```
clear; clc
cost=[20 28 19 13; 15 30 31 28; 40 21 20 17; 21 28 26 12];a=cost
n=length(a);
a=(a'-min(a'))';       % Row reduction
a=a-min(a)             % Column reduction
[c,sol]=isOptimal(a);

while(length(sol)~=n)
    mm=min(min(a+c));
    for i=1:n
        for j=1:n
            if(sum(c(i,:)==inf)+sum(c(:,j)==inf)==2*n)
                a(i,j)=mm+a(i,j);
            elseif(c(i,j)~=inf)
                a(i,j)=a(i,j)-mm;
            end
        end
    end
    [c,sol]=isOptimal(a);
end
Final_Reduced_Matrix=a
Result=sol'

function [c,sol]=isOptimal(c)
n=length(c);
for cnt=1:2
    p=sum(c'==0)';
    for i=1:n
        if(p(i)==1)
            f=find(c(i,:)==0);
            if(f)
                sol(i)=f;
                c(:,f)=inf;
            end
        end
    end
    p=sum(c==0);
     for j=1:n
        if(p(j)==1)
            f=find(c(:,j)==0);
            if(f)
                sol(f)=j;
                c(f,:)=inf;
            end
        end
     end
end
c=c.*(c==inf);
end


a =
```

```
    20    28    19    13
    15    30    31    28
    40    21    20    17
    21    28    26    12


a =

     7    11     3     0
     0    11    13    13
    23     0     0     0
     9    12    11     0


Final_Reduced_Matrix =

     7     8     0     0
     0     8    10    13
    26     0     0     3
     9     9     8     0


Result =

     3
     1
     2
     4
```

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