INPUT:

```
import numpy as np
c1=[1,1,1,1]
c2=[1,-1,1,-1]
c3=[1,1,-1,-1]
c4=[1,-1,-1,1]
rc=[]
print("Enter the data bits :")
d1=int(input("Enter D1 :"))
d2=int(input("Enter D2 :"))
d3=int(input("Enter D3 :"))
d4=int(input("Enter D4 :"))
r1=np.multiply(c1,d1)
r2=np.multiply(c2,d2)
r3=np.multiply(c3,d3)
r4=np.multiply(c4,d4)
resultant_channel=r1+r2+r3+r4;
print("Resultant Channel",resultant_channel)
Channel=int(input("Enter the station to listen for C1=1 ,C2=2, C3=3 C4=4 : "))

if Channel==1: rc=c1
elif Channel==2: rc=c2
elif Channel==3: rc=c3
elif Channel==4: rc=c4
inner_product=np.multiply(resultant_channel,rc)

print("Inner Product",inner_product)
res1=sum(inner_product)

data=res1/len(inner_product)
print("Data bit that was sent",data)
```

OUTPUT:

Enter the data bits :

Enter D1 :-1

Enter D2 :-1

Enter D3 :0

Enter D4 :1

Resultant Channel [-1 -1 -3 1]

Enter the station to listen for C1=1 ,C2=2, C3=3 C4=4 : 1

Inner Product [-1 -1 -3 1]

Data bit that was sent -1.0

Enter the data bits :

Enter D1 :-1

Enter D2 :-1

Enter D3 :0

Enter D4 :1

Resultant Channel [-1 -1 -3 1]

Enter the station to listen for C1=1 ,C2=2, C3=3 C4=4 : 2

Inner Product [-1 1 -3 -1]

Data bit that was sent -1.0

Enter the data bits :

Enter D1 :-1

Enter D2 :-1

Enter D3 :0

Enter D4 :1

Resultant Channel [-1 -1 -3 1]

Enter the station to listen for C1=1 ,C2=2, C3=3 C4=4 : 3

Inner Product [-1 -1 3 -1]

Data bit that was sent 0.0

Enter the data bits :

Enter D1 :-1

Enter D2 :-1

Enter D3 :0

Enter D4 :1

Resultant Channel [-1 -1 -3 1]

Enter the station to listen for C1=1 ,C2=2, C3=3 C4=4 : 4

Inner Product [-1 1 3 1]

Data bit that was sent 1.0