PNT2022TMID21280_Efficient Water Quality Analysis & Prediction using Machine Learning.

Handling Missing Values-3:

```
In [12]: data['Temp'].fillna(data['Temp'].mean(),inplace=True)
         data['D.O. (mg/l)'].fillna(data['D.O. (mg/l)'].mean(),inplace=True)
         data['PH'].fillna(data['PH'].mean(),inplace=True)
         data['CONDUCTIVITY (µmhos/cm)'].fillna(data['CONDUCTIVITY (µmhos/cm)'].mean(),inplace=True)
         data['B.O.D. (mg/l)'].fillna(data['B.O.D. (mg/l)'].mean(),inplace=True)
         data['NITRATENAN N+ NITRITENANN (mg/l)'].fillna(data['NITRATENAN N+ NITRITENANN (mg/l)'].mean(),inplace=True)
         data['TOTAL COLIFORM (MPN/100ml)Mean'].fillna(data['TOTAL COLIFORM (MPN/100ml)Mean'].mean(),inplace=True)
```

```
In [13]: data.isnull().any()
```

```
Out[13]: STATION CODE                        False
         LOCATIONS                           False
         STATE                               False
         Temp                                False
         D.O. (mg/l)                         False
         PH                                  False
         CONDUCTIVITY (µmhos/cm)             False
         B.O.D. (mg/l)                       False
         NITRATENAN N+ NITRITENANN (mg/l)    False
         FECAL COLIFORM (MPN/100ml)          False
         TOTAL COLIFORM (MPN/100ml)Mean      False
         year                                False
         dtype: bool
```

```
In [14]: data.drop("FECAL COLIFORM (MPN/100ml)",axis=1,inplace=True)
```

```
In [15]: data.head()
```

Out[15]:

	STATION CODE	LOCATIONS	STATE	Temp	D.O. (mg/l)	PH	CONDUCTIVITY (µmhos/cm)	B.O.D. (mg/l)	NITRATENAN N+ NITRITENANN (mg/l)	TOTAL COLIFORM (MPN/100ml)Mean	year
0	1393	DAMANGANGA AT D/S OF MADHUBAN, DAMAN	DAMAN & DIU	30.6	6.7	7.5	203.0	6.940049	0.1	27.0	2014
1	1399	ZUARI AT D/S OF PT. WHERE KUMBARJRIA CANAL JOI...	GOA	29.8	5.7	7.2	189.0	2.000000	0.2	8391.0	2014
2	1475	ZUARI AT PANCHAWADI	GOA	29.5	6.3	6.9	179.0	1.700000	0.1	5330.0	2014
3	3181	RIVER ZUARI AT BORIM BRIDGE	GOA	29.7	5.8	6.9	64.0	3.800000	0.5	8443.0	2014
4	3182	RIVER ZUARI AT MARCAIM JETTY	GOA	29.5	5.8	7.3	83.0	1.900000	0.4	5500.0	2014

```
In [16]: data=data.rename(columns={'D.O. (mg/l)':'do'})
         data=data.rename(columns={'CONDUCTIVITY (µmhos/cm)':'co'})
         data=data.rename(columns={'B.O.D. (mg/l)':'bod'})
         data=data.rename(columns={'NITRATENAN N+ NITRITENANN (mg/l)':'na'})
         data=data.rename(columns={'TOTAL COLIFORM (MPN/100ml)Mean':'tc'})
         data=data.rename(columns={'STATION CODE':'station'})
         data=data.rename(columns={'LOCATIONS':'location'})
         data=data.rename(columns={'STATE':'state'})
         data=data.rename(columns={'PH':'ph'})
```

In [17]: `data.head()`

Out[17]:

	station	location	state	Temp	do	ph	co	bod	na	tc	year
0	1393	DAMANGANGA AT D/S OF MADHUBAN, DAMAN	DAMAN & DIU	30.6	6.7	7.5	203.0	6.940049	0.1	27.0	2014
1	1399	ZUARI AT D/S OF PT. WHERE KUMBARJRIA CANAL JOI...	GOA	29.8	5.7	7.2	189.0	2.000000	0.2	8391.0	2014
2	1475	ZUARI AT PANCHAWADI	GOA	29.5	6.3	6.9	179.0	1.700000	0.1	5330.0	2014
3	3181	RIVER ZUARI AT BORIM BRIDGE	GOA	29.7	5.8	6.9	64.0	3.800000	0.5	8443.0	2014
4	3182	RIVER ZUARI AT MARCAIM JETTY	GOA	29.5	5.8	7.3	83.0	1.900000	0.4	5500.0	2014