#include<iostream>

#include<cmath>

#include<time.h>

#include<sys/resource.h>

using namespace std;

int a[30], count = 0;

int place(int pos)

{

for (int i = 1; i < pos; i++)

{

if ((a[i] == a[pos]) || (abs(a[i] - a[pos]) == abs(i - pos)))

return 0;

}

return 1;

}

void print\_sol(int n)

{

count++;

cout << "\n\nSolution #" << count << ":\n";

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

{

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

{

if (a[i] == j)

cout << "Q\t";

else

cout << "\*\t";

}

cout << endl;

}

}

void queen(int n)

{

int k = 1;

a[k] = 0;

while (k != 0)

{

a[k] = a[k] + 1;

while ((a[k] <= n) && !place(k))

a[k]++;

if (a[k] <= n)

{

if (k == n)

print\_sol(n);

else

{

k++;

a[k] = 0;

}

}

else

k--;

}

}

int main()

{

struct rusage r\_usage;

clock\_t start,end;

double clk;

int n;

cout << "Enter the number of Queens\n";

cin >> n;

start=clock();

queen(n);

end=clock();

cout << "\nTotal solutions=" << count << endl;

clk=(double)(end-start)/CLOCKS\_PER\_SEC;

cout << "Total time = " << clk << " seconds" << endl;

getrusage(RUSAGE\_SELF, &r\_usage);

cout << "Memory usage: " << r\_usage.ru\_maxrss << " kilobytes" << endl;

return 0;

}