#include <iostream>

#include <vector>

#include <string>

#include <algorithm>

using namespace std;

#define MOD (1000000007LL)

typedef long long LL;

typedef vector<vector<LL> > VLL;

VLL d;

LL n;

VLL mul(VLL a, VLL b)

{

VLL ret(n);

LL i, j, k;

for (i = 0; i < n; i++)

for (j = 0; j < n; j++)

{

ret[i].push\_back(0);

for (k = 0; k < n; k++)

ret[i][j] = (ret[i][j]+a[i][k]\*b[k][j])%MOD;

}

return ret;

}

VLL pow(LL p)

{

if (p == 1)

return d;

VLL r = pow(p>>1);

if (p&1)

return mul(mul(r, r), d);

return mul(r, r);

}

int main()

{

string s;

LL m, p, q, i, j;

cin >> n;

d.resize(n);

for (i = 0; i < n; i++)

for (j = 0; j < n; j++)

{

d[i].push\_back(0);

cin >> d[i][j];

}

cin >> m;

while (m--)

{

cin >> s;

if (s == "T")

{

for (i = 0; i < n; i++)

for (j = i+1; j < n; j++)

swap(d[i][j], d[j][i]);

continue;

}

if (s == "MUL")

{

cin >> p;

for (i = 0; i < n; i++)

for (j = 0; j < n; j++)

d[i][j] = (d[i][j]\*p)%MOD;

continue;

}

if (s == "POW")

{

cin >> p;

d = pow(p);

continue;

}

cin >> s >> p >> q;

p--;

q--;

if (s == "ROW")

{

for (i = 0; i < n; i++)

swap(d[p][i], d[q][i]);

continue;

}

for (i = 0; i < n; i++)

swap(d[i][p], d[i][q]);

}

for (i = 0; i < n; i++)

{

for (j = 0; j < n-1; j++)

cout << d[i][j] << ' ';

cout << d[i][j] << '\n';

}

return 0;

}