Johnson trotter

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```
#include <stdio.h>
#include <conio.h>

int N, i, count=0;
int p[100], pi[100];
int dir[100];

void PrintPerm()
{
   int i;

   count = count + 1;
   printf( "[%4d] ", count );
   for (i=1; i <= N; ++i)
      printf( "%d", p[i] );
};

void PrintTrans( int x, int y )
{
   printf( " (%d %d)", x, y );
   printf( "\n" );
} ;

void Move( int x, int d )
{
   int z;
   PrintTrans( pi[x], pi[x]+d );
   z = p[pi[x]+d];
   p[pi[x]] = z;
   p[pi[x]+d] = x;
   pi[z] = pi[x];
   pi[x] = pi[x]+d;
};

void Perm ( int n )
{
   int i;
   if (n > N)
      PrintPerm();
   else
   {
      Perm( n+1 );
```

```
    for (i=1; i<=n-1; ++i)
    {
      Move( n, dir[n] );
      Perm( n+1 );
    }
    dir[n] = -dir[n];
  }
};

void main ()
{
  printf( "Enter n for numbers: " );
  scanf( "%d", &N );
  printf( "\n" );
  for (i=1; i<=N; ++i)
  {
    dir[i] = -1; p[i] = i;
    pi[i] = i;
  }
  Perm ( 1 );
  printf( "\n" );
  getch();
}
```

```
Enter n for numbers: 4

[    1] 1234 (4 3)
[    2] 1243 (3 2)
[    3] 1423 (2 1)
[    4] 4123 (4 3)
[    5] 4132 (1 2)
[    6] 1432 (2 3)
[    7] 1342 (3 4)
[    8] 1324 (2 1)
[    9] 3124 (4 3)
[   10] 3142 (3 2)
[   11] 3412 (2 1)
[   12] 4312 (4 3)
[   13] 4321 (1 2)
[   14] 3421 (2 3)
[   15] 3241 (3 4)
[   16] 3214 (1 2)
[   17] 2314 (4 3)
[   18] 2341 (3 2)
[   19] 2431 (2 1)
[   20] 4231 (3 4)
[   21] 4213 (1 2)
[   22] 2413 (2 3)
[   23] 2143 (3 4)
[   24] 2134
```

Leet code