

### K-means

```
clc;
clear all;
close all;
o=[1 2 4 5;1 1 3 4];
c=[1 1;2 1];
[m1,n1]=size(o);
counter=0;
g=[0 0 0 0;0 0 0 0];
while(1)
    counter=counter+1;
    for i=1:m1
        for j=1:n1
            C=c(i,:);
            O=o(:,j)';
            a=O-C;
            a=a.*a;
            s=sum(a);
            d(i,j)=sqrt(s);
        end
    end
    disp('d=');
    disp(d);
    m=min(d);
    for i=1:m1
        for j=1:n1
            if(d(i,j)==m(1,j))
                g(i,j)=1;
            else
                g(i,j)=0;
            end
        end
    end
    for i=1:m1
        G=g(i,:);
        for j=1:n1
            if(G(j)==1)
                q(i,j)=j;

            else
                q(i,j)=0;
            end
        end
    end
    disp('g=');
    disp(g);
    nn=0;
    for i=1:m1
        Q=q(i,:);
        for(j=1:n1)
            if(Q(j)>0)
                X(j,:)=o(:,j)';
                nn=nn+1;
            else
                X(j,:)= [0 0];
            end
        end
    end
end
```

```

        end
        cn(i,:)=sum(X)/nn;
        nn=0;
    end
    if(cn==c)
        break;
    else
        c=cn;
    end
    disp('cn=');
    disp(cn);
end

```

### OUTPUT:

```

d=
      0      1.0000      3.6056      5.0000
    1.0000      0      2.8284      4.2426

g=
      1      0      0      0
      0      1      1      1

cn=
    1.0000    1.0000
    3.6667    2.6667

d=
      0      1.0000      3.6056      5.0000
    3.1447    2.3570    0.4714    1.8856

g=
      1      1      0      0
      0      0      1      1

cn=
    1.5000    1.0000
    4.5000    3.5000

d=
    0.5000    0.5000    3.2016    4.6098
    4.3012    3.5355    0.7071    0.7071

g=
      1      1      0      0
      0      0      1      1

```