#include<iostream>

#include<vector>

#include<conio.h>

using namespace std;

vector<int> sender(int Ad,int Bd,int Cd,vector<int> A,vector<int> B,vector<int> C,int n) {

vector<int> Z(n);

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

Z[i] = Ad\*A[i] + Bd\*B[i] + Cd\*C[i];

}

return Z;

}

vector<int> take\_data(int n) {

vector<int> temp;

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

int bit;

cin >> bit;

if (bit == 0) {

bit = -1;

}

temp.push\_back(bit);

}

return temp;

}

void receiver(vector<int> Z,vector<int> A,vector<int> B,vector<int> C,int n) {

int A\_ans = 0, B\_ans = 0, C\_ans=0;

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

A\_ans += Z[i] \* A[i];

B\_ans += Z[i] \* B[i];

C\_ans += Z[i] \* C[i];

}

cout << "A,B,C values on receiver side: " << A\_ans << " " << B\_ans << " " << C\_ans << endl;

if (A\_ans > 0 && B\_ans > 0 && C\_ans>0) {

cout << "A,B & C sent a 1" << endl;

}

else if (A\_ans <= 0 && B\_ans > 0 && C\_ans>0) {

cout << "A sent a 0, B & C sent a 1" << endl;

}

else if (A\_ans <= 0 && B\_ans <= 0 && C\_ans<=0) {

cout << "A,B & C sent a 0" << endl;

}

else if(A\_ans > 0 && B\_ans <= 0 && C\_ans <= 0){

cout << "A sent a 1 , B & C sent a 0" << endl;

}

else if (A\_ans > 0 && B\_ans > 0 && C\_ans <= 0) {

cout << "A,B sent a 1, C sent 0" << endl;

}

else if(A\_ans>0 && B\_ans<=0 && C\_ans>0){

cout << "A & C sent 1, B sent 0";

}

else if (A\_ans<=0 && B\_ans > 0 && C\_ans<=0) {

cout << "A &C sent 0, B sent 1";

}

else {

cout << "A&B sent 0, C sent 1";

}

}

int main() {

vector<int> A;

vector<int> B;

vector<int> C;

vector<int> Z;

int Ad;

int Bd;

int Cd;

int n;

cout << "Enter the key size: ";

cin >> n;

cout << "Enter A's Key" << endl;

A = take\_data(n);

cout << "Enter B's Key" << endl;

B = take\_data(n);

cout << "Enter C's Key" << endl;

C = take\_data(n);

cout << "Enter A's Data: ";

cin >> Ad;

cout << "Enter B's Data: ";

cin >> Bd;

cout << "Enter C's Data: ";

cin >> Cd;

if (Ad == 0) {

Ad = -1;

}

if (Bd == 0) {

Bd = -1;

}

if (Cd == 0) {

Cd = -1;

}

Z = sender(Ad, Bd,Cd, A, B,C, n);

cout << "Transmitted: ";

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

cout << Z[i] << " ";

}

cout <<endl<<"At receivers side: " << endl;

receiver(Z, A, B,C,n);

\_getch();

}

**Output:**

Enter the key size: 4

Enter A's Key

1 1 1 1

Enter B's Key

1 0 1 0

Enter C's Key

1 0 0 1

Enter A's Data: 0

Enter B's Data: 1

Enter C's Data: 1

Transmitted: 1 -3 -1 -1

At receivers side:

A,B,C values on receiver side: -4 4 4

A sent a 0, B & C sent a 1