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ex1 AND gate

```
[X1,X2]=meshgrid(-1:0.1:2, -1:0.1:2);
Y=0.5*X1+0.5*X2-0.7;
mesh(X1,X2,Y)
xlabel('x1'), ylabel('x2'), zlabel('y')
grid on
hold on
x1=[0 0 1 1];
x2=[0 1 0 1];
y =[0 0 0 1];
plot3(x1,x2,y, 'or')
hold off
```

```
[X1,X2]=meshgrid(-1:0.1:2, -1:0.1:2);
Y=0.5*X1+0.5*X2-0.7;
Y(Y>0)=1;
Y(Y<=0)=0;
mesh(X1,X2,Y)
xlabel('x1'), ylabel('x2'), zlabel('y')
grid on
hold on
x1=[0 0 1 1];
x2=[0 1 0 1];
y =[0 0 0 1];
plot3(x1,x2,y, 'or')
hold off
```

ex2

```
[X1,X2]=meshgrid(-1:0.1:2, -1:0.1:2);
Y=1*X1+1*X2-1;
Y(Y>0)=1;
Y(Y<=0)=0;
mesh(X1,X2,Y)
xlabel('x1'), ylabel('x2'), zlabel('y')
grid on
hold on
x1=[0 0 1 1];
x2=[0 1 0 1];
y =[0 0 0 1];
plot3(x1,x2,y, 'or')
title(" (w1, w2, b) = (1, 1, -1)")
hold off
```

NAND gate

```
[X1,X2]=meshgrid(-1:0.1:2, -1:0.1:2);
Y=-0.5*X1-0.5*X2+0.7;
mesh(X1,X2,Y)
xlabel('x1'), ylabel('x2'), zlabel('y')
grid on
hold on
x1=[0 0 1 1];
```

```
x2=[0 1 0 1];
y =[1 1 1 0];
plot3(x1,x2,y, 'or')
title('NAND gate')
hold off
```

```
[X1,X2]=meshgrid(-1:0.1:2, -1:0.1:2);
Y=-0.5*X1-0.5*X2+0.8;
Y(Y>0)=1;
Y(Y<=0)=0;
mesh(X1,X2,Y)
xlabel('x1'), ylabel('x2'), zlabel('y')
grid on
hold on
x1=[0 0 1 1];
x2=[0 1 0 1];
y =[1 1 1 0];
plot3(x1,x2,y, 'or')
hold off
```

Exercise#3: OR gate

```
[X1,X2]=meshgrid(-1:0.1:2, -1:0.1:2);
Y=-0.5*X1-0.5*X2+0.7;
mesh(X1,X2,Y)
xlabel('x1'), ylabel('x2'), zlabel('y')
grid on
hold on
x1=[0 0 1 1];
x2=[0 1 0 1];
y =[0 1 1 1];
plot3(x1,x2,y, 'or')
title('or gate')
hold off
```

```
[X1,X2]=meshgrid(-1:0.1:2, -1:0.1:2);
Y=1*X1+1*X2-0.5;
Y(Y>0)=1;
Y(Y<=0)=0;
mesh(X1,X2,Y)
xlabel('x1'), ylabel('x2'), zlabel('y')
grid on
hold on
x1=[0 0 1 1];
x2=[0 1 0 1];
y =[0 1 1 1];
plot3(x1,x2,y, 'or')
hold off
```

ex3 xor

```
net=feedforwardnet([2 2]);
view(net)
a=[1 0 1 0]
b=[1 0 0 1]
c=[0 0 1 1]
n=600;
```

```
x=zeros(2,n);
y=zeros(1,n);
for k=1:n
    j=randi([1,4]);
    x(:,k)=[a(j);b(j)];
    y(k)=c(j);
end
```

```
net=configure(net,x,y);
view(net)
net.name='XOR';
net=train(net,x,y);
c=sim(net,[a;b]);
```

```

```