2 input OR Gate – Single Layer Perceptron

```
// Single Layer Perceptron Model for OR Gate with bipolar inputs
// Truth table:
// x1  x2  y
// -1 -1 -1
// -1  1   1
//  1 -1   1
//  1  1   1

clc ;
clear ;
disp("Reeha Parkar - 60001180046");
disp("2 input OR gate implementation using Single Layer Perceptron");
//Input:
x = [1 1 -1 -1;1 -1 1 -1];
//Target output:
t = [1 1 1 -1];
//Weights:
w = [0 0];
//Bias:
b = 0;
//Learning rate:
alpha = input("Enter learning rate: ");
//Threshold:
threshold = input("Enter threshold value: ");
//Number of epochs:
epoch = 0;

flag = 1;

while flag

    flag = 0;

    for i = 1:4

        yin = b + x(1,i)*w(1) + x(2,i)*w(2); // Net input

        //Bipolar Step Activation Function:
        if yin > threshold then
            y = 1;
        end
        if yin <= threshold & yin >= -(threshold) then
            y = 0;
        end
        if yin < -(threshold) then
            y = -1;
        end

        if y - t(i) then // t=y? condition check
            flag = 1;
            for j = 1:2
                w (j) = w(j) + alpha*t(i)*x(j,i); //Weight Upgrade
            end
            b = b + alpha*t(i); //Bias Upgrade
        end
    end
    epoch = epoch + 1; //Increase epochs
    disp("Epoch Number");
    disp(epoch)
    disp("Weights for this epoch");
    disp(w);
    disp("Bias for this epoch");
    disp(b);
```

```
end
disp ("Final parameters of 2 input OR gate perceptron") ;
disp ("Weights:") ;
disp (w);
disp ("Bias:") ;
disp (b);
disp("Number of Epochs:");
disp(epoch);
```

Output:

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File Edit Control Applications ?

Scilab 5.5.2 Console

```
 Reeha Parkar - 60001180046

 2 input OR gate implementation using Single Layer Perceptron
Enter learning rate: 1
Enter threshold value: 1

 Epoch Number

    1.

Weights for this epoch

    2.    2.

Bias for this epoch

    2.

Epoch Number

    2.

Weights for this epoch

    2.    2.

Bias for this epoch

    2.

Final parameters of 2 input OR gate perceptron
```
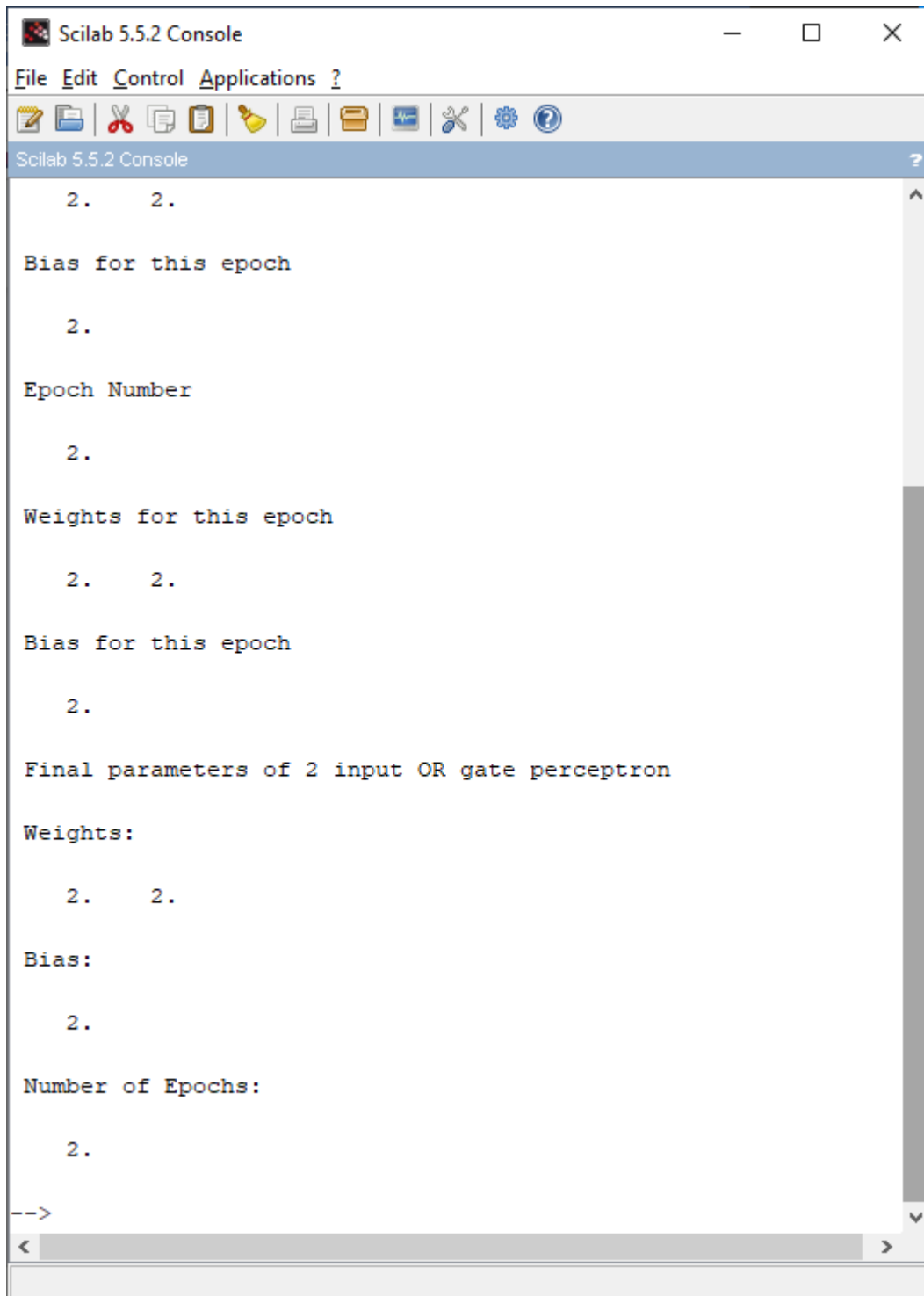
```
    2.    2.

Bias for this epoch

    2.

Epoch Number

    2.

Weights for this epoch

    2.    2.

Bias for this epoch

    2.

Final parameters of 2 input OR gate perceptron

Weights:

    2.    2.

Bias:

    2.

Number of Epochs:

    2.

-->
```