n=int(input()) # Number of Compartments

bookedArr=list([int(item) for item in input().split()]) # Booked Seats

total=[]

comp=[]

leftArr=[]

rightArr=[]

uArr=[]

mArr=[]

lArr=[]

for x in range(0,n):

arr=[]

for y in range((x\*8 + 1),((x\*8+1) + 8)):

arr.append(y)

if(y in range((x\*8 + 1),((x\*8+1) + 6))):

leftArr.append(y)

if(y in range((x\*8 + 7),((x\*8+1) + 8))):

rightArr.append(y)

if(y == (x\*8 + 1) or y == (x\*8 + 4) or y == (x\*8 + 7)):

uArr.append(y)

elif(y == (x\*8 + 2) or y == (x\*8 + 5)):

mArr.append(y)

elif(y == (x\*8 + 3) or y == (x\*8 + 6) or y == (x\*8 + 8)):

lArr.append(y)

total.append(y)

comp.append(arr)

unbookedArr=list(set(total)-set(bookedArr))

choice=input().split()

def calcTemp(arr1,arr2):

return [value for value in arr1 if value in arr2]

temp1=[]

if(choice[1] == "L"):

if(choice[2]=="U"):

temp1 = calcTemp(leftArr,uArr)

if(choice[2]=="M"):

temp1 = calcTemp(leftArr,mArr)

if(choice[2]=="L"):

temp1 = calcTemp(leftArr,lArr)

if(choice[2]=="N"):

temp1.extend(calcTemp(leftArr,uArr))

temp1.extend(calcTemp(leftArr,mArr))

temp1.extend(calcTemp(leftArr,lArr))

if(choice[1] == "R"):

if(choice[2]=="U"):

temp1 = calcTemp(rightArr,uArr)

if(choice[2]=="M"):

temp1 = calcTemp(rightArr,mArr)

if(choice[2]=="L"):

temp1 = calcTemp(rightArr,lArr)

if(choice[2]=="N"):

temp1.extend(calcTemp(rightArr,uArr))

temp1.extend(calcTemp(rightArr,mArr))

temp1.extend(calcTemp(rightArr,lArr))

if(choice[1] == "N"):

if(choice[2]=="U"):

temp1.extend(calcTemp(leftArr,uArr))

temp1.extend(calcTemp(rightArr,uArr))

if(choice[2]=="M"):

temp1.extend(calcTemp(leftArr,mArr))

temp1.extend(calcTemp(rightArr,mArr))

if(choice[2]=="L"):

temp1.extend(calcTemp(leftArr,lArr))

temp1.extend(calcTemp(rightArr,lArr))

if(choice[2]=="N"):

temp1.extend(calcTemp(leftArr,uArr))

temp1.extend(calcTemp(rightArr,uArr))

temp1.extend(calcTemp(leftArr,mArr))

temp1.extend(calcTemp(rightArr,mArr))

temp1.extend(calcTemp(leftArr,lArr))

temp1.extend(calcTemp(rightArr,lArr))

temp2=[]

if(choice[0]!="N"):

index=comp[int(choice[0]) - 1]

temp2 = [value for value in temp1 if value in index]

elif(choice[0]=="N"):

for index in comp:

temp2.extend([value for value in temp1 if value in index])

final= [value for value in temp2 if value in unbookedArr]

print(final)