Matlab Code

sigmoid.m (sigmoid function)
```
function y = sigmoid (x)
y = 1./(1+2.7182818285.^(-x));
```

sigmoidprime.m (derivative of sigmoid function)
```
function y = sigmoidprime (x)
y = (2.7182818285.^x)./((1+(2.7182818285.^x)).^2);
```

neural_network.m (code for the neural network that will output $W^{(1)}$ and $W^{(2)}$)
```
W1 = [0.5 0.5 0.5;0.5 0.5 0.5]; %
W2 = [0.5;0.5;0.5];

input = [v t];

X = input;

for n = 1:10000
   Z2 = X*W1;
   A2 = sigmoid (Z2);
   Z3 = A2 * W2;
   yhat = sigmoid (Z3);
   J = 0.5*(sum((temp-yhat).^2));

   dJ_dW1 = (X.')*(((((-(temp-
yhat)).*sigmoidprime(sigmoid(X*W1)*W2))*(W2.')).*sigmoidprime(X*W1));
   dJ_dW2 = ((sigmoid(X*W1)).')*((-(temp-yhat)).*sigmoidprime(sigmoid(X*W1)*W2));

   W1 = W1 - (1/J).* (dJ_dW1);
   W2 = W2 - (1/J).* (dJ_dW2);

end
   disp(J)
   disp(W1)
   disp(W2)
```