```
//Entropy

clc;
clear all;
//For x
p=[0.125,0.25,0.625];
x=length(p);
hx=0;
for i=1:x;
   hx=hx+p(i)*log2(1/p(i));
end
disp("Entropy of x");
disp(hx);

//For y
p=[0.25,0.3,0.45];
y=length(p);
hy=0;
for i=1:y;
   hy=hy+p(i)*log2(1/p(i));
end
disp("Entropy of y");
disp(hy);

z=[3/40,1/40,1/40,1/20,3/20,1/20,1/8,1/8,3/8];
[n,m]=size(z);
hx_y=0;
for i=1:n
   for j=1:m
      hx_y=hx_y+z(i,j)*log2(1/z(i,j));
   end
```

```
end
disp("joint entropy of x_y");
disp(hx_y);
yx=[3/5,15,15,1/5,3/5,1/5,1/5,1/5,3/5];
[a,b]=size(yx);
hyx=0;
for i=1:a
   for j=1:b;
      hyx=hyx+z(i,j)*log2(1/yx(i,j));
   end
end
disp("entropy of y/x");
disp(hyx);
xy=[3/10,1/12,1/18,1/5,1/2,1/9,1/2,5/12,5/6];
[c,d]=size(xy);
hxy=0;
for i=1:c
    for j=1:d;
        hxy =hxy+z(i,j)*log2(1/xy(i,j));
        end
end
disp('Entropy of x/y');
disp(hxy);

s=[0.6,0.2,0.2,0.25,0.6,0.2,0.2,0.2,0.6];
[m,n]=size(s);
hs=0;
I=hy-hyx;
disp(I);
I=hx+hy-hx_y;
disp(I);
```

"Entropy of x"

1.2987949

"Entropy of y"

1.5394911

"joint entropy of x_y"

2.6697455

"entropy of y/x"

1.0595097

"Entropy of x/y"

1.1302545

0.4799814

0.1685405