Team ID	PNT2022TMID25561
Project Name	Efficient Water Quality Analysis and Prediction using Machine Learning

Water Quality Index Calculation 3

```
Calculation of Water Quality Index WQI
 In [352]: data['wph']=data.nph*0.165
           data['wdo']=data.ndo*0.281
data['wbdo']=data.nbdo*0.234
           data['wec']=data.nec*0.009
data['wna']=data.nna*0.028
data['wco']=data.nco*0.281
            data['wqi']=data.wph+data.wdo+data.wbdo+data.wec+data.wna+data.wco
           data
Out[352]:
                                         state Temp do ph co bod
                                                                                            tc year nph ndo nco nbdo nec nna wph wdo wbdo
                        0 1393
                                DAMAN
                         ZUARI AT D/S OF
PT. WHERE
KUMBARJRIA
                  1399
                                          GOA 29 800000 5.7 7.2 189.0 2.000000 0.200000 8391.0 2014 100 100 40 100 60 100 16.5 28.10 23.40
                             CANAL JOI...
                               ZUARI AT
              2 1475
                                         GOA 29 500000 6 3 6 9 179 0 1 700000 0 100000 5330 0 2014 80 100 40 100 60 100 13 2 28 10 23 40
                           PANCHAWADI
                          RIVER ZUARI AT
              3 3181
                                          GOA 29.700000 5.8 6.9 64.0 3.800000 0.500000 8443.0 2014 80 100 40 80 100 100 13.2 28.10 18.72
                           BORIM BRIDGE
                          RIVER ZUARLAT
                  3182
                                          GOA 29 500000 5 8 7 3 8 3 0 1 900000 0 400000 5500 0 2014 100 100 40 100 80 100 16 5 28 10 23 40
                         MARCAIM JETTY
                         TAMBIRAPARANI
                                          NAN 26 209814 7 9 738 0 7 2 2 700000 0 518000 202 0 2003 0 100 60 100 100 100 0.0 28 10 23 40
            1986
                  1330
                          ARUMUGANERI.
                               PALAR AT
                         VANIYAMBADI
WATER SUPPLY
HEAD WORK, T...
            1987
                  1450
                                          NAN 29.000000 7.5 585.0 6.3 2.600000 0.155000 315.0 2003 0 100 60 100 100 100 0.0 28.10 23.40
                       GUMTI AT U/S
SOUTH
TRIPURA,TRIPURA
            1988
                  1403
                                           NAN 28.000000 7.6 98.0 6.2 1.200000 1.623079 570.0 2003
                                                                                                       0 100 40 100 100 100 0.0 28.10 23.40
                 GUMTI AT D/S
1404 SOUTH TRIPURA,
TRIPURA
            1989
                                           NAN 28.000000 7.7 91.0 6.5 1.300000 1.623079 562.0 2003 0 100 40 100 100 100 0.0 28.10 23.40
                  CHANDRAPUR,
AGARTALA D/S OF
HAORA RIVER,
TRIPURA
                                          NAN 29.000000 7.6 110.0 5.7 1.100000 1.623079 546.0 2003 0 80 40 100 100 100 0.0 22.48 23.40
           1991 rows × 24 columns
            Calculation of overall WQI for each year
 In [354]: average=data.groupby('year')['wqi'].mean()
           average.head()
 Out[354]: year
            2003
                    64.195909
            2004
                   61.290000
                   75.840672
75.585905
            2005
            2006
            2007
                   76.762000
            Name: wqi, dtype: float64
```