

```
% Aditya Agre SYCOA06
% Hetero-associative memory algorithm
clear all
% Input vector
x = [1 1 1 -1; 1 -1 1 -1; -1 -1 1 1; -1 -1 -1 1]
```

```
x = 4x4
     1     1     1    -1
     1    -1     1    -1
    -1    -1     1     1
    -1    -1    -1     1
```

```
% Target Output
t = [1 -1; 1 -1; -1 1; -1 1]
```

```
t = 4x2
     1    -1
     1    -1
    -1     1
    -1     1
```

```
% Weight matrix
w = x' * t
```

```
w = 4x2
     4    -4
     2    -2
     2    -2
    -4     4
```

```
% One missing entry
x1 = [1 0 1 -1]
```

```
x1 = 1x4
     1     0     1    -1
```

```
% Two missing entries
x2 = [0 1 0 -1]
```

```
x2 = 1x4
     0     1     0    -1
```

```
% One mistaken entry
x3 = [1 1 1 1]
```

```
x3 = 1x4
     1     1     1     1
```

```
% Net Input
z1 = x1 * w
```

```
z1 = 1x2
    10   -10
```

```
z2 = x2 * w
```

```
z2 = 1x2  
6 -6
```

```
z3 = x3 * w
```

```
z3 = 1x2  
4 -4
```

```
y1 = [0 0];  
y2 = [0 0];  
y3 = [0 0];
```

```
for j=1:2  
if z1(1,j)>0  
y1(1,j)=1;  
y2(1,j)=1;  
y3(1,j)=1;  
elseif z1(1,j)<0  
y1(1,j)=-1;  
y2(1,j)=-1;  
y3(1,j)=-1;  
else  
y1(1,j)=0;  
y2(1,j)=0;  
y3(1,j)=0;  
end  
end  
y1
```

```
y1 = 1x2  
1 -1
```

```
y2
```

```
y2 = 1x2  
1 -1
```

```
y3
```

```
y3 = 1x2  
1 -1
```