```
%%%%%%%%%%%%%%%%%%%%%%%%%   Problem 04  %%%%%%%%%%%%%%%%
clc
clear
a=[20 28 19 13; 15 30 31 28; 40 21 20 17; 21 28 26 12];n=length(a);
fprintf('Row and Column Reduction:')
a=(a'-min(a'))'
a=a-min(a)
[c,ic,sol]=optCheck(a);
while(ic~=n)
mm=min(min(a+c));
for i=1:n
    for j=1:n
        if(sum(c(i,:)==intmax)+sum(c(:,j)==intmax)==2*n)
            a(i,j)=a(i,j)+mm;
        end
        if(c(i,j)~=intmax)
            a(i,j)=a(i,j)-mm;
        end
    end
end
[c,ic,sol]=optCheck(a);
end
Final_Reduced_Matrix=a
Final_Result=sol'

function [c,ic,sol] = optCheck(c)
ic=0;n=length(c);
for i1=1:2
p=sum(c'==0)';
for i=1:n       %Row Checking
    if(p(i)==1)
        f=find(0==c(i,:));
        c(:,f)=intmax;
        if(f)
            ic=ic+1;sol(i)=f;
        end
    end
end
p=sum(c==0);
for i=1:n       %Column Checking
    if(p(i)==1)
        f=find(0==c(:,i));
        c(f,:)=intmax;
        if(f)
            ic=ic+1;sol(f)=i;
        end
    end
end
end
for i=1:n %Making other elements exactly zero to calculate easily
    for j=1:n
        if(c(i,j)~=intmax)
```

```
            c(i,j)=0;
        end
    end
end
end
```

```
Row and Column Reduction:
a =

     7    15     6     0
     0    15    16    13
    23     4     3     0
     9    16    14     0


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


Final_Result =

     3
     1
     2
     4
```

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