#include<stdio.h>

#include<iostream>

#include<math.h>

using namespace std;

struct n1

{

int a;

n1 \*next1;

}\*top1 = NULL, \*p1 = NULL, \*np1 = NULL;

struct n2

{

int b;

n2 \*next2;

}\*top2 = NULL, \*p2 = NULL, \*np2 = NULL;

struct n3

{

int c;

n3 \*next3;

}\*top3 = NULL, \*p3 = NULL, \*np3 = NULL;

void push1 ( int d )

{

np1 = new n1;

np1-> a = d ;

np1->next1 = NULL;

if (top1 == NULL)

{

top1 = np1;

}

else

{

np1->next1 = top1;

top1 = np1;

}

}

int pop1 ()

{

int b = 999;

if (top1 == NULL)

{

return b;

}

else

{

p1 = top1;

top1 = top1->next1;

return ( p1 -> a );

delete( p1 );

}

}

void push2(int d )

{

np2 = new n2;

np2-> b = d;

np2->next2 = NULL;

if (top2 == NULL)

{

top2 = np2;

}

else

{

np2->next2 = top2;

top2 = np2;

}

}

int pop2()

{

int b = 999;

if (top2 == NULL)

{

return b;

}

else

{

p2 = top2;

top2 = top2->next2;

return(p2-> b);

delete(p2);

}

}

void push3(int d)

{

np3 = new n3;

np3-> c = d;

np3->next3 = NULL;

if (top3 == NULL)

{

top3 = np3;

}

else

{

np3->next3 = top3;

top3 = np3;

}

}

int pop3()

{

int b = 999;

if (top3 == NULL)

{

return b;

}

else

{

p3 = top3;

top3 = top3->next3;

return(p3-> c );

delete(p3);

}

}

int TS ()

{

if (top1 != NULL && top1 -> a == 1 )

{

return 1;

}

else if (top2 != NULL && top2 -> b == 1)

{

return 2;

}

else if (top3 != NULL && top3 -> c == 1)

{

return 3;

}

}

void d1()

{

cout << "\n" ;

n1 \*p1;

p1 = top1;

cout<< " ThapA -> " << " t " ;

while ( p1 != NULL )

{

cout << p1 -> a <<" t " ;

p1 = p1 -> next1 ;

}

cout << "\n" ;

}

void d2()

{

n2 \*p2;

p2 = top2;

cout << " ThapB -> " << " t " ;

while (p2 != NULL)

{

cout<< p2 -> b << " t " ;

p2 = p2 -> next2;

}

cout<< "\n" ;

}

void d3()

{

n3 \*p3;

p3 = top3;

cout<<" ThapC -> " << " t " ;

while (p3 != NULL)

{

cout<< p3 -> c << " t " ;

p3 = p3 -> next3;

}

cout << "\n" ;

cout << "\n" ;

}

void toh ( int n )

{

int i, x, a, b;

for (i = 0; i < (pow(2,n)); i++)

{

d1();

d2();

d3();

x = TS ();

if (i % 2 == 0)

{

if (x == 1)

{

push3(pop1());

}

else if (x == 2)

{

push1(pop2());

}

else if (x == 3)

{

push2(pop3());

}

}

else

{

if (x == 1)

{

a = pop2();

b = pop3();

if (a < b && b != 999)

{

push3(b);

push3(a);

}

else if (a > b && a != 999)

{

push2(a);

push2(b);

}

else if (b == 999)

{

push3(a);

}

else if (a == 999)

{

push2(b);

}

}

else if (x == 2)

{

a = pop1();

b = pop3();

if (a < b && b != 999)

{

push3(b);

push3(a);

}

else if (a > b && a != 999)

{

push1(a);

push1(b);

}

else if (b == 999)

{

push3(a);

}

else if (a == 999)

{

push1(b);

}

}

else if (x == 3)

{

a = pop1();

b = pop2();

if (a < b && b != 999)

{

push2(b);

push2(a);

}

else if (a > b && a != 999)

{

push1(a);

push1(b);

}

else if (b == 999)

{

push2(a);

}

else if (a == 999)

{

push1(b);

}

}

}

}

}

int main()

{

int n, i;

cout << " Nhap so dia cho bai toan : ";

cin>> n ;

for (i = n; i >= 1; i--)

{

push1(i);

}

toh(n);

return 0;

}