Sprint 1

TEAMID: PNT2022TMID18416

[1]:
```
#IMPORT REQUIRED  LIBRARIES
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

[3]:
```
#import dataset and load in dataframe
df=pd.read_csv('chronickidneydisease.csv')
df.head()
```

[3]:
```
   id   age    bp     sg   al   su     rbc        pc         pcc          ba  \
0   0  48.0  80.0  1.020  1.0  0.0     NaN    normal  notpresent  notpresent
1   1   7.0  50.0  1.020  4.0  0.0     NaN    normal  notpresent  notpresent
2   2  62.0  80.0  1.010  2.0  3.0  normal    normal  notpresent  notpresent
3   3  48.0  70.0  1.005  4.0  0.0  normal  abnormal     present  notpresent
4   4  51.0  80.0  1.010  2.0  0.0  normal    normal  notpresent  notpresent

   … pcv    wc   rc  htn   dm  cad appet   pe  ane classification
0  …  44  7800  5.2  yes  yes   no  good   no   no            ckd
1  …  38  6000  NaN   no   no   no  good   no   no            ckd
2  …  31  7500  NaN   no  yes   no  poor   no  yes            ckd
3  …  32  6700  3.9  yes   no   no  poor  yes  yes            ckd
4  …  35  7300  4.6   no   no   no  good   no   no            ckd

[5 rows x 26 columns]
```

[4]:
```
#checking the description and gathering the information about the dataset
df.describe().T
```

[4]:
```
     count        mean         std     min    25%     50%     75%      max
id   400.0  199.500000  115.614301   0.000  99.75  199.50  299.25  399.000
age  391.0   51.483376   17.169714   2.000  42.00   55.00   64.50   90.000
bp   388.0   76.469072   13.683637  50.000  70.00   80.00   80.00  180.000
sg   353.0    1.017408    0.005717   1.005   1.01    1.02    1.02    1.025
al   354.0    1.016949    1.352679   0.000   0.00    0.00    2.00    5.000
```

```
su    351.0    0.450142    1.099191   0.000    0.00    0.00    0.00    5.000
bgr   356.0  148.036517   79.281714  22.000   99.00  121.00  163.00  490.000
bu    381.0   57.425722   50.503006   1.500   27.00   42.00   66.00  391.000
sc    383.0    3.072454    5.741126   0.400    0.90    1.30    2.80   76.000
sod   313.0  137.528754   10.408752   4.500  135.00  138.00  142.00  163.000
pot   312.0    4.627244    3.193904   2.500    3.80    4.40    4.90   47.000
hemo  348.0   12.526437    2.912587   3.100   10.30   12.65   15.00   17.800
```

[5]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 400 entries, 0 to 399
Data columns (total 26 columns):
 #   Column          Non-Null Count  Dtype
---  ------          --------------  -----
 0   id              400 non-null    int64
 1   age             391 non-null    float64
 2   bp              388 non-null    float64
 3   sg              353 non-null    float64
 4   al              354 non-null    float64
 5   su              351 non-null    float64
 6   rbc             248 non-null    object
 7   pc              335 non-null    object
 8   pcc             396 non-null    object
 9   ba              396 non-null    object
 10  bgr             356 non-null    float64
 11  bu              381 non-null    float64
 12  sc              383 non-null    float64
 13  sod             313 non-null    float64
 14  pot             312 non-null    float64
 15  hemo            348 non-null    float64
 16  pcv             330 non-null    object
 17  wc              295 non-null    object
 18  rc              270 non-null    object
 19  htn             398 non-null    object
 20  dm              398 non-null    object
 21  cad             398 non-null    object
 22  appet           399 non-null    object
 23  pe              399 non-null    object
 24  ane             399 non-null    object
 25  classification  400 non-null    object
dtypes: float64(11), int64(1), object(14)
memory usage: 81.4+ KB
```

[6]:

```
#counting for the null values
df.isna().sum()
```

[6]:
```
id                 0
age                9
bp                12
sg                47
al                46
su                49
rbc              152
pc                65
pcc                4
ba                 4
bgr               44
bu                19
sc                17
sod               87
pot               88
hemo              52
pcv               70
wc               105
rc               130
htn                2
dm                 2
cad                2
appet              1
pe                 1
ane                1
classification     0
dtype: int64
```

[11]:
```
#replacing the null values with median and mode
oc=[]#object data type columns
ic=[]#int type columns

for i in df.columns:
    if(df[i].dtype=='object'):
        oc.append(i)
    else:
        ic.append(i)
print("ic\t",ic,"\noc\t",oc)
```

```
ic       ['id', 'age', 'bp', 'sg', 'al', 'su', 'bgr', 'bu', 'sc', 'sod', 'pot',
'hemo']
oc       ['rbc', 'pc', 'pcc', 'ba', 'pcv', 'wc', 'rc', 'htn', 'dm', 'cad',
'appet', 'pe', 'ane', 'classification']
```

[40]:
```
#replacing the null with median
for i in ic:
    if(df[i].isna().any()==True):
        df[i]=df[i].fillna(df[i].median())
    #checking
    print("Attribute "+i+"\t",df[i].isna().sum())
```

```
Attribute: id    0
Attribute: age   0
Attribute: bp    0
Attribute: sg    0
Attribute: al    0
Attribute: su    0
Attribute: bgr   0
Attribute: bu    0
Attribute: sc    0
Attribute: sod   0
Attribute: pot   0
Attribute: hemo  0
```

[46]:

```
#replacing the null with mode
for i in oc:
    if(df[i].isna().any()==True):
        df[i]=df[i].fillna(df[i].mode()[0])
    #checking
    print("Attribute: "+i+"\t\t\t",df[i].isna().sum())
```

```
Attribute: rbc                   0
Attribute: pc                    0
Attribute: pcc                   0
Attribute: ba                    0
Attribute: pcv                   0
Attribute: wc                    0
Attribute: rc                    0
Attribute: htn                   0
Attribute: dm                    0
Attribute: cad                   0
Attribute: appet                         0
Attribute: pe                    0
Attribute: ane                   0
Attribute: classification                        0
```

[47]:

```
df.isna().sum()
```

[47]:

```
id                0
age               0
bp                0
sg                0
al                0
su                0
```

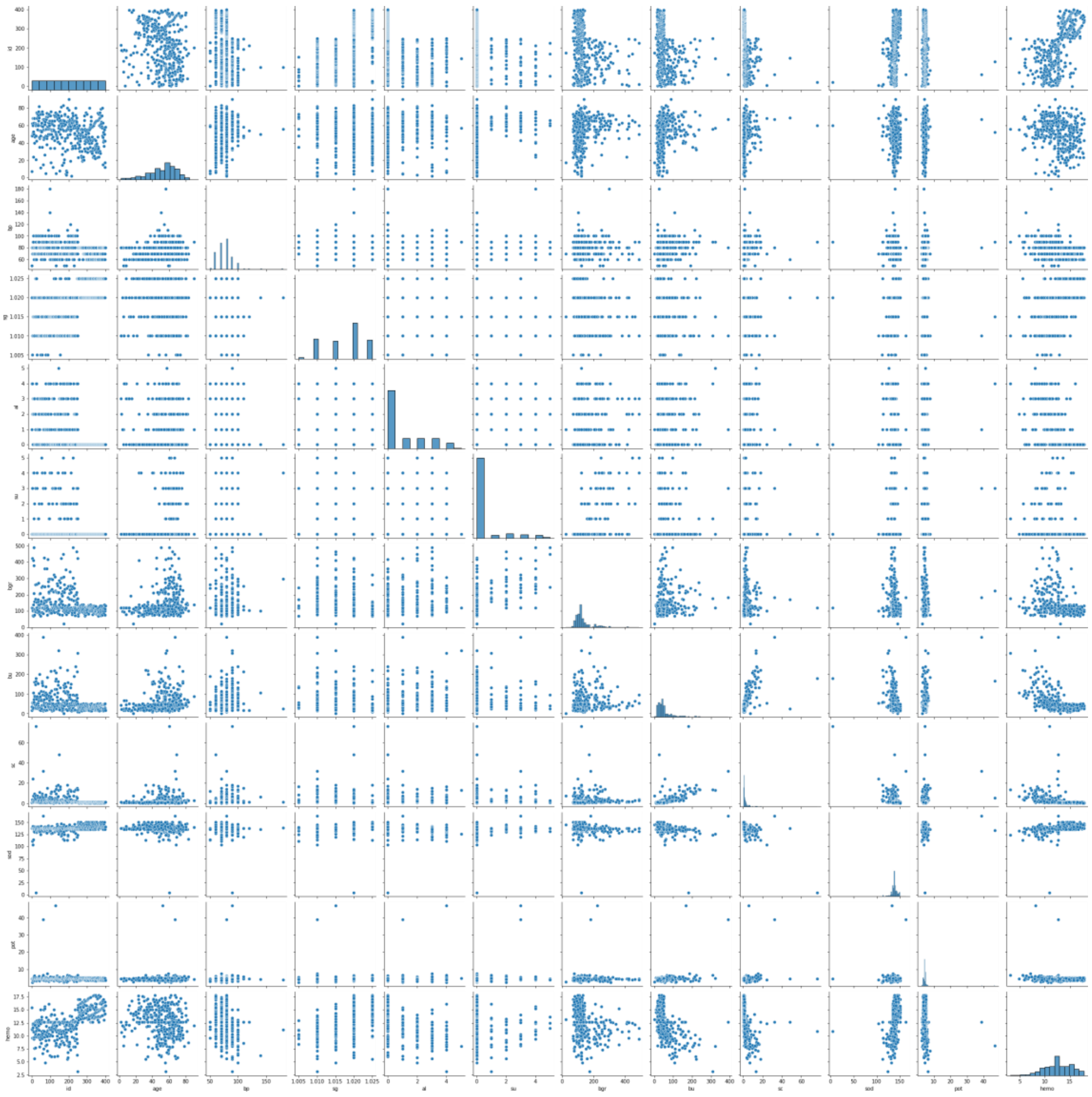
```
rbc               0
pc                0
pcc               0
ba                0
bgr               0
bu                0
sc                0
sod               0
pot               0
hemo              0
pcv               0
wc                0
rc                0
htn               0
dm                0
cad               0
appet             0
pe                0
ane               0
classification    0
dtype: int64
```

[50]:

```
#visualizing the  datasets
sns.pairplot(df)
```

[50]:

```
<seaborn.axisgrid.PairGrid at 0x7fbb94b144c0>
```


id
age
bp
sg
al
su
bgr
bu
sc
sod
pot
hemo