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clc
clear

filename = 'Iris-Data_dat.txt';
formatSpec = '%3f%6f%3f%3f%f%[^\\n\\r]';
fileID = fopen(filename, 'r');
IRISData = textscan(fileID, formatSpec, 'Delimiter', '', 'WhiteSpace', '',
'ReturnOnError', false);
fclose(fileID);

Data = [IRISData{1}, IRISData{2}, IRISData{3}, IRISData{4}, IRISData{5}];
Data = [Data, zeros(numel(Data(:, 1)), 1)];

[rowC1, ~] = find(Data(:, 1) == 1);
[rowC2, ~] = find(Data(:, 1) == 2);
[rowC3, ~] = find(Data(:, 1) == 3);
distance = zeros(1, 3);

nTPC11 = 0;
nFNC1 = 0;
nFPC12 = 0;
nFPC13 = 0;

nTPC22 = 0;
nFNC2 = 0;
nFPC21 = 0;
nFPC23 = 0;

nTPC33 = 0;
nFNC3 = 0;
nFPC31 = 0;
nFPC32 = 0;

MeanClass1 = mean([Data(rowC1, 2), Data(rowC1, 3), Data(rowC1, 4), Data(rowC1, 5)]);
MeanClass2 = mean([Data(rowC2, 2), Data(rowC2, 3), Data(rowC2, 4), Data(rowC2, 5)]);
MeanClass3 = mean([Data(rowC3, 2), Data(rowC3, 3), Data(rowC3, 4), Data(rowC3, 5)]);

for i = min(rowC1):max(rowC1)
    MeanClass1_L00 = mean([Data(setdiff(rowC1, i), 2), Data(setdiff(rowC1, i), 3),
Data(setdiff(rowC1, i), 4), Data(setdiff(rowC1, i), 5)]);
    DataPoint = [Data(i, 2), Data(i, 3), Data(i, 4), Data(i, 5)];

    distance(1, 1) = euclideanDistance(DataPoint, MeanClass1_L00);
    distance(1, 2) = euclideanDistance(DataPoint, MeanClass2);
    distance(1, 3) = euclideanDistance(DataPoint, MeanClass3);

    [M, I] = min(distance);
    Data(i, 6) = I;

    if I ~= 1
        nFNC1 = nFNC1 + 1;
        switch I
            case 2

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        nFPC12 = nFPC12 + 1;
    case 3
        nFPC13 = nFPC13 + 1;
    end
    display('-----');
    display(['Row Number: ', num2str(i)]);
    display(['Actual Class: ', num2str(Data(i, 1))]);
    display(['Predicted Class: ', num2str(I)]);
    display('-----');
end
end
nTPC11 = numel(rowC1) - nFNC1;

for i = min(rowC2):max(rowC2)
    MeanClass2_L00 = mean([Data(setdiff(rowC2, i), 2), Data(setdiff(rowC2, i), 3),
Data(setdiff(rowC2, i), 4), Data(setdiff(rowC2, i), 5))]);
    DataPoint = [Data(i, 2), Data(i, 3), Data(i, 4), Data(i, 5)];

    distance(1, 1) = euclideanDistance(DataPoint, MeanClass1);
    distance(1, 2) = euclideanDistance(DataPoint, MeanClass2_L00);
    distance(1, 3) = euclideanDistance(DataPoint, MeanClass3);

    [M, I] = min(distance);
    Data(i, 6) = I;

    if I ~= 2
        nFNC2 = nFNC2 + 1;
        switch I
            case 1
                nFPC21 = nFPC21 + 1;
            case 3
                nFPC23 = nFPC23 + 1;
        end
        display('-----');
        display(['Row Number: ', num2str(i - max(rowC1))]);
        display(['Actual Class: ', num2str(Data(i, 1))]);
        display(['Predicted Class: ', num2str(I)]);
        display('-----');
    end
end
nTPC22 = numel(rowC2) - nFNC2;

for i = min(rowC3):max(rowC3)
    MeanClass3_L00 = mean([Data(setdiff(rowC3, i), 2), Data(setdiff(rowC3, i), 3),
Data(setdiff(rowC3, i), 4), Data(setdiff(rowC3, i), 5))]);
    DataPoint = [Data(i, 2), Data(i, 3), Data(i, 4), Data(i, 5)];

    distance(1, 1) = euclideanDistance(DataPoint, MeanClass1);
    distance(1, 2) = euclideanDistance(DataPoint, MeanClass2);
    distance(1, 3) = euclideanDistance(DataPoint, MeanClass3_L00);

    [M, I] = min(distance);
    Data(i, 6) = I;

    if I ~= 3

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nFNC3 = nFNC3 + 1;
switch I
    case 1
        nFPC31 = nFPC31 + 1;
    case 2
        nFPC32 = nFPC32 + 1;
end
display('-----');
display(['Row Number: ', num2str(i - max(rowC2))]);
display(['Actual Class: ', num2str(Data(i, 1))]);
display(['Predicted Class: ', num2str(I)]);
display('-----');
end
end
nTPC33 = numel(rowC3) - nFNC3;

Confusion_matrix{1, 1} = 'P\A';
Confusion_matrix{2, 1} = 'C1';
Confusion_matrix{3, 1} = 'C2';
Confusion_matrix{4, 1} = 'C3';
Confusion_matrix{1, 2} = 'C1';
Confusion_matrix{1, 3} = 'C2';
Confusion_matrix{1, 4} = 'C3';

Confusion_matrix{2, 2} = nTPC11;
Confusion_matrix{2, 3} = nFPC21;
Confusion_matrix{2, 4} = nFPC31;

Confusion_matrix{3, 2} = nFPC12;
Confusion_matrix{3, 3} = nTPC22;
Confusion_matrix{3, 4} = nFPC32;

Confusion_matrix{4, 2} = nFPC13;
Confusion_matrix{4, 3} = nFPC23;
Confusion_matrix{4, 4} = nTPC33;

display(Confusion_matrix);

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Row Number: 1
Actual Class: 2
Predicted Class: 3
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Row Number: 3
Actual Class: 2
Predicted Class: 3

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Row Number: 27  
Actual Class: 2  
Predicted Class: 3

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Row Number: 28  
Actual Class: 2  
Predicted Class: 3

-----  
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Row Number: 34  
Actual Class: 2  
Predicted Class: 3

-----  
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Row Number: 7  
Actual Class: 3  
Predicted Class: 2

-----  
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Row Number: 14  
Actual Class: 3  
Predicted Class: 2

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Row Number: 20  
Actual Class: 3  
Predicted Class: 2

-----  
-----

Row Number: 22

Actual Class: 3

Predicted Class: 2

-----  
-----

Row Number: 27

Actual Class: 3

Predicted Class: 2

-----  
-----

Row Number: 28

Actual Class: 3

Predicted Class: 2

-----  
-----

Row Number: 39

Actual Class: 3

Predicted Class: 2

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Confusion\_matrix =

'P\A'	'C1'	'C2'	'C3'
'C1'	[50]	[ 0]	[ 0]
'C2'	[ 0]	[45]	[ 7]
'C3'	[ 0]	[ 5]	[43]