```matlab
% Importing data from excel file
filename=input('ENTER EXCEL FILE LOCATION WITH FILENAME\n','s')
```

```
filename =
'data.xlsx'
```

```matlab
data = readtable(filename)
```

data = 3×4 table

	x1	x2	x3	t
1	1	0	1	-1
2	0	-1.0000	-1	1
3	-1	-0.5000	-1	1

```matlab
% Initialization
eta = input('Enter the learning rate (η): ')
```

```
eta = 0.1000
```

```matlab
weight = [1 -1 0]
```

```
weight = 1×3
    1    -1     0
```

```matlab
xtrain = [data.x1 data.x2 data.x3]'
```

```
xtrain = 3×3
    1.0000        0   -1.0000
         0   -1.0000   -0.5000
    1.0000   -1.0000   -1.0000
```

```matlab
target = data.t
```

```
target = 3×1
    -1
     1
     1
```

```matlab
% Size of input training set
size_x = size(xtrain);
row_x = size_x(1,1)
```

```
row_x = 3
```

```matlab
col_x = size_x(1,2)
```

```
col_x = 3
```

1

```
% Building Algorithm Logic
count = 0;
y(row_x,1) = zeros;
while true
    weight_old = weight
    i = mod(count,row_x) + 1;  % i=mod(count/3)+1 gives repeating value 1,2,3,1,2,3,1,2...
    y(i) = sign(weight * xtrain(:,i));
    r = target(i,:) - y(i);
    fprintf('y(%d) - target(%d) = %.3f', i,i,r)
    if y(i) ~= target(i,:) % not equal in MATLAB is ~= not !=
        fprintf('Updating Weight:')
        temp = eta * (target(i,:) - y(i)) * xtrain(:,i); % Calculating #w
        weight_new = weight' + temp;
        weight = weight_new';
    else
        fprintf('No change in Weight\n')
    end
    weight

    % Condition for closing loop
    if ((target(1,:)==y(1))&&(target(2,:)==y(2))&&(target(3,:)==y(3)))
        if (weight_old == weight)
            break;
        end
    else
        count = count + 1
    end
end
```

```
weight_old = 1×3
     1    -1     0
y(1) - target(1) = -2.000
Updating Weight:
weight = 1×3
    0.8000   -1.0000   -0.2000
count = 1
weight_old = 1×3
    0.8000   -1.0000   -0.2000
y(2) - target(2) = 0.000
No change in Weight
weight = 1×3
    0.8000   -1.0000   -0.2000
count = 2
weight_old = 1×3
    0.8000   -1.0000   -0.2000
y(3) - target(3) = 2.000
Updating Weight:
weight = 1×3
    0.6000   -1.1000   -0.4000
count = 3
weight_old = 1×3
    0.6000   -1.1000   -0.4000
y(1) - target(1) = -2.000
Updating Weight:
weight = 1×3
```

```
    0.4000   -1.1000   -0.6000
count = 4
weight_old = 1×3
    0.4000   -1.1000   -0.6000
y(2) - target(2) = 0.000
No change in Weight
weight = 1×3
    0.4000   -1.1000   -0.6000
count = 5
weight_old = 1×3
    0.4000   -1.1000   -0.6000
y(3) - target(3) = 0.000
No change in Weight
weight = 1×3
    0.4000   -1.1000   -0.6000
count = 6
weight_old = 1×3
    0.4000   -1.1000   -0.6000
y(1) - target(1) = 0.000
No change in Weight
weight = 1×3
    0.4000   -1.1000   -0.6000
```

```matlab
% Final result display
fprintf('\nTotal iteration : %d \n', count)
```

```
Total iteration : 6
```

```matlab
fprintf('Final Weight:')
```

```
Final Weight:
```

```matlab
weight'
```

```
ans = 3×1
    0.4000
   -1.1000
   -0.6000
```