Name: Vivek Pawar
Roll no: 404C045

Experiment no: 1

```python
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)
```

```python
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)
```

Terminal output:

```
PS D:\BE Study matterial\pract\MC> python code.py
Enter the data bits
Enter D1:2
Enter D2:3
Enter D3:5
Enter D4:6
Resultant Channel [16 -2 -6  0]
Enter the station to listen for C1=1,C2=2,C3=3,C4=4:2
Inner Product [16  2 -6  0]
Data bit that was sent 3.0
PS D:\BE Study matterial\pract\MC>
```