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clear; close all; clc

% Load built-in example dataset
[x,t] = simplefit_dataset; % x = input, t = target

% Create feedforward network with 10 hidden neurons
hiddenSize = 10;
net = fitnet(hiddenSize);

% Divide data for training, validation, testing
net.divideParam.trainRatio = 0.7;
net.divideParam.valRatio = 0.15;
net.divideParam.testRatio = 0.15;

% Train the network
[net,tr] = train(net,x,t);

% Test the trained network
y = net(x);

% Calculate performance (Mean Squared Error)
perf = perform(net,t,y);
fprintf('Final performance (MSE): %.6f\n', perf);

% Visualize
view(net); % Network architecture
figure; plotperform(tr); % Training performance
figure; plotregression(t,y); % Regression plot

% Save trained network
save('exp5_net.mat','net','tr');

```

```

clear; close all; clc
[x,t] = simplefit_dataset;

% Create and train ANN
net = fitnet(10);
[net,tr] = train(net,x,t);
y = net(x);
save('exp6_net.mat','net','tr');

% Create timeseries for Simulink
N = length(x);
Ts = 0.1;
tvec = (0:N-1)*Ts;
P_ts = timeseries(x', tvec');

```