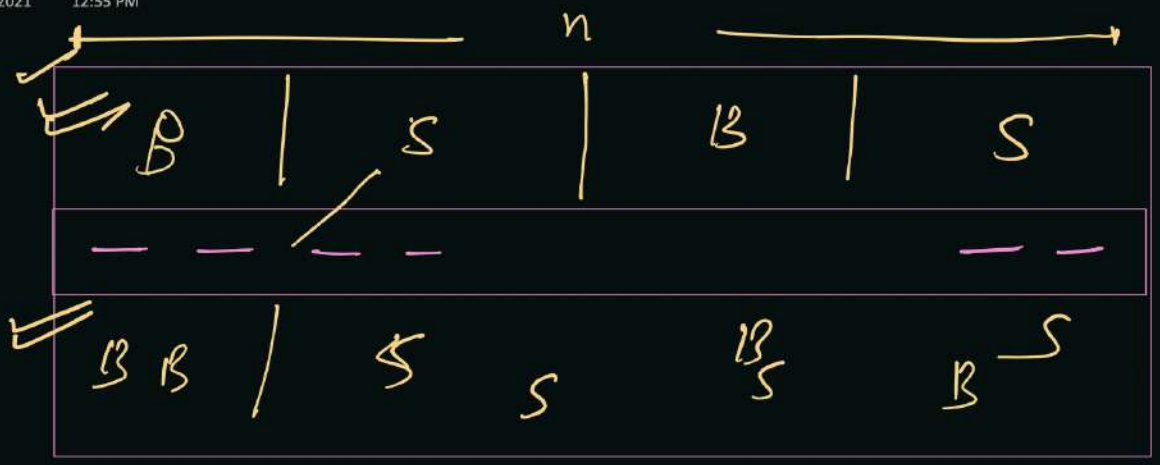
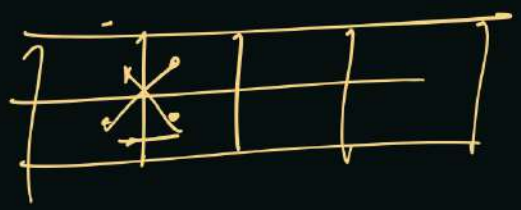


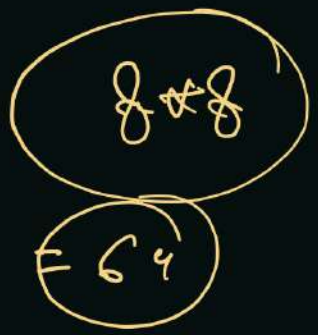
total no. of ways to arrange building as well as space.

Condition:
No. two building can be placed on adjacent.

0 → Building

1 → Space





Count Encodings

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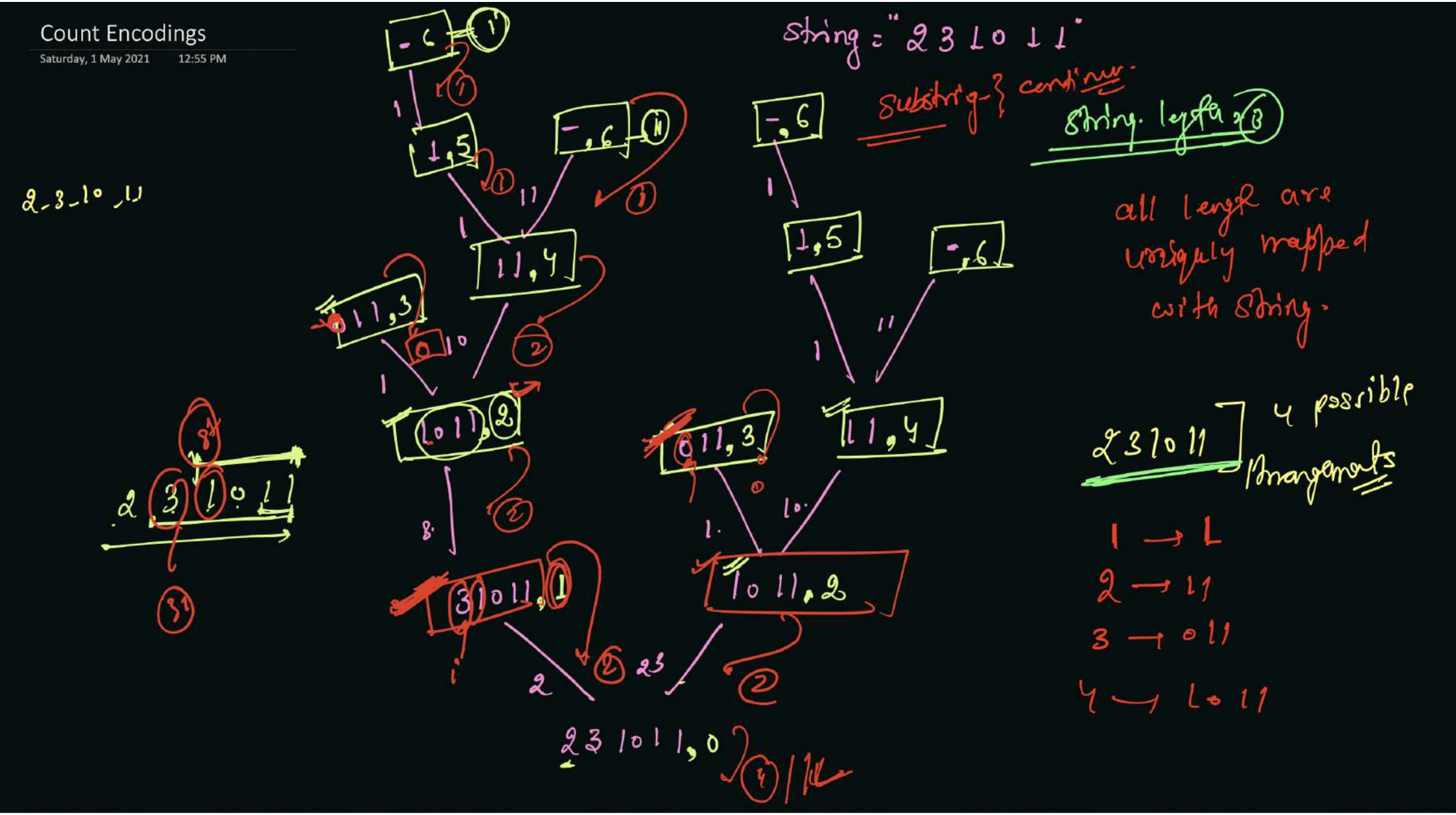
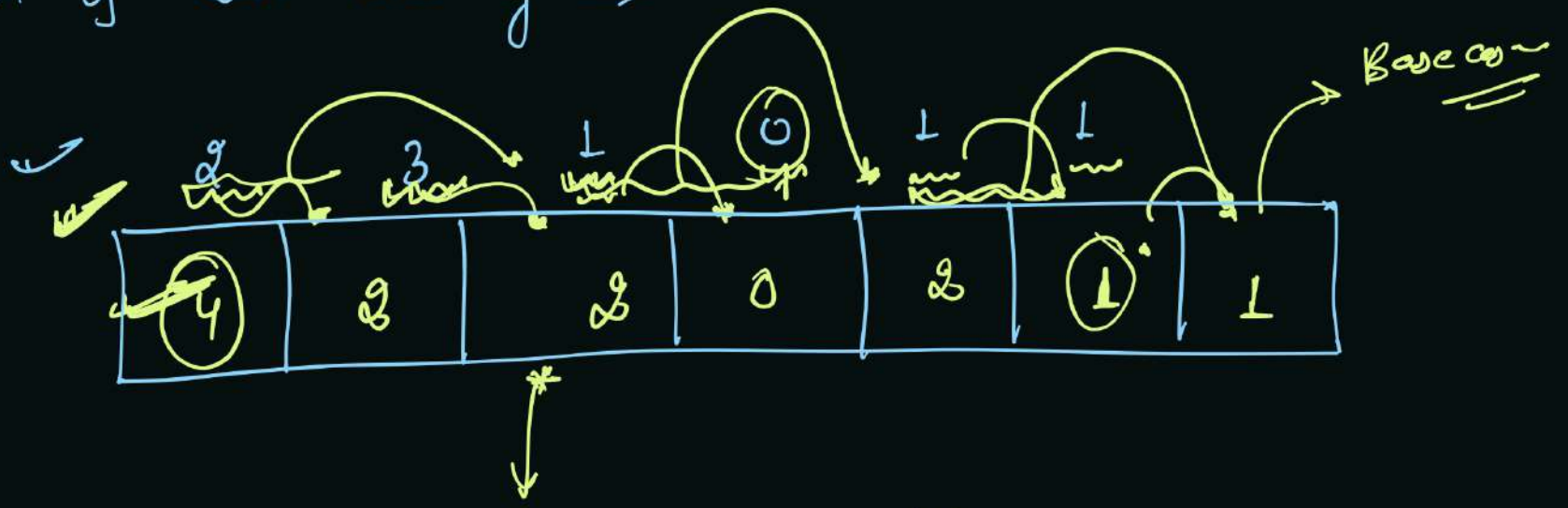


tabulation of count Encoding →



Meaning → No. of possible Encoding Starting from index 'i' to end.