

```

1  /**
2  A number is said to be a 369 number if The count of 3s is equal to count of
3  6s and the count of 6s is equal to count of 9s. The count of 3s is at least 1.
4  For Example 12369,383676989,396 all are 369 numbers whereas 213,342143,111 are not.
5  Given A and B find how many 369 numbers are there in the interval [A, B].
6  Print the answer modulo 1000000007.
7
8  The first line contains the number of test cases (T) followed by T lines
9  each containing 2 integers A and B. T<=100 and 1<=A<=B<=10^50.
10
11 For each test case output the number of 369 numbers between A and B inclusive.
12
13 Input          Output
14 3
15 121 4325      -----> 60
16 432 4356      -----> 58
17 4234 4325667  -----> 207159
18
19 ***/
20 #include<bits/stdc++.h>
21 using namespace std;
22 #define MOD 1000000007LL
23 #define ll long long
24 int dp[51][2][2][17][17][17];
25 string LB,UB;
26 int fun(int pos, int boro, int choto, int three, int six, int nine){
27     if(three>16 || six>16 || nine>16) return 0LL;
28     if(pos==51){
29         if(three>0 && three==six && six==nine) return 1LL;
30         return 0LL;
31     }
32
33     int &ret = dp[pos][boro][choto][three][six][nine];
34     if(ret!=-1 && choto && boro) return ret;
35
36     int lo = 0, hi=9;
37     if(boro==0) lo = LB[pos]-'0';
38     if(choto==0)hi = UB[pos]-'0';
39     ret = 0;
40     for(int i=lo; i<=hi; i++){
41         ret += fun(pos+1, boro|(i>lo), choto|(i<hi), three+(i==3), six+(i==6), nine+(i==9));
42         ret %= MOD;
43     }
44     return ret;
45 }
46 int main(){
47     memset(dp,-1,sizeof(dp));
48     int tt; scanf("%d",&tt);
49     for(int ks=1; ks<=tt; ks++){
50         cin >> LB;
51         string p;
52         int d = 51-LB.size();
53         for(int i=1; i<=d; i++)p+="0";
54         LB = p+LB;
55
56         cin >> UB;
57         string q;
58         int c = 51-UB.size();
59         for(int i=1; i<=c; i++)q+="0";
60         UB = q+UB;
61
62         int ans = fun(0,0,0,0,0,0);
63         cout << ans << endl;
64     }
65     return 0;
66 }

```