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Assignment-04

Exercise - 01:

```
Rating=[122,133,111,134,126,117,115,129,102,110]
```

```
Rating = 1×10
   122   133   111   134   126   117   115   129   102   110
```

```
Country=["IND","AUS","SA","ENG","SRL","PAK","BD","ZIM","IRE","WI"]
```

```
Country = 1×10 string
"IND"        "AUS"        "SA"         "ENG"        "SRL"        "PAK"        "B···
```

```
%(1)max,min,average rating
maxRating=max(Rating)
```

```
maxRating = 134
```

```
minRating=min(Rating)
```

```
minRating = 102
```

```
avgRating=mean(Rating)
```

```
avgRating = 119.9000
```

```
%(2)count above average
countAboveAvg=sum(Rating>avgRating)
```

```
countAboveAvg = 5
```

```
%(3)country with rating 115
idx115=find(Rating==115);
country115=Country{idx115}
```

```
country115 =
'BD'
```

```
%(4)three countries with lowest ratings
[~,idxSorted]=sort(Rating)
```

```
idxSorted = 1×10
     9    10     3     7     6     1     5     8     2     4
```

```
lowestThree=Country(idxSorted(1:3))
```

```
lowestThree = 1×3 string
"IRE"        "WI"         "SA"
```

```
%(5)difference between SA and IRE
idxSA=find(strcmp(Country,"SA"));
idxIRE=find(strcmp(Country,"IRE"));
```

```
diffSA_IRE=abs(Rating(idxSA)-Rating(idxIRE))
```

```
diffSA_IRE = 9
```

```
%(6)remove SRL
idxSRL=find(strcmp(Country,"SRL"));
Rating_updated=Rating;
Rating_updated(idxSRL)=[]
```

```
Rating_updated = 1×9
   122   133   111   134   117   115   129   102   110
```

```
Country_updated=Country;
Country_updated(idxSRL)=[]
```

```
Country_updated = 1×9 string
"IND"        "AUS"        "SA"         "ENG"        "PAK"        "BD"         "Z···
```

Exercise – 02:

```
p=input('How many test cases : ');
for j=1:p
    v=input('Enter a Array : ');
    primes_out=v(isprime(v));
    Input=v
    Output=primes_out
end
```

```
Input = 1×18
     1     3     4     6     7     9···
Output = 1×7
     3     7     3     5    11   223   677
Input = 1×4
   100   200   400  1000
Output =

  1×0 empty double row vector
```

Exercise – 03:

```
p1=input('How many test cases : ');
for j=1:p1
    Input1=input('Enter a Array : ')
    rowSums=sum(Input1, 2);
    Input1(:,end+1)=rowSums;
    colSums=sum(Input1, 1);
    Output1=[Input1;colSums]
end
```

```
Input1 = 3×3
     1     2     3
     4     5     6
     7     8     9
Output1 = 4×4
     1     2     3     6
```

```
     4     5     6    15
     7     8     9    24
    12    15    18    45
Input1 = 2×2
     2     5
     3     8
Output1 = 3×3
     2     5     7
     3     8    11
     5    13    18
```

Exercise – 04:

```
p2=input('How many test cases : ');
for j=1:p2
        a=input('Enter a Array : ');
        a_sorted=sort(a);
        n=length(a_sorted);
        i=1;
        j=n;
        out=[];
        while i<j
            out(end+1)=a_sorted(i);
            out(end+1)=a_sorted(j);
            i=i+1;
            j=j-1;
        end
        if i==j
            out(end+1)=a_sorted(i);
        end
        Inp=a
        out
end
```

```
Inp = 1×6
     2     1    11     4     5    13
out = 1×6
     1    13     2    11     4     5
Inp = 1×9
    10     2    30     4     3     2    34     7     9
out = 1×9
     2    34     2    30     3    10     4     9     7
Inp = 1×4
        100         200         400        1000
out = 1×4
        100        1000         200         400
```

Exercise - 05

```
data=[120 120 100  80  40;
      180 120 150  80  80;
      150  80 150  80  55;
      195  80 150  80  45;
      40 NaN  30  80 NaN;
```

```
      100  50  80  80 NaN;
      50  50 NaN  80  30];
%(i) BUET (col1) add 30 to each dept
data_i=data;
data_i(:,1)=data(:,1)+30
```

```
data_i = 7×5
   150   120   100    80    40
   210   120   150    80    80
   180    80   150    80    55
   225    80   150    80    45
    70   NaN    30    80   NaN
   130    50    80    80   NaN
    80    50   NaN    80    30
```

```
%(ii) IUT (col5) double each entry
data_ii=data;
data_ii(:,5)=data(:,5)*2
```

```
data_ii = 7×5
   120   120   100    80    80
   180   120   150    80   160
   150    80   150    80   110
   195    80   150    80    90
    40   NaN    30    80   NaN
   100    50    80    80   NaN
    50    50   NaN    80    60
```

```
%(iii) All unis: decrease EEE (row2) by 10
data_iii=data;
data_iii(2,:)=data(2,:)-10
```

```
data_iii = 7×5
   120   120   100    80    40
   170   110   140    70    70
   150    80   150    80    55
   195    80   150    80    45
    40   NaN    30    80   NaN
   100    50    80    80   NaN
    50    50   NaN    80    30
```

```
%(iv) Remove CE (row5)
data_iv=data;
data_iv(5,:)=[]
```

```
data_iv = 6×5
   120   120   100    80    40
   180   120   150    80    80
   150    80   150    80    55
   195    80   150    80    45
   100    50    80    80   NaN
    50    50   NaN    80    30
```

```
%(v) RUET (col2) increase Civil (row4) by 30
data_v=data;
data_v(4,2)=data(4,2)+30
```

```
data_v = 7×5
   120   120   100    80    40
```

```
   180   120   150    80    80
   150    80   150    80    55
   195   110   150    80    45
    40   NaN    30    80   NaN
   100    50    80    80   NaN
    50    50   NaN    80    30
```

```
%(vi) KUET (col3) increase by vector [5,10,5,10,10,5]
data_vi=data;
inc=[5;10;5;10;10;5;0];
data_vi(:,3)=data(:,3)+inc
```

```
data_vi = 7×5
   120   120   105    80    40
   180   120   160    80    80
   150    80   155    80    55
   195    80   160    80    45
    40   NaN    40    80   NaN
   100    50    85    80   NaN
    50    50   NaN    80    30
```

```
%(vii) Extract IUT (col5) after modification (example using ii)
iut_data_after=data_ii(:,5)
```

```
iut_data_after = 7×1
    80
   160
   110
    90
   NaN
   NaN
    60
```

Exercise - 06:

```
p3=input('How many test cases : ');
for j=1:p3
    A=input('Enter a 1st Word : ','s')
    B=input('Enter a 2nd Word : ','s')
    A1=lower(A);
    B1=lower(B);
    outp=isequal(sort(A1),sort(B1));
    if outp==1
        disp("Out=true")
    else
        disp("Out=false")
    end
end
```

```
A =
'listen'
B =
'silent'
Out=true
A =
'evil'
```

```
B =
'vile'
Out=true
A =
'aaabbccd'
B =
'abbcdddd'
Out=false
A =
'evil'
B =
'vibe'
Out=false
```

Exercise - 07:

```
p4=input('How many test cases : ');
for j=1:p4
    V=input('Enter a Array : ');
    Input=V
    v=V(:);
    maskInt=v==floor(v);
    v_int=v(maskInt);
    mask=(mod(v_int,3)==0)|(mod(v_int,5)==0);
    out=unique(v_int(mask));
    out=sort(out)'
end
```

```
Input = 3×4
     1     2     3     6
     4     5     6     7
     7     8     9   -15
out = 1×5
   -15     3     5     6     9
Input = 4×4
   16.0000    2.0000    3.0000   12.2000
    5.0000   11.0000   10.0000    8.0000
    9.0000    7.0000    6.0000   12.0000
    4.0000   14.0000   15.0000    3.5000
out = 1×7
     3     5     6     9    10    12    15
```

Exercise – 08:

```
p4=input('How many test cases : ');
for j=1:p4
    M=input('Enter a Array : ');
    Input_=M
    out = [];
    while ~isempty(M)
        out = [out, M(1,:)];
        M(1,:) = [];
        M = rot90(M);
    end
```

```
    out
end
```

```
Input_ = 3×3
     1     2     3
     4     5     6
     7     8     9
out = 1×9
     1     2     3     6     9     8     7     4     5
Input_ = 4×4
    16     2     3    13
     5    11    10     8
     9     7     6    12
     4    14    15     1
out = 1×16
    16     2     3    13     8    12     1    15    14     4     9     5    11 ···
```

Exercise – 09:

```
p5=input('How many test cases : ');
for j=1:p5
    A=input('Enter a Array : ');
[m,n]=size(A);
B=zeros(m,n);
for j=1:n
    col=A(:,j);
    nz=col(col~=0);
    zc=m-numel(nz);
    B(:,j)=[zeros(zc,1);nz];
end
INP=A
OUTT=B
end
```

```
INP = 3×3
     1     2     3
     0     4     5
     6     0     0
OUTT = 3×3
     0     0     0
     1     2     3
     6     4     5
INP = 7×1
     1
     0
     5
     0
     6
     0
     7
OUTT = 7×1
     0
     0
     0
     1
     5
     6
     7
```

```
INP = 2×2
     1     0
     1     1
OUTT = 2×2
     1     0
     1     1
```