quiz1

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GitHub Link: https://github.com/fkirmani/csce590-001/tree/main/Quiz1

[1]:
```
import pandas as pd
import numpy as np
from sklearn.impute import SimpleImputer
import matplotlib.pyplot as plt
import seaborn as sns
```

Task 1 – Load data programmatically (10 points), summarize its statistics (10 points) and report on missing data (10 points). Note that a number of parameters are reported for the same date/time in successive rows. Load data

[2]:
```
input_data = pd.read_csv('./data/WaterAtlas-OneLake.csv')
input_data.head()
```

[2]:
```
    WBodyID         WaterBodyName    DataSource StationID StationName  \
0  2003889  Okaloacoochee Branch  WIN_21FLSFWM     32275      CRFW09
1  2003889  Okaloacoochee Branch  WIN_21FLSFWM     32275      CRFW09
2  2003889  Okaloacoochee Branch  WIN_21FLSFWM     32275      CRFW09
3  2003889  Okaloacoochee Branch  WIN_21FLSFWM     32275      CRFW09
4  2003889  Okaloacoochee Branch  WIN_21FLSFWM     32275      CRFW09

  Actual_StationID  Actual_Latitude  Actual_Longitude DEP_WBID  \
0            32275          26.7629          -81.4001    32350
1            32275          26.7629          -81.4001    32350
2            32275          26.7629          -81.4001    32350
3            32275          26.7629          -81.4001    32350
4            32275          26.7629          -81.4001    32350

              SampleDate  …  DepthUnits  Parameter  \
0  5/18/2020 11:11:00 AM  …           m     TN_ugl
1  5/18/2020 11:11:00 AM  …           m  NH3_N_ugl
2  5/18/2020 11:11:00 AM  …           m    NOx_ugl
3  5/18/2020 11:11:00 AM  …           m     TP_ugl
```

```
4  5/18/2020 11:11:00 AM  …           m     OP_mgl

                                Characteristic Sample_Fraction Result_Value  \
0                                     Nitrogen           Total     1280.000
1                         Nitrogen, ammonia as N       Dissolved      203.000
2  Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N       Dissolved        9.000
3                               Phosphorus as P           Total       52.000
4               Phosphorus, phosphate (PO4) as P       Dissolved        0.002

   Result_Unit QACode Result_Comment Original_Result_Value  \
0         ug/l    NaN            NaN                 1.280
1         ug/l    NaN            NaN                 0.203
2         ug/l      I            NaN                 0.009
3         ug/l    NaN            NaN                 0.052
4         mg/l      I            NaN                 0.002

   Original_Result_Unit
0                  mg/L
1                  mg/L
2                  mg/L
3                  mg/L
4                  mg/L

[5 rows x 21 columns]
```

As data is for single lake, removing “WBodyID”, “WaterBodyName”, “DataSource”, “StationID”, “StationName”, “Actual_StationID”, “Actual_Latitude”, “Actual_Longitude”, “DEP_WBID”.

Also not including for data exploration: “Sample_Fraction”, “ActivityDepth”, “DepthUnits”, “QA-Code”, “Original_Result_Comment”, “Characteristic”, “Original_Result_Unit”, “Result_Unit”.

Excluding Original_Result_Value and including Result_Value as Result_Value are updated units.

[3]:
```
input_data_pivot = input_data.pivot_table(columns="Parameter",
                        index=["SampleDate", "ActivityDepth"],
                        values="Result_Value").reset_index()
input_data_pivot
```

[3]:
```
Parameter             SampleDate  ActivityDepth  24D_ugl  Ag_ugl  Al_ugl  \
0                  01-11-1978 0:00       0.500000      NaN     NaN     NaN
1                 01-11-2021 12:08       0.410000      NaN     NaN     NaN
2                  02-08-1978 0:00       0.500000      NaN     NaN     NaN
3                 02-08-2021 11:06       0.500000      NaN     NaN     NaN
4                  02-12-1979 0:00       0.500000      NaN     NaN     NaN
..                             …             …      …     …     …
98         9/13/1978 12:00:00 AM       0.500000      NaN     NaN     NaN
99         9/16/1980 12:00:00 AM       0.500000      NaN     NaN     NaN
100        9/19/2013 12:00:00 AM       0.152439      NaN     NaN     NaN
```

```
101        9/20/2016 12:00:00 AM       0.300000      NaN     NaN     NaN
102        9/21/2020 11:43:00 AM       0.500000      NaN     NaN     NaN

Parameter  Alk_CaCO3_mgl  As_ugl  BOD5_mgl  B_ugl  Ba_ugl  …  TN_ugl  \
0                  243.0     NaN       NaN    NaN     NaN  …   464.0
1                    NaN     NaN       NaN    NaN     NaN  …   987.0
2                  263.5     NaN       NaN    NaN     NaN  …  1301.0
3                    NaN     NaN       NaN    NaN     NaN  …   879.0
4                    NaN     NaN       NaN    NaN     NaN  …     NaN
..                   …     …       …    …     …  …     …
98                 221.0     NaN       NaN    NaN     NaN  …   978.0
99                   NaN     NaN       NaN    NaN     NaN  …  1660.0
100                  NaN     NaN       NaN    NaN     NaN  …     NaN
101                  NaN    1.78       NaN    NaN     NaN  …  1210.0
102                  NaN     NaN       NaN    NaN     NaN  …  1470.0

Parameter  TOC_mgl  TP_ugl  TSS_mgl  TempW_C  TempW_F  Tl_ugl  Turb_ntu  \
0              NaN    20.0      NaN    16.70   62.060     NaN       NaN
1              NaN    48.0      NaN    19.30   66.740     NaN       NaN
2              NaN    14.5      NaN    15.90   60.620     NaN       NaN
3              NaN    43.0      NaN    20.80   69.440     NaN       NaN
4              NaN    28.5      NaN    16.20   61.160     NaN       NaN
..             …     …       …       …      …       …
98             NaN    26.5      NaN    29.70   85.460     NaN       NaN
99             NaN   131.0      NaN    27.60   81.680     NaN       NaN
100            NaN     NaN      NaN    27.26   81.068     NaN       NaN
101           22.0   170.0      6.0    28.00   82.400     NaN       3.5
102            NaN   264.0      NaN    28.80   83.840     NaN       NaN

Parameter  Zn_ugl     pH
0             NaN  7.720
1             NaN  7.900
2             NaN  7.610
3             NaN  8.100
4             NaN  7.220
..            …    …
98            NaN  7.500
99            NaN  7.230
100           NaN  7.445
101           NaN  7.200
102           NaN  7.500

[103 rows x 74 columns]
```

[4]:
```
input_data_pivot.rename(columns={'Sucralose_ug/l':'Sucralose_ugl'},␣
↪inplace=True)
```

summarizing statistics of input_data_pivot dataframe

[5]:
```
summary = input_data_pivot.describe()
print(summary.columns)
summary
```

```
Index(['ActivityDepth', '24D_ugl', 'Ag_ugl', 'Al_ugl', 'Alk_CaCO3_mgl',
       'As_ugl', 'BOD5_mgl', 'B_ugl', 'Ba_ugl', 'C_organic_mgl', 'Ca_diss_mgl',
       'Ca_mgl', 'CarbAlk_mgl', 'Cd_ugl', 'ChlaC_ugl', 'Chla_ugl',
       'Cl_diss_mgl', 'Cl_mgl', 'Color_true_pcu', 'Cond_umhocm', 'Cr_ugl',
       'Cu_diss_ugl', 'Cu_ugl', 'DO_mgl', 'DO_percent', 'Depth_bott_ft',
       'Diuron_ugl', 'Ecoli_100ml', 'Endothall_ugl', 'F_mgl', 'Fe_diss_ugl',
       'Fe_ugl', 'Glyphosate_ugl', 'Hardnesscarbonate_mgl', 'K_mgl',
       'Linuron_ugl', 'MCPP_ugl', 'Mg_diss_mgl', 'Mg_mgl', 'Mn_diss_ugl',
       'Mn_ugl', 'NH3_N_diss_ugl', 'NH3_N_ugl', 'NO2_diss_ugl', 'NO3_diss_ugl',
       'NOx_ugl', 'Na_diss_mgl', 'Na_mgl', 'Ni_ugl', 'OP_mgl', 'Pb_ugl',
       'Pheo_ugl', 'SO4_diss_mgl', 'SO4_mgl', 'Salinity_PSS', 'Salinity_ppt',
       'Sb_ugl', 'Se_ugl', 'Secchi_ft', 'Si_ugl', 'Sucralose_ugl', 'TDS_mgl',
       'TKN_ugl', 'TN_ugl', 'TOC_mgl', 'TP_ugl', 'TSS_mgl', 'TempW_C',
       'TempW_F', 'Tl_ugl', 'Turb_ntu', 'Zn_ugl', 'pH'],
      dtype='object', name='Parameter')
```

[5]:

Parameter	ActivityDepth	24D_ugl	Ag_ugl	Al_ugl	Alk_CaCO3_mgl	\
count	103.000000	5.000000	19.00	6.000000	34.000000	
mean	0.385385	0.070100	0.01	28.833333	230.823529	
std	0.146083	0.128781	0.00	13.556056	33.442597	
min	0.100000	0.002000	0.01	11.000000	113.000000	
25%	0.290000	0.008500	0.01	20.250000	205.750000	
50%	0.500000	0.016000	0.01	30.000000	240.000000	
75%	0.500000	0.024000	0.01	34.500000	250.000000	
max	0.500000	0.300000	0.01	49.000000	289.000000	

Parameter	As_ugl	BOD5_mgl	B_ugl	Ba_ugl	C_organic_mgl	…	\
count	25.000000	1.0	6.000000	6.000000	19.000000	…	
mean	2.137200	1.0	72.700000	18.466667	15.842105	…	
std	0.500995	NaN	10.409611	1.155278	3.905312	…	
min	1.410000	1.0	57.900000	16.900000	10.000000	…	
25%	1.780000	1.0	66.900000	17.850000	12.500000	…	
50%	2.080000	1.0	73.100000	18.500000	15.000000	…	
75%	2.430000	1.0	78.025000	18.850000	17.500000	…	
max	3.480000	1.0	87.600000	20.300000	24.000000	…	

Parameter	TN_ugl	TOC_mgl	TP_ugl	TSS_mgl	TempW_C	\
count	72.000000	6.000000	94.000000	25.000000	95.000000	
mean	1175.430556	16.666667	61.132979	5.840000	25.890333	
std	427.584135	4.366539	50.033547	4.209909	4.203510	
min	420.000000	11.000000	8.000000	2.000000	15.900000	
25%	925.000000	13.250000	23.625000	3.000000	23.350000	

```
50%         1092.500000  17.500000   48.500000   5.000000  26.900000
75%         1303.250000  19.500000   82.000000   7.000000  28.993333
max         2734.000000  22.000000  264.000000  22.000000  32.400000

Parameter    TempW_F        Tl_ugl   Turb_ntu     Zn_ugl         pH
count      95.000000  6.000000e+00  25.000000  21.000000  95.000000
mean       78.602600  1.000000e-01   6.344000  10.190476   7.557158
std         7.566317  1.520235e-17   3.446264  18.861652   0.336734
min        60.620000  1.000000e-01   2.900000   5.000000   6.790000
25%        74.030000  1.000000e-01   4.000000   5.000000   7.320000
50%        80.420000  1.000000e-01   5.200000   5.000000   7.500000
75%        84.188000  1.000000e-01   8.000000   5.000000   7.800000
max        90.320000  1.000000e-01  18.000000  89.000000   8.300000

[8 rows x 73 columns]
```

Not every parameter is measured on every date the survey of water is conducted.

[6]:
```
input_data_pivot.isnull()
```

[6]:
```
Parameter  SampleDate  ActivityDepth  24D_ugl  Ag_ugl  Al_ugl  Alk_CaCO3_mgl  \
0              False          False     True    True    True          False
1              False          False     True    True    True           True
2              False          False     True    True    True          False
3              False          False     True    True    True           True
4              False          False     True    True    True           True
..               …              …       …       …       …             …
98             False          False     True    True    True          False
99             False          False     True    True    True           True
100            False          False     True    True    True           True
101            False          False     True    True    True           True
102            False          False     True    True    True           True

Parameter  As_ugl  BOD5_mgl  B_ugl  Ba_ugl  …  TN_ugl  TOC_mgl  TP_ugl  \
0            True      True   True    True  …   False     True   False
1            True      True   True    True  …   False     True   False
2            True      True   True    True  …   False     True   False
3            True      True   True    True  …   False     True   False
4            True      True   True    True  …    True     True   False
..            …         …      …       …    …      …        …      …
98           True      True   True    True  …   False     True   False
99           True      True   True    True  …   False     True   False
100          True      True   True    True  …    True     True    True
101         False      True   True    True  …   False    False   False
102          True      True   True    True  …   False     True   False

Parameter  TSS_mgl  TempW_C  TempW_F  Tl_ugl  Turb_ntu  Zn_ugl     pH
```

```
0              True    False    False    True      True    True  False
1              True    False    False    True      True    True  False
2              True    False    False    True      True    True  False
3              True    False    False    True      True    True  False
4              True    False    False    True      True    True  False
..              …       …        …        …         …       …     …
98             True    False    False    True      True    True  False
99             True    False    False    True      True    True  False
100            True    False    False    True      True    True  False
101           False    False    False    True     False    True  False
102            True    False    False    True      True    True  False

[103 rows x 74 columns]
```

Percentage of missing values in each parameter

[7]:
```
for i in range(len(input_data_pivot.columns)):
    missing_data = input_data_pivot[input_data_pivot.columns[i]].isna().sum()
    perc = missing_data / len(input_data_pivot) * 100
    print('>%d,  missing entries: %d, percentage %.2f' % (i, missing_data,␣
 ↪perc))
```

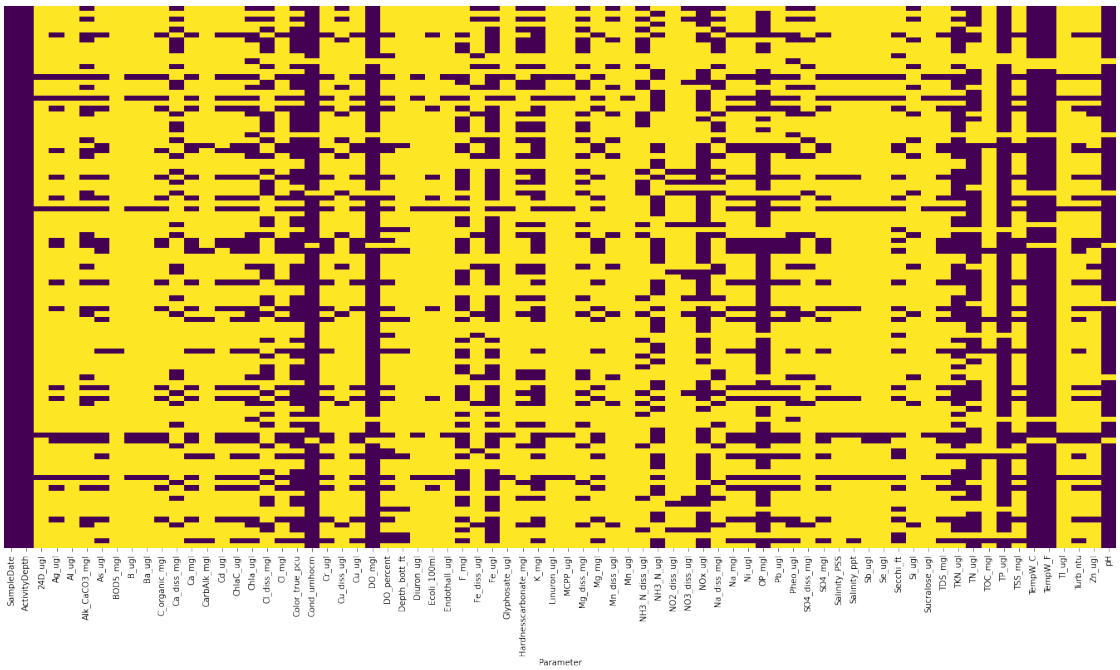
```
>0,  missing entries: 0, percentage 0.00
>1,  missing entries: 0, percentage 0.00
>2,  missing entries: 98, percentage 95.15
>3,  missing entries: 84, percentage 81.55
>4,  missing entries: 97, percentage 94.17
>5,  missing entries: 69, percentage 66.99
>6,  missing entries: 78, percentage 75.73
>7,  missing entries: 102, percentage 99.03
>8,  missing entries: 97, percentage 94.17
>9,  missing entries: 97, percentage 94.17
>10,  missing entries: 84, percentage 81.55
>11,  missing entries: 71, percentage 68.93
>12,  missing entries: 78, percentage 75.73
>13,  missing entries: 97, percentage 94.17
>14,  missing entries: 84, percentage 81.55
>15,  missing entries: 78, percentage 75.73
>16,  missing entries: 63, percentage 61.17
>17,  missing entries: 59, percentage 57.28
>18,  missing entries: 78, percentage 75.73
>19,  missing entries: 35, percentage 33.98
>20,  missing entries: 6, percentage 5.83
>21,  missing entries: 79, percentage 76.70
>22,  missing entries: 90, percentage 87.38
>23,  missing entries: 80, percentage 77.67
>24,  missing entries: 6, percentage 5.83
>25,  missing entries: 74, percentage 71.84
```

```
>26,  missing entries: 94, percentage 91.26
>27,  missing entries: 98, percentage 95.15
>28,  missing entries: 94, percentage 91.26
>29,  missing entries: 98, percentage 95.15
>30,  missing entries: 50, percentage 48.54
>31,  missing entries: 87, percentage 84.47
>32,  missing entries: 31, percentage 30.10
>33,  missing entries: 98, percentage 95.15
>34,  missing entries: 71, percentage 68.93
>35,  missing entries: 46, percentage 44.66
>36,  missing entries: 98, percentage 95.15
>37,  missing entries: 98, percentage 95.15
>38,  missing entries: 72, percentage 69.90
>39,  missing entries: 78, percentage 75.73
>40,  missing entries: 89, percentage 86.41
>41,  missing entries: 102, percentage 99.03
>42,  missing entries: 74, percentage 71.84
>43,  missing entries: 53, percentage 51.46
>44,  missing entries: 96, percentage 93.20
>45,  missing entries: 88, percentage 85.44
>46,  missing entries: 30, percentage 29.13
>47,  missing entries: 71, percentage 68.93
>48,  missing entries: 78, percentage 75.73
>49,  missing entries: 78, percentage 75.73
>50,  missing entries: 23, percentage 22.33
>51,  missing entries: 79, percentage 76.70
>52,  missing entries: 63, percentage 61.17
>53,  missing entries: 88, percentage 85.44
>54,  missing entries: 78, percentage 75.73
>55,  missing entries: 95, percentage 92.23
>56,  missing entries: 94, percentage 91.26
>57,  missing entries: 97, percentage 94.17
>58,  missing entries: 97, percentage 94.17
>59,  missing entries: 74, percentage 71.84
>60,  missing entries: 88, percentage 85.44
>61,  missing entries: 98, percentage 95.15
>62,  missing entries: 78, percentage 75.73
>63,  missing entries: 36, percentage 34.95
>64,  missing entries: 31, percentage 30.10
>65,  missing entries: 97, percentage 94.17
>66,  missing entries: 9, percentage 8.74
>67,  missing entries: 78, percentage 75.73
>68,  missing entries: 8, percentage 7.77
>69,  missing entries: 8, percentage 7.77
>70,  missing entries: 97, percentage 94.17
>71,  missing entries: 78, percentage 75.73
>72,  missing entries: 82, percentage 79.61
>73,  missing entries: 8, percentage 7.77
```

Heatmap of missing values in each parameter/column

[8]:
```
plt.rcParams["figure.figsize"] = [24, 12]
sns.heatmap(input_data_pivot.isna(), cbar=False, cmap='viridis',␣
 ↪yticklabels=False)
```

[8]:
```
<AxesSubplot:xlabel='Parameter'>
```



From above figure, we can observe there are lot of missing data in every column except "SampleDate" and "ActivityDepth" which have no missing value.

Task 2 - Create plots for all the parameters with X-axis showing time and Y-axis showing the parameter value.

[9]:
```
plt.style.use('classic')
%matplotlib inline
plt.rcParams["figure.figsize"] = [16, 12]
```

Saving plots in plots folder.

[10]:
```
input_data_pivot.set_index('SampleDate',inplace=True)
for i, col in enumerate(input_data_pivot.columns):
    input_data_pivot[col].plot(fig=plt.figure(i))
    plt.ion()
    plt.title(col)
    plt.xticks(rotation=90)
```

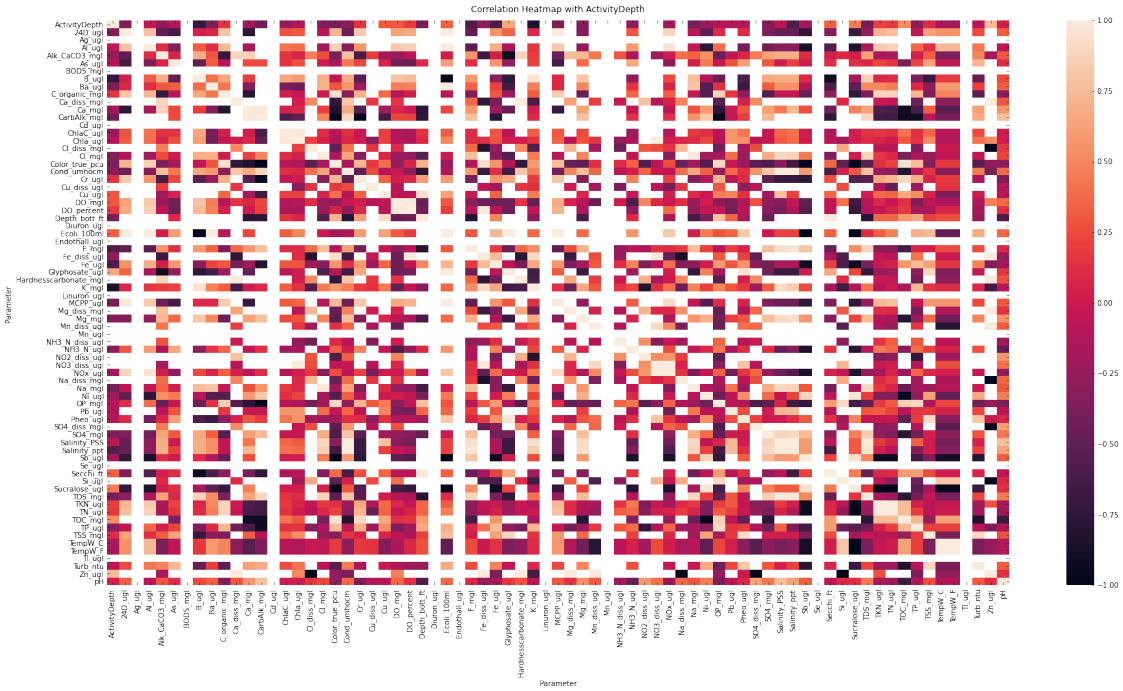
```
    plt.tight_layout()
    plt.savefig('./plots/'+str(col)+'.png', dpi=300)
    plt.close()
```

Task 3 – List at least 3 feature pairs with strong correlations (> 0.5 or <-0.5) among them? Show heatmap of correlation, if possible. What does this indicate?

Correlation Heatmap

[22]:
```
corr1 = input_data_pivot.corr()
# mask = np.triu(np.ones_like(input_data_pivot.corr(), dtype=bool))

# plotting the heatmap
plt.rcParams["figure.figsize"] = [28, 14]
heatmap = sns.heatmap(corr1)
heatmap.set_title('Correlation Heatmap with ActivityDepth',␣
↪fontdict={'fontsize':12}, pad=12);
```



Two Highest correlation: One is self and other is with different feature. We are concenred with other features not same feature for correlation.

[100]:
```
corr1.reset_index()
for i, col in enumerate(corr1.columns):
    try:
```

```
        top = pd.DataFrame(corr1[(corr1[col]>0.9) | (corr1[col]<-0.9)][col].
↪nlargest(2).to_frame()).reset_index()
        top = top.drop(top[top["Parameter"]==col].index)
        if top.empty:
            pass
        else:
            print(top)
            print("\n")
    except:
        pass
```

```
     Parameter  24D_ugl
0  Ecoli_100ml      1.0


     Parameter  Al_ugl
0  Ecoli_100ml     1.0


        Parameter  Alk_CaCO3_mgl
1  Glyphosate_ugl      -0.925814


  Parameter     B_ugl
1     K_mgl  0.950117


     Parameter  Ba_ugl
0  Ecoli_100ml     1.0


        Parameter  C_organic_mgl
1  Color_true_pcu       0.939544


  Parameter  Ca_diss_mgl
1    Zn_ugl          1.0


     Parameter    Ca_mgl
1  CarbAlk_mgl  0.990536


  Parameter  CarbAlk_mgl
1    Ca_mgl     0.990536
```

```
  Parameter  ChlaC_ugl
1  Chla_ugl   0.976938
```

```
      Parameter  Chla_ugl
1  NO3_diss_ugl   0.99939
```

```
  Parameter  Cl_diss_mgl
1    Zn_ugl         -1.0
```

```
  Parameter    Cl_mgl
1    Na_mgl  0.983395
```

```
  Parameter  Color_true_pcu
1   TOC_mgl         0.94758
```

```
      Parameter  Cond_umhocm
1  Salinity_ppt     0.999392
```

```
     Parameter    Cr_ugl
1  CarbAlk_mgl -0.958928
```

```
       Parameter    Cu_ugl
1  Depth_bott_ft  0.926694
```

```
    Parameter    DO_mgl
1  DO_percent  0.988709
```

```
     Parameter  DO_percent
1  Fe_diss_ugl    0.998719
```

```
   Parameter  Depth_bott_ft
1  Secchi_ft       0.991882
```

```
  Parameter  Ecoli_100ml
0   24D_ugl          1.0
1    Al_ugl          1.0
```

```
      Parameter     F_mgl
1  Salinity_ppt  0.961899
```

```
  Parameter  Fe_diss_ugl
1    Zn_ugl          1.0
```

```
       Parameter    Fe_ugl
1  Sucralose_ugl -0.915896
```

```
     Parameter  Glyphosate_ugl
1  Ecoli_100ml             1.0
```

```
  Parameter  Hardnesscarbonate_mgl
1    Zn_ugl                   1.0
```

```
  Parameter     K_mgl
1     B_ugl  0.950117
```

```
     Parameter  MCPP_ugl
1  Ecoli_100ml       1.0
```

```
  Parameter  Mg_diss_mgl
1    Zn_ugl          1.0
```

```
      Parameter    Mg_mgl
1  Salinity_ppt  0.936817
```

```
  Parameter  Mn_diss_ugl
1    Zn_ugl          1.0
```

```
  Parameter  NO3_diss_ugl
1  Chla_ugl       0.99939
```

```
      Parameter   NOx_ugl
1  NO3_diss_ugl  0.998936
```

```
  Parameter  Na_diss_mgl
1    Zn_ugl         -1.0
```

```
  Parameter    Na_mgl
1    Cl_mgl  0.983395
```

```
       Parameter    Ni_ugl
1  Sucralose_ugl  0.961861
```

```
  Parameter    OP_mgl
1    Si_ugl  0.910904
```

```
        Parameter  Pheo_ugl
1  Glyphosate_ugl  0.962065
```

```
  Parameter  SO4_diss_mgl
1    Zn_ugl          -1.0
```

```
      Parameter   SO4_mgl
1  Salinity_ppt  0.913588
```

```
      Parameter  Salinity_PSS
1  Salinity_ppt           1.0
```

```
      Parameter  Salinity_ppt
0  Salinity_PSS           1.0
```

```
       Parameter    Sb_ugl
1  Sucralose_ugl  0.936411
```

```
       Parameter  Secchi_ft
1  Depth_bott_ft   0.991882
```

```
  Parameter    Si_ugl
1    OP_mgl  0.910904
```

```
  Parameter  Sucralose_ugl
1    Ni_ugl       0.961861
```

```
      Parameter   TDS_mgl
1  Salinity_PSS  0.977539
```

```
  Parameter   TKN_ugl
1    TN_ugl  0.993621
```

```
  Parameter    TN_ugl
1   TKN_ugl  0.993621
```

```
        Parameter  TOC_mgl
1  Color_true_pcu  0.94758
```

```
  Parameter    TP_ugl
1    OP_mgl  0.902318
```

```
  Parameter   TSS_mgl
1  Pheo_ugl  0.915603
```

```
  Parameter  TempW_C
1   TempW_F      1.0
```

```
  Parameter  TempW_F
1   TempW_C      1.0
```

```
              Parameter  Zn_ugl
0            Fe_diss_ugl     1.0
1  Hardnesscarbonate_mgl     1.0
```

Top three correlated feature pairs are when considering ActivityDepth:

1. Ecoli_100ml and Al_ugl
2. Zn_ugl and Si_ugl
3. DO_percent and Fe_diss_ugl

[102]:
```
# Imputing missing values
# imputer = SimpleImputer(missing_values=np.NaN, strategy='median')
# for i in range(len(input_data_pivot_drop_activitydepth.columns)):
#     input_data_pivot_drop_activitydepth[input_data_pivot_drop_activitydepth.
 ↪columns[i]] = imputer.
 ↪fit_transform(input_data_pivot_drop_activitydepth[input_data_pivot_drop_activitydepth.
 ↪columns[i]].values.reshape(-1,1))[:,0]

# input_data_pivot_drop_activitydepth
```

Task 4 – If you are a resident living near this location and looking at this water data. You want to know answers for questions like if it safe to go to swim in the water, use water to irrigate your garden or event drink from it? Can this data answer any such questions? Discuss. .

If I am residing near this location, I would be interested to know the quality of the water I am using when using using from this water body. I would able to know the quality of the water if I know:

1. The pH value of the water, tells the acidic level of water.
2. The amount of dissolved calcium and magnesium in the water, it defines the hardness of wate
3. The temperature of the water. It affects fish and aquatic plants in the water.
5. Salinity of water
6. Turbidity of water
7. Alkalinity of water
8. Dissolved oxygen content in water
9. Phosporius and Nirtrogen content of water.

Basically, by looking at this I want to know the quality of the water before using it to drink, cook food, swimming, fishing, etc. As the contains the parameters I will mostly be interested in to know, I think I will able to judge the quality of water in this location.

[ ]: