Program:

```
import numpy as np

no_of_stations = 4
station_one_code = [1, 1, 1, 1]
station_two_code = [1, -1, 1, -1]
station_three_code = [1, 1, -1, -1]
station_four_code = [1, -1, -1, 1]
channel_resultant = []

print("""Enter the data bits to be sent by each station,
For data bit 0 --> -1
For data bit 1 --> +1
------------------------------------------
Station Data:""")
station_one_data = int(input("Enter data for Station 1: "))
station_two_data = int(input("Enter data for Station 2: "))
station_three_data = int(input("Enter data for Station 3: "))
station_four_data = int(input("Enter data for Station 4: "))


station_one_resultant = np.multiply(station_one_code, station_one_data)
station_two_resultant = np.multiply(station_two_code, station_two_data)
station_three_resultant = np.multiply(station_three_code, station_three_data)
station_four_resultant = np.multiply(station_four_code, station_four_data)

resultant_channel = station_one_resultant + station_two_resultant + station_three_resultant + station_four_resultant

print(f"""\nStation Codes:
Station one code: {station_one_code}
Station two code: {station_two_code}
Station three code: {station_three_code}
Station four code: {station_four_code}""")
print("------------------------------------------")
print(f"Thus, Resultant channel: ", resultant_channel)

receiving_station = int(input("""\nEnter the station to listen to
For Station One --> 1
For Station Two --> 2
For Station Three --> 3
For Station Four --> 4
```

```python
Enter the station number: """))
print("\n-----------------------------------------")
if receiving_station == 1:
    resultant = np.multiply(resultant_channel, station_one_code)
    sum_of_resultant_bits = sum(resultant)
    sent_data = sum_of_resultant_bits / no_of_stations
elif receiving_station == 2:
    resultant = np.multiply(resultant_channel, station_two_code)
    sum_of_resultant_bits = sum(resultant)
    sent_data = sum_of_resultant_bits / no_of_stations
elif receiving_station == 3:
    resultant = np.multiply(resultant_channel, station_three_code)
    sum_of_resultant_bits = sum(resultant)
    sent_data = sum_of_resultant_bits / no_of_stations
elif receiving_station == 4:
    resultant = np.multiply(resultant_channel, station_four_code)
    sum_of_resultant_bits = sum(resultant)
    sent_data = sum_of_resultant_bits / no_of_stations
else:
    sent_data = 'No such station'
if sent_data == -1:
    print(f"The data sent by Station {receiving_station}: {int(sent_data)}, i.e 0")
elif sent_data == 1:
    print(f"The data sent by Station {receiving_station}: {int(sent_data)}, i.e 1")
else:
    print(sent_data)

print("-----------------------------------------")
```

Output:

PS C:\Users\LENOVO\Desktop\SIGMA\JAVA PROGRAMMING> py .\mcc.py

Enter the data bits to be sent by each station,

For data bit 0 --> -1

For data bit 1 --> +1

Station Data:

Enter data for Station 1: 1

Enter data for Station 2: -1

Enter data for Station 3: 1

Enter data for Station 4: 1

Station Codes:

Station one code: [1, 1, 1, 1]

Station two code: [1, -1, 1, -1]

Station three code: [1, 1, -1, -1]

Station four code: [1, -1, -1, 1]

Thus, Resultant channel: [2 2 -2 2]

Enter the station to listen to

For Station One --> 1

For Station Two --> 2

For Station Three --> 3

For Station Four --> 4

Enter the station number: 3

The data sent by Station 3: 1, i.e 1