

4 input AND Gate

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clear ;
clc ;
// Generate weights and threshold value
disp("60001180046 - Reeha Parkar");
disp("4 input AND Gate McCulloch Pitts Model")

// Weights
w = [1 1 1 1];

x = [0 0 0 0 0 0 0 0 1 1 1 1; 0 0 0 0 1 1 1 1 0 0 0 1; 0 0 1 1 0 0 0 1 0 0 1 1; 0 1
0 1 0 1 0 1 0 1 0 1];

threshold = input("Enter threshold value ");

y=[0 0 0 0 0 0 0 0];

expected_output = [0 0 0 0 0 0 0 0 0 0 1];

flag = 1 // will check if the output matches, and iterate till it does
while flag
    for i = 1:12
        zin = x(1,i)*w(1) + x(2,i)*w(2) + x(3,i)*w(3) + x(4,i)*w(4);
        if zin >= threshold
            y(i) = 1;
        else
            y(i) = 0;
        end
    end

    disp('Outputs') ;
    disp("zin = ");
    disp(zin);
    disp("y = ");
    disp(y);

    if y == expected_output
        disp("Output matches!");
        flag = 0;
    else
        disp("Output does not match so change the threshold");
        threshold = input("Enter threshold value ");
    end
end

disp("Final McCulloch Pitts 4 input AND Gate Model Parameters:");
disp("Weights: ");
disp(w);
disp("Threshold: ");
disp(threshold);

//Testing
disp("Enter 4 bit input");
for i = 1:4
    test_x(i) = input("");
end

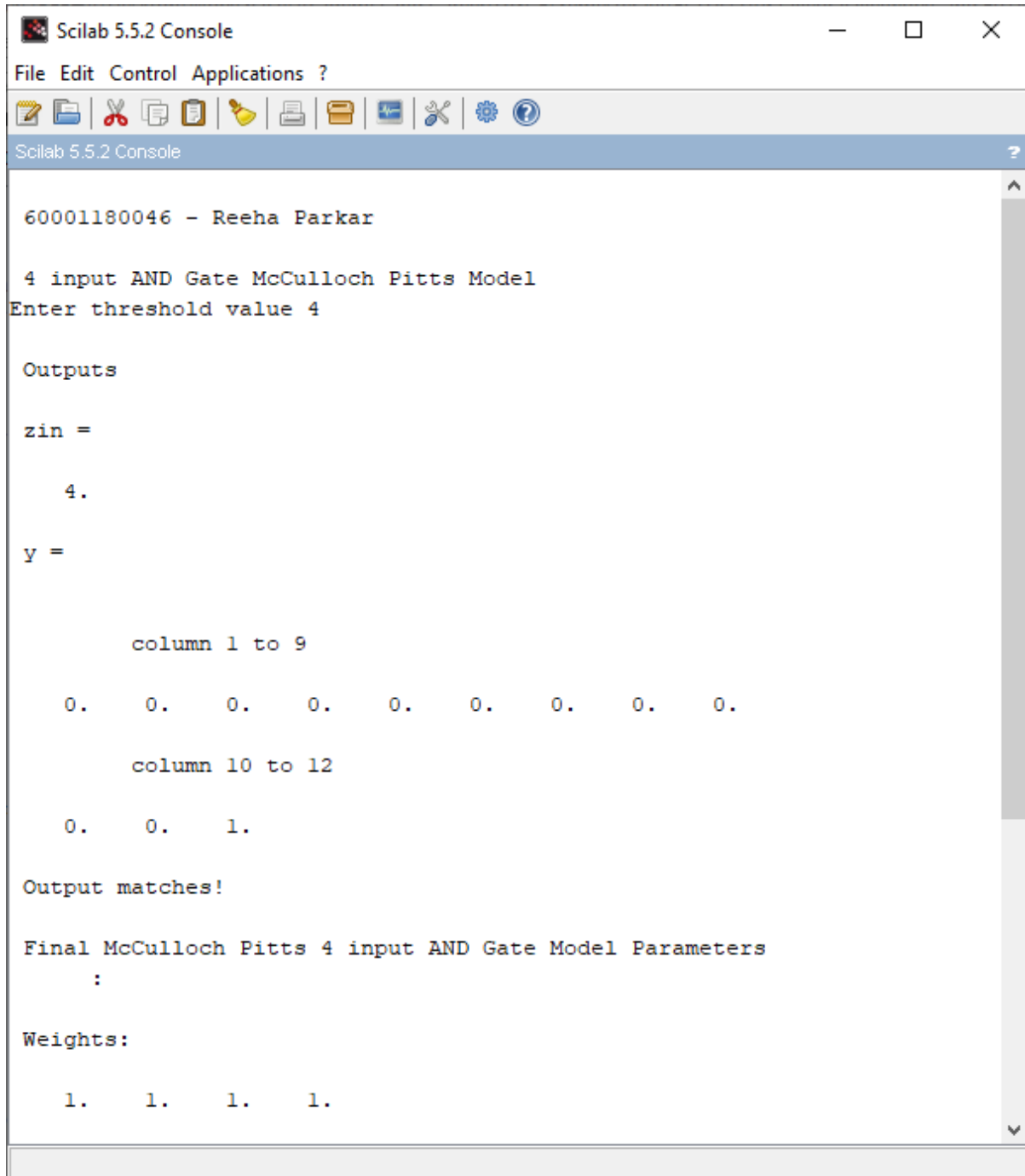
test_x = test_x';
test_zin = test_x(1)*w(1) + test_x(2)*w(2) + test_x(3)*w(3) + test_x(4)*w(4);
test_y = 0;
for i = 1:4
    if test_zin >= threshold
        test_y = 1;
    else
        test_y = 0;
    end
end

```

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end
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// Final Output:
disp("Final AND output of the Model is:");
disp(test_y);
```

Output:



```
Scilab 5.5.2 Console
File Edit Control Applications ?
60001180046 - Reeha Parkar

4 input AND Gate McCulloch Pitts Model
Enter threshold value 4

Outputs

zin =

    4.

y =

    column 1 to 9
0.    0.    0.    0.    0.    0.    0.    0.    0.

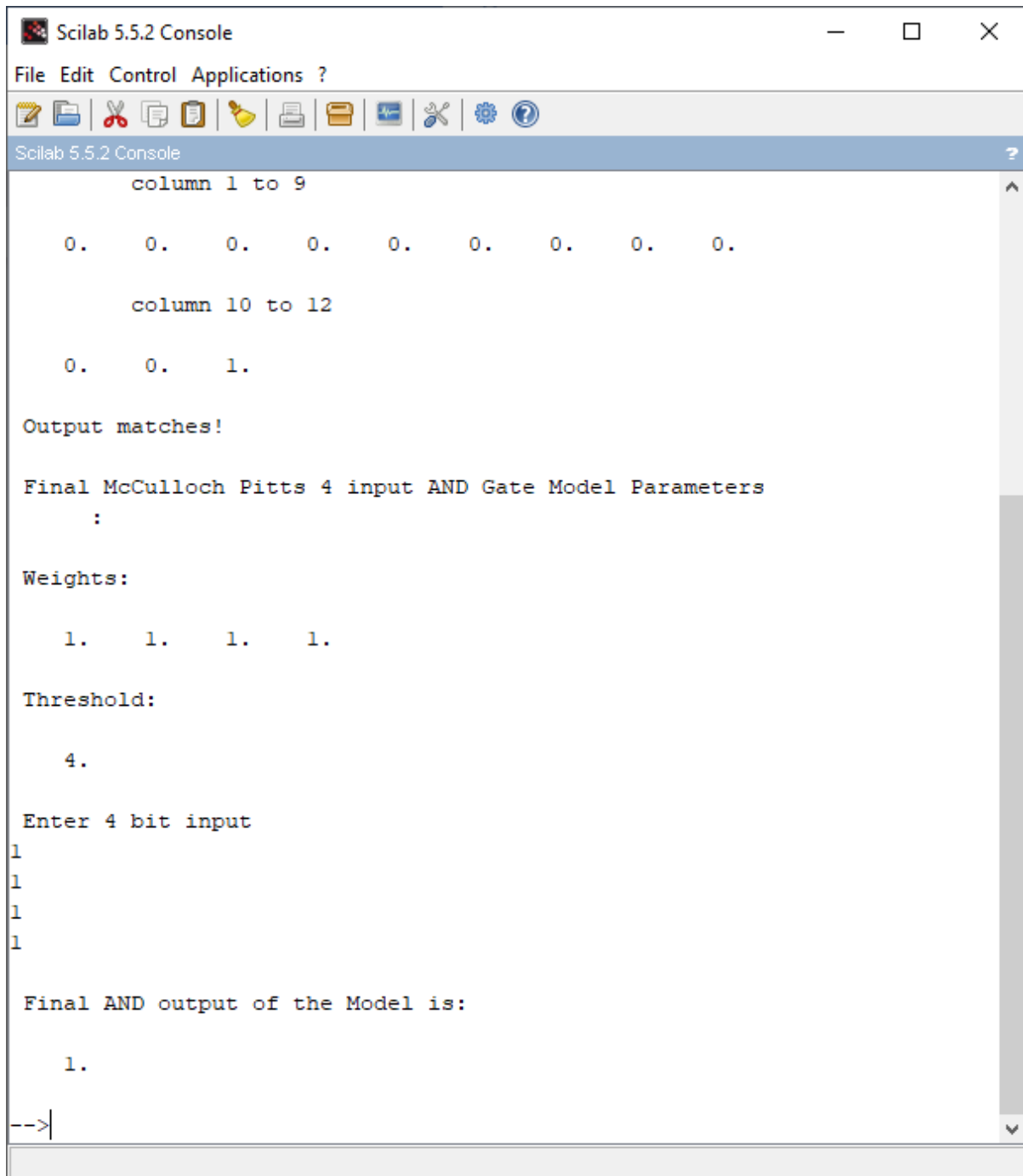
    column 10 to 12
0.    0.    1.

Output matches!

Final McCulloch Pitts 4 input AND Gate Model Parameters
:

Weights:

    1.    1.    1.    1.
```



```
Scilab 5.5.2 Console
File Edit Control Applications ?
column 1 to 9
0.  0.  0.  0.  0.  0.  0.  0.  0.
column 10 to 12
0.  0.  1.
Output matches!
Final McCulloch Pitts 4 input AND Gate Model Parameters
:
Weights:
1.  1.  1.  1.
Threshold:
4.
Enter 4 bit input
1
1
1
1
Final AND output of the Model is:
1.
-->
```