It will choose “No”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **WEATHER** | **UNIFORM** | **WIN** | **BUYJERSEY** |
| 1 | 0 | 0 | 1 | 1 |
| 2 | 0 | 0 | 0 | 1 |
| 3 | 0 | 1 | 1 | 1 |
| 4 | 0 | 1 | 0 | 0 |
| 5 | 1 | 0 | 1 | 1 |
| 6 | 1 | 0 | 0 | 1 |
| 7 | 1 | 1 | 0 | 0 |
| 8 | 2 | 0 | 1 | 1 |
| 9 | 2 | 0 | 0 | 1 |
| 10 | 2 | 1 | 1 | 0 |
| 11 | 2 | 1 | 0 | 0 |

Weather = cloudy (1), Uniform = gray (1), Win = Yes (1)

(1)(1)+(1)(1)+(1)(1)+(1)(1)=4 ≥ 0 -> BuyJersey

Untrained Perceptron will give us the result that people will Buy Jersey.

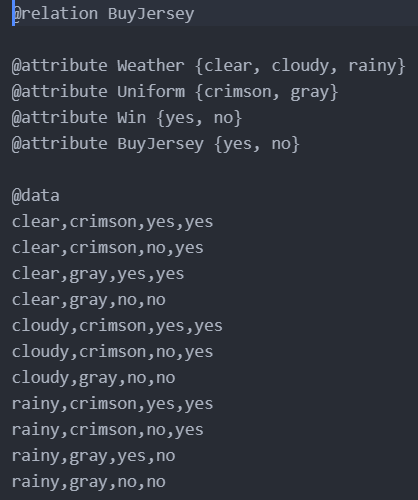
Round 1:

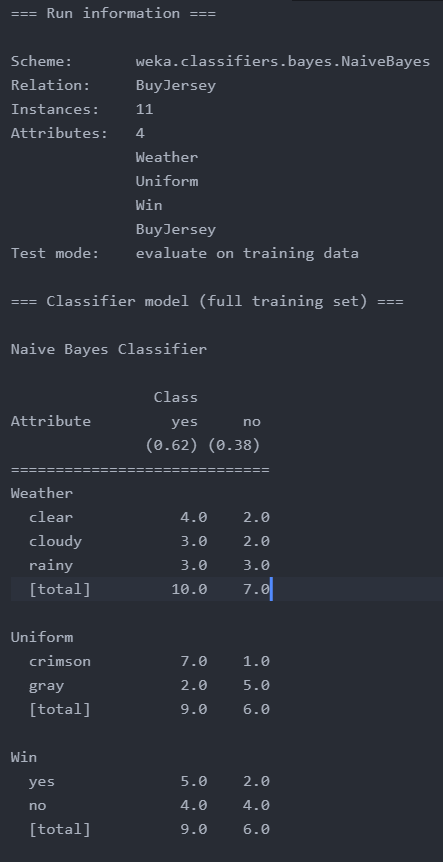
1. (1)(1)+(0)(1)+(0)(1)+(1)(1)=2 ≥ 0 -> BuyJersey <- Correct
2. (1)(1)+(0)(1)+(0)(1)+(0)(1)=1 ≥ 0 -> BuyJersey <- Correct
3. (1)(1)+(0)(1)+(1)(1)+(1)(1)=3 ≥ 0 -> BuyJersey <- Correct
4. (1)(1)+(0)(1)+(1)(1)+(0)(1)=2 ≥ 0 -> BuyJersye <- False  
   Modify Weights:  
   ΔW0=(0.5)(0-1)(1) = -0.5, W0 = 1-0.5 = 0.5  
   ΔW1=(0.5)(0-1)(0) = 0, W1 = 1  
   ΔW2=(0.5)(0-1)(1) = -0.5, W2 = 1-0.5 = 0.5  
   ΔW3=(0.5)(0-1)(0) = 0, W3 = 1
5. (1)(0.5)+(1)(1)+(0)(0.5)+(1)(1)=2.5 ≥ 0 -> BuyJersey <- Correct
6. (1)(0.5)+(1)(1)+(0)(0.5)+(0)(1)=1.5 ≥ 0 -> BuyJersey <- Correct
7. (1)(0.5)+(1)(1)+(1)(0.5)+(0)(1)=2 ≥ 0 -> BuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(0-1)(1) = -0.5, W0 = 0.5-0.5 = 0  
   ΔW1=(0.5)(0-1)(1) = -0.5, W1 = 1-0.5 = 0.5  
   ΔW2=(0.5)(0-1)(1) = -0.5, W2 = 0.5-0.5 = 0  
   ΔW3=(0.5)(0-1)(0) = 0, W3 = 1
8. (1)(0)+(2)(0.5)+(0)(0)+(1)(1)=2 ≥ 0 -> BuyJersey <- Correct
9. (1)(0)+(2)(0.5)+(0)(0)+(0)(1)=1 ≥ 0 -> BuyJersey <- Correct
10. (1)(0)+(2)(0.5)+(1)(0)+(1)(1)=2 ≥ 0 -> BuyJersey <- False  
    Modify Weights:  
    ΔW0=(0.5)(0-1)(1) = -0.5, W0 = 0-0.5 = -0.5  
    ΔW1=(0.5)(0-1)(2) = -1, W1 = 0.5-1 = -0.5  
    ΔW2=(0.5)(0-1)(1) = -0.5, W2 = 0-0.5 = -0.5  
    ΔW3=(0.5)(0-1)(1) = 0.5, W3 = 1-0.5 = 0.5
11. (1)(-0.5)+(2)(-0.5)+(1)(-0.5)+(0)(0.5)=-2 < 0 -> NotBuyJersey <- Correct

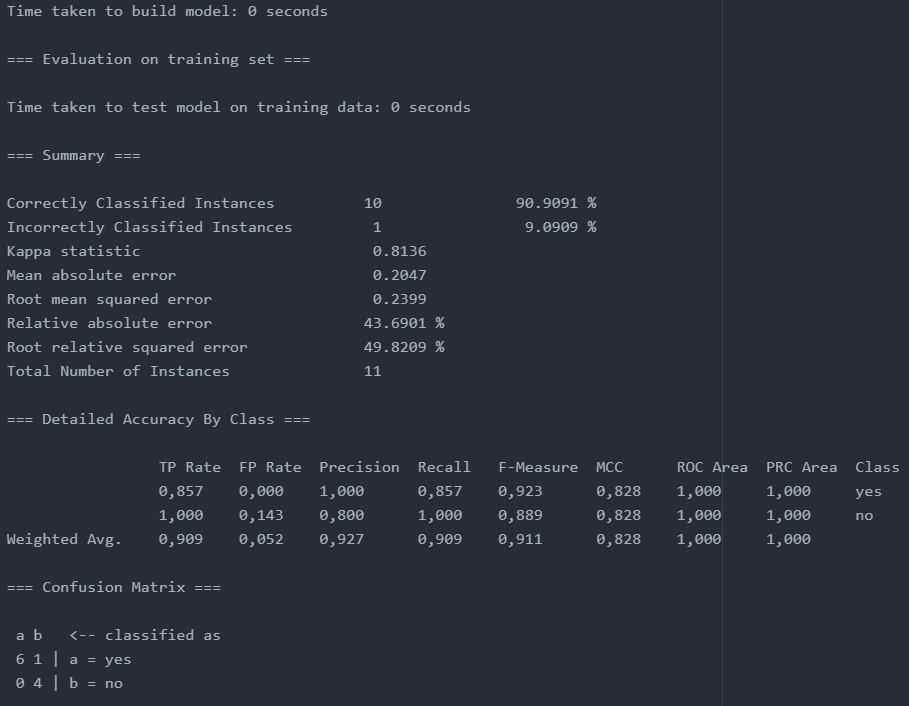
Weather = cloudy (1), Uniform = gray (1), Win = Yes (1)

(1)(-0.5)+(1)(-0.5)+(1)(-0.5)+(1)(0.5)=-1 < 0 -> NotBuyJersey

Trained on one round Perceptron will calculate that people won’t Buy Jersey.







Round 2:

1. (1)(-0.5)+(0)(-0.5)+(0)(-0.5)+(1)(0.5)=0 ≥ 0 -> BuyJersey <- Correct
2. (1)(-0.5)+(0)(-0.5)+(0)(-0.5)+(0)(0.5)=-0.5 < 0 -> NotBuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(1-0)(1) = 0.5, W0 = -0.5+0.5 = 0  
   ΔW1=(0.5)(1-0)(0) = 0, W1 = -0.5  
   ΔW2=(0.5)(1-0)(0) = 0, W2 = -0.5  
   ΔW3=(0.5)(1-0)(0) = 0, W3 = 0.5
3. (1)(0)+(0)(-0.5)+(1)(-0.5)+(1)(0.5)=0 ≥ 0 -> BuyJersey <- Correct
4. (1)(0)+(0)(-0.5)+(1)(-0.5)+(0)(0.5)=-0.5 < 0 -> NotBuyJersey <- Correct
5. (1)(0)+(1)(-0.5)+(0)(-0.5)+(1)(0.5)=0 ≥ 0 -> BuyJersey <- Correct
6. (1)(0)+(1)(-0.5)+(0)(-0.5)+(0)(0.5)=-0.5 < 0 -> NotBuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(1-0)(1) = 0.5, W0 = 0+0.5 = 0.5  
   ΔW1=(0.5)(1-0)(1) = 0.5, W1 = -0.5+0.5 = 0  
   ΔW2=(0.5)(1-0)(0) = 0, W2 = -0.5  
   ΔW3=(0.5)(1-0)(0) = 0, W3 = 0.5
7. (1)(0.5)+(1)(0)+(1)(-0.5)+(0)(0.5)=0 ≥ 0 -> BuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(0-1)(1) = -0.5, W0 = 0.5-0.5 = 0  
   ΔW1=(0.5)(0-1)(1) = -0.5, W1 = 0-0.5 = -0.5  
   ΔW2=(0.5)(0-1)(1) = -0.5, W2 = -0.5-0.5 = -1  
   ΔW3=(0.5)(0-1)(0) = 0, W3 = 0.5
8. (1)(0)+(2)(-0.5)+(0)(-1)+(1)(0.5)=-0.5 < 0 -> NotBuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(1-0)(1) = 0.5, W0 = 0+0.5 = 0.5  
   ΔW1=(0.5)(1-0)(2) = 1, W1 = -0.5+1 = 0.5  
   ΔW2=(0.5)(1-0)(0) = 0, W2 = -1  
   ΔW3=(0.5)(1-0)(1) = 0.5, W3 = 0.5+0.5 = 1
9. (1)(0.5)+(2)(0.5)+(0)(-1)+(0)(1)=1.5 ≥ 0 -> BuyJersey <- Correct
10. (1)(0.5)+(2)(0.5)+(1)(-1)+(1)(1)=1.5 ≥ 0 -> BuyJersey <- False  
    Modify Weights:  
    ΔW0=(0.5)(0-1)(1) = -0.5, W0 = 0.5-0.5 = 0  
    ΔW1=(0.5)(0-1)(2) = -1, W1 = 0.5-1 = -0.5  
    ΔW2=(0.5)(0-1)(1) = -0.5, W2 = -1-0.5 = -1.5  
    ΔW3=(0.5)(0-1)(1) = 0.5, W3 = 1-0.5 = 0.5
11. (1)(0)+(2)(-0.5)+(1)(-1.5)+(0)(0.5)=-2.5 < 0 -> NotBuyJersey <- Correct

Round 3:

1. (1)(0)+(0)(-0.5)+(0)(-1.5)+(1)(0.5)=0.5 ≥ 0 -> BuyJersey <- Correct
2. (1)(0)+(0)(-0.5)+(0)(-1.5)+(0)(0.5)=0 ≥ 0 -> BuyJersey <- Correct
3. (1)(0)+(0)(-0.5)+(1)(-1.5)+(1)(0.5)=-1< 0 -> NotBuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(1-0)(1) = 0.5, W0 = 0+0.5 = 0.5  
   ΔW1=(0.5)(1-0)(0) = 0, W1 = -0.5  
   ΔW2=(0.5)(1-0)(1) = 0.5, W2 = -1.5+0.5 = -1  
   ΔW3=(0.5)(1-0)(1) = 0.5, W3 = 0.5+0.5 = 1
4. (1)(0.5)+(0)(-0.5)+(1)(-1)+(0)(1)=-0.5 < 0 -> NotBuyJersey <- Correct
5. (1)(0.5)+(1)(-0.5)+(0)(-1)+(1)(1)=1 ≥ 0 -> BuyJersey <- Correct
6. (1)(0.5)+(1)(-0.5)+(0)(-1)+(0)(1)=0 ≥ 0 -> BuyJersey <- Correct
7. (1)(0.5)+(1)(-0.5)+(1)(-1)+(0)(1)=-1 < 0 -> NotBuyJersey <- Correct
8. (1)(0.5)+(2)(-0.5)+(0)(-1)+(1)(1)=0.5 ≥ 0 -> BuyJersey <- Correct
9. (1)(0.5)+(2)(-0.5)+(0)(-1)+(0)(1)=-0.5 < 0 -> NotBuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(1-0)(1) = 0.5, W0 = 0.5+0.5 = 1  
   ΔW1=(0.5)(1-0)(2) = 1, W1 = -0.5+1 = 0.5  
   ΔW2=(0.5)(1-0)(0) = 0, W2 = -1  
   ΔW3=(0.5)(1-0)(0) = 0, W3 = 1
10. (1)(1)+(2)(0.5)+(1)(-1)+(1)(1)=2 ≥ 0 -> BuyJersey <- False  
    Modify Weights:  
    ΔW0=(0.5)(0-1)(1) = -0.5, W0 = 1-0.5 = 0.5  
    ΔW1=(0.5)(0-1)(2) = -1, W1 = 0.5-1 = -0.5  
    ΔW2=(0.5)(0-1)(1) = -0.5, W2 = -1-0.5 = -1.5  
    ΔW3=(0.5)(0-1)(1) = 0.5, W3 = 1-0.5 = 0.5
11. (1)(0.5)+(2)(-0.5)+(1)(-1.5)+(0)(0.5)=-2 < 0 -> NotBuyJersey <- Correct

Round 4:

1. (1)(0.5)+(0)(-0.5)+(0)(-1.5)+(1)(0.5)=1 ≥ 0 -> BuyJersey <- Correct
2. (1)(0.5)+(0)(-0.5)+(0)(-1.5)+(0)(0.5)=0.5 ≥ 0 -> BuyJersey <- Correct
3. (1)(0.5)+(0)(-0.5)+(1)(-1.5)+(1)(0.5)=-0.5 < 0 -> NotBuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(1-0)(1) = 0.5, W0 = 0.5+0.5 = 1  
   ΔW1=(0.5)(1-0)(0) = 0, W1 = -0.5  
   ΔW2=(0.5)(1-0)(1) = 0.5, W2 = -1.5+0.5 = -1  
   ΔW3=(0.5)(1-0)(1) = 0.5, W3 = 0.5+0.5 = 1
4. (1)(1)+(0)(-0.5)+(1)(-1)+(0)(1)=0 ≥ 0 -> BuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(0-1)(1) = -0.5, W0 = 1-0.5 = 0.5  
   ΔW1=(0.5)(0-1)(0) = 0, W1 = -0.5  
   ΔW2=(0.5)(0-1)(1) = -0.5, W2 = -1-0.5 = -1.5  
   ΔW3=(0.5)(0-1)(0) = 0, W3 = 1
5. (1)(0.5)+(1)(-0.5)+(0)(-1.5)+(1)(1)=1 ≥ 0 -> BuyJersey <- Correct
6. (1)(0.5)+(1)(-0.5)+(0)(-1.5)+(0)(1)=0 ≥ 0 -> BuyJersey <- Correct
7. (1)(0.5)+(1)(-0.5)+(1)(-1.5)+(0)(1)=-1.5 < 0 -> NotBuyJersey <- Correct
8. (1)(0.5)+(2)(-0.5)+(0)(-1.5)+(1)(1)=0.5 ≥ 0 -> BuyJersey <- Correct
9. (1)(0.5)+(2)(-0.5)+(0)(-1.5)+(0)(1)=-0.5 < 0 -> NotBuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(1-0)(1) = 0.5, W0 = 0.5+0.5 = 1  
   ΔW1=(0.5)(1-0)(2) = 1, W1 = -0.5+1 = 0.5  
   ΔW2=(0.5)(1-0)(0) = 0, W2 = -1.5  
   ΔW3=(0.5)(1-0)(0) = 0, W3 = 1
10. (1)(1)+(2)(0.5)+(1)(-1.5)+(1)(1)=1.5 ≥ 0 -> BuyJersey <- False  
    Modify Weights:  
    ΔW0=(0.5)(0-1)(1) = -0.5, W0 = 1-0.5 = 0.5  
    ΔW1=(0.5)(0-1)(2) = -1, W1 = 0.5-1 = -0.5  
    ΔW2=(0.5)(0-1)(1) = -0.5, W2 = -1.5-0.5 = -2  
    ΔW3=(0.5)(0-1)(1) = 0.5, W3 = 1-0.5 = 0.5
11. (1)(0.5)+(2)(-0.5)+(1)(-2)+(0)(0.5)=-2.5 < 0 -> NotBuyJersey <- Correct

Round 5:

1. (1)(0.5)+(0)(-0.5)+(0)(-2)+(1)(0.5)=1 ≥ 0 -> BuyJersey <- Correct
2. (1)(0.5)+(0)(-0.5)+(0)(-2)+(0)(0.5)=0.5 ≥ 0 -> BuyJersey <- Correct
3. (1)(0.5)+(0)(-0.5)+(1)(-2)+(1)(0.5)=-1 < 0 -> NotBuyJersey <- False  
   Modify Weights:  
   ΔW0=(0.5)(1-0)(1) = 0.5, W0 = 0.5+0.5 = 1  
   ΔW1=(0.5)(1-0)(0) = 0, W1 = -0.5  
   ΔW2=(0.5)(1-0)(1) = 0.5, W2 = -2+0.5 = -1.5  
   ΔW3=(0.5)(1-0)(1) = 0.5, W3 = 0.5+0.5 = 1
4. (1)(1)+(0)(-0.5)+(1)(-1.5)+(0)(1)=-0.5 < 0 -> NotBuyJersey <- Correct
5. (1)(1)+(1)(-0.5)+(0)(-1.5)+(1)(1)=1.5 ≥ 0 -> BuyJersey <- Correct
6. (1)(1)+(1)(-0.5)+(0)(-1.5)+(0)(1)=0.5 ≥ 0 -> BuyJersey <- Correct
7. (1)(1)+(1)(-0.5)+(1)(-1.5)+(0)(1)=-1 < 0 -> NotBuyJersey <- Correct
8. (1)(1)+(2)(-0.5)+(0)(-1.5)+(1)(1)=1 ≥ 0 -> BuyJersey <- Correct
9. (1)(1)+(2)(-0.5)+(0)(-1.5)+(0)(1)=0 ≥ 0 -> BuyJersey <- Correct
10. (1)(1)+(2)(-0.5)+(1)(-1.5)+(1)(1)=-0.5 < 0 -> NotBuyJersey <- Correct
11. (1)(1)+(2)(-0.5)+(1)(-1.5)+(0)(1)=-1.5 < 0 -> NotBuyJersey <- Correct

Round 6:

1. (1)(1)+(0)(-0.5)+(0)(-1.5)+(1)(1)=2 ≥ 0 -> BuyJersey <- Correct
2. (1)(1)+(0)(-0.5)+(0)(-1.5)+(0)(1)=1 ≥ 0 -> BuyJersey <- Correct
3. (1)(1)+(0)(-0.5)+(1)(-1.5)+(1)(1)=0.5 ≥ 0 -> BuyJersey <- Correct
4. (1)(1)+(0)(-0.5)+(1)(-1.5)+(0)(1)=-0.5 < 0 -> NotBuyJersey <- Correct
5. (1)(1)+(1)(-0.5)+(0)(-1.5)+(1)(1)=1.5 ≥ 0 -> BuyJersey <- Correct
6. (1)(1)+(1)(-0.5)+(0)(-1.5)+(0)(1)=0.5 ≥ 0 -> BuyJersey <- Correct
7. (1)(1)+(1)(-0.5)+(1)(-1.5)+(0)(1)=-1 < 0 -> NotBuyJersey <- Correct
8. (1)(1)+(2)(-0.5)+(0)(-1.5)+(1)(1)=1 ≥ 0 -> BuyJersey <- Correct
9. (1)(1)+(2)(-0.5)+(0)(-1.5)+(0)(1)=0 ≥ 0 -> BuyJersey <- Correct
10. (1)(1)+(2)(-0.5)+(1)(-1.5)+(1)(1)=-0.5 < 0 -> NotBuyJersey <- Correct
11. (1)(1)+(2)(-0.5)+(1)(-1.5)+(0)(1)=-1.5 < 0 -> NotBuyJersey <- Correct