In [8]:
```
import numpy as np
import pandas as pd
```

In [7]:
```
data=pd.read_csv(r"C:\Users\user\Downloads\9_bottle.csv")
data
```

```
C:\ProgramData\Anaconda3\lib\site-packages\IPython\core\interactiveshell.py:3
165: DtypeWarning: Columns (47,73) have mixed types.Specify dtype option on i
mport or set low_memory=False.
  has_raised = await self.run_ast_nodes(code_ast.body, cell_name,
```

Out[7]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2S
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.500	33.4400	NaN	25.64900	Na
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.460	33.4400	NaN	25.65600	Na
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.460	33.4370	NaN	25.65400	Na
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.450	33.4200	NaN	25.64300	Na
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.450	33.4210	NaN	25.64300	Na
...	...	...	...	...	...	...	...	...	...	
864858	34404	864859	093.4 026.4	20-1611SR-MX-310-2239-09340264-0000A-7	0	18.744	33.4083	5.805	23.87055	108.
864859	34404	864860	093.4 026.4	20-1611SR-MX-310-2239-09340264-0002A-3	2	18.744	33.4083	5.805	23.87072	108.
864860	34404	864861	093.4 026.4	20-1611SR-MX-310-2239-09340264-0005A-3	5	18.692	33.4150	5.796	23.88911	108.
864861	34404	864862	093.4 026.4	20-1611SR-MX-310-2239-09340264-0010A-3	10	18.161	33.4062	5.816	24.01426	107.

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2S
864862	34404	864863	093.4 026.4	20-1611SR-MX-310-2239-09340264-0015A-3	15	17.533	33.3880	5.774	24.15297	105.

864863 rows × 74 columns

In [6]:
```
data.describe()
```

Out[6]:

	Cst_Cnt	Btl_Cnt	Depthm	T_degC	Salnty	O2ml
count	864863.000000	864863.000000	864863.000000	853900.000000	817509.000000	696201.0000
mean	17138.790958	432432.000000	226.831951	10.799677	33.840350	3.3924
std	10240.949817	249664.587267	316.050259	4.243825	0.461843	2.0732
min	1.000000	1.000000	0.000000	1.440000	28.431000	-0.0100
25%	8269.000000	216216.500000	46.000000	7.680000	33.488000	1.3600
50%	16848.000000	432432.000000	125.000000	10.060000	33.863000	3.4400
75%	26557.000000	648647.500000	300.000000	13.880000	34.196900	5.5000
max	34404.000000	864863.000000	5351.000000	31.140000	37.034000	11.1300

8 rows × 70 columns

In [11]:
```
da=data.head(10)
da
```

Out[11]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	F
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	NaN	25.649	NaN	...	
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	NaN	25.656	NaN	...	
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	NaN	25.654	NaN	...	
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	NaN	25.643	NaN	...	
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	NaN	25.643	NaN	...	
5	1	6	054.0 056.0	19-4903CR-HY-060-0930-05400560-0030A-7	30	10.45	33.431	NaN	25.651	NaN	...	
6	1	7	054.0 056.0	19-4903CR-HY-060-0930-05400560-0039A-3	39	10.45	33.440	NaN	25.658	NaN	...	
7	1	8	054.0 056.0	19-4903CR-HY-060-0930-05400560-0050A-7	50	10.24	33.424	NaN	25.682	NaN	...	
8	1	9	054.0 056.0	19-4903CR-HY-060-0930-05400560-0058A-3	58	10.06	33.420	NaN	25.710	NaN	...	

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	F
9	1	10	054.0 056.0	19-4903CR-HY-060-0930-05400560-0075A-7	75	9.86	33.494	NaN	25.801	NaN	...	

10 rows × 74 columns

In [10]:
```
da.mean()
```

Out[10]:
```
Cst_Cnt                  1.0000
Btl_Cnt                  5.5000
Depthm                  30.9000
T_degC                  10.3380
Salnty                  33.4367
                          ...
TA1                        NaN
TA2                        NaN
pH2                        NaN
pH1                        NaN
DIC Quality Comment        NaN
Length: 72, dtype: float64
```

In [12]:
```
da.median()
```

Out[12]:
```
Cst_Cnt                  1.000
Btl_Cnt                  5.500
Depthm                  25.000
T_degC                  10.450
Salnty                  33.434
                          ...
TA1                        NaN
TA2                        NaN
pH2                        NaN
pH1                        NaN
DIC Quality Comment        NaN
Length: 72, dtype: float64
```

In [13]:
```
da.mode()
```

Out[13]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	F
0	1.0	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.45	33.44	NaN	25.643	NaN	...	
1	NaN	2	NaN	19-4903CR-HY-060-0930-05400560-0008A-3	8	NaN	NaN	NaN	NaN	NaN	...	
2	NaN	3	NaN	19-4903CR-HY-060-0930-05400560-0010A-7	10	NaN	NaN	NaN	NaN	NaN	...	
3	NaN	4	NaN	19-4903CR-HY-060-0930-05400560-0019A-3	19	NaN	NaN	NaN	NaN	NaN	...	
4	NaN	5	NaN	19-4903CR-HY-060-0930-05400560-0020A-7	20	NaN	NaN	NaN	NaN	NaN	...	
5	NaN	6	NaN	19-4903CR-HY-060-0930-05400560-0030A-7	30	NaN	NaN	NaN	NaN	NaN	...	
6	NaN	7	NaN	19-4903CR-HY-060-0930-05400560-0039A-3	39	NaN	NaN	NaN	NaN	NaN	...	
7	NaN	8	NaN	19-4903CR-HY-060-0930-05400560-0050A-7	50	NaN	NaN	NaN	NaN	NaN	...	
8	NaN	9	NaN	19-4903CR-HY-060-0930-05400560-0058A-3	58	NaN	NaN	NaN	NaN	NaN	...	

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	F
9	NaN	10	NaN	19-4903CR-HY-060-0930-05400560-0075A-7	75	NaN	NaN	NaN	NaN	NaN	...	

10 rows × 74 columns

In [14]:
```
da.sum()
```

Out[14]:
```
Cst_Cnt                                                        10
Btl_Cnt                                                        55
Sta_ID                 054.0 056.0054.0 056.0054.0 056.0054.0 056.005...
Depth_ID               19-4903CR-HY-060-0930-05400560-0000A-319-4903C...
Depthm                                                        309
                                          ...
TA1                                                           0.0
TA2                                                           0.0
pH2                                                           0.0
pH1                                                           0.0
DIC Quality Comment                                             0
Length: 74, dtype: object
```

In [15]:
```
da.cumsum()
```

Out[15]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	NaN	25.649	NaN
1	2	3	054.0 056.0054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	8	20.96	66.880	NaN	51.305	NaN
2	3	6	054.0 056.0054.0 056.0054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	18	31.42	100.317	NaN	76.959	NaN
3	4	10	054.0 056.0054.0 056.0054.0 056.0054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	37	41.87	133.737	NaN	102.602	NaN
4	5	15	054.0 056.0054.0 056.0054.0 056.0054.0 056.005...	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	57	52.32	167.158	NaN	128.245	NaN
5	6	21	054.0 056.0054.0 056.0054.0 056.0054.0 056.005...	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	87	62.77	200.589	NaN	153.896	NaN
6	7	28	054.0 056.0054.0 056.0054.0 056.0054.0 056.005...	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	126	73.22	234.029	NaN	179.554	NaN

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat
7	8	36	054.0 056.0054.0 056.0054.0 056.0054.0 056.005...	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	176	83.46	267.453	NaN	205.236	NaN
8	9	45	054.0 056.0054.0 056.0054.0 056.0054.0 056.005...	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	234	93.52	300.873	NaN	230.946	NaN
9	10	55	054.0 056.0054.0 056.0054.0 056.0054.0 056.005...	19-4903CR-HY-060-0930-05400560-0000A-319-4903C...	309	103.38	334.367	NaN	256.747	NaN

10 rows × 74 columns

In [16]:
```
data.max()
```

Out[16]:
```
Cst_Cnt                                          34404
Btl_Cnt                                         864863
Sta_ID                                   176.7 030.0
Depth_ID    20-1611SR-PR-324-1700-07670700-0516A-3
Depthm                                            5351
                                ...
DIC2                                          2364.42
TA1                                            2434.9
TA2                                            2437.0
pH2                                            7.9883
pH1                                            8.0477
Length: 72, dtype: object
```

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

Out[17]:
```
Cst_Cnt                                          1
Btl_Cnt                                          1
Sta_ID                                 001.0 168.0
Depth_ID    19-4903CR-HY-060-0930-05400560-0000A-3
Depthm                                           0
                                ...
DIC2                                       1969.44
TA1                                        2181.57
TA2                                        2198.15
pH2                                         7.9231
pH1                                         7.6183
Length: 72, dtype: object
```

In [18]:
```
data.count()
```

Out[18]:
```
Cst_Cnt                 864863
Btl_Cnt                 864863
Sta_ID                  864863
Depth_ID                864863
Depthm                  864863
                          ...
TA1                      2084
TA2                       234
pH2                        10
pH1                        84
DIC Quality Comment        55
Length: 74, dtype: int64
```

In [19]:
```
data.cov()
```

Out[19]:

	Cst_Cnt	Btl_Cnt	Depthm	T_degC	Salnty	O2ml_L
Cst_Cnt	1.048771e+08	2.555128e+09	-5.250579e+05	3883.267026	-923.783675	3461.841077
Btl_Cnt	2.555128e+09	6.233241e+10	-1.275262e+07	95521.022697	-22206.786075	83405.383938
Depthm	-5.250579e+05	-1.275262e+07	9.988777e+04	-916.041979	81.571552	-389.093954
T_degC	3.883267e+03	9.552102e+04	-9.160420e+02	18.010048	-0.985460	6.994982
Salnty	-9.237837e+02	-2.220679e+04	8.157155e+01	-0.985460	0.213299	-0.785036
...	...	...	...	...	...	..
DIC2	-9.812408e+03	-2.518103e+05	7.567584e+04	-795.433611	76.876178	-387.776555
TA1	-1.560942e+03	-3.987787e+04	8.956785e+03	-98.232710	12.371908	-59.889101
TA2	-4.423893e+03	-1.132539e+05	4.256402e+04	-287.148240	28.199208	-112.891502
pH2	-7.993367e-01	-2.027119e+01	2.233333e-03	0.022476	0.001828	0.001273
pH1	2.175486e-01	5.456378e+00	-6.558484e-01	0.158004	0.001142	0.029757

70 rows × 70 columns

In [20]:
```
data.corr()
```

Out[20]:

	Cst_Cnt	Btl_Cnt	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	C
Cst_Cnt	1.000000	0.999345	-0.162222	0.089329	-0.198024	0.156096	-0.089902	0.136510	
Btl_Cnt	0.999345	1.000000	-0.161617	0.090118	-0.195207	0.154219	-0.089521	0.134732	
Depthm	-0.162222	-0.161617	1.000000	-0.681201	0.572630	-0.592399	0.582710	-0.595547	
T_degC	0.089329	0.090118	-0.681201	1.000000	-0.505266	0.795700	-0.829155	0.850596	
Salnty	-0.198024	-0.195207	0.572630	-0.505266	1.000000	-0.823870	0.603470	-0.790231	
...	...	...	...	...	...	...	...	...	
DIC2	-0.097938	-0.097251	0.572374	-0.949972	0.955942	-0.941214	0.965546	-0.962977	
TA1	-0.075060	-0.074255	0.786873	-0.742196	0.895124	-0.802493	0.779899	-0.788291	
TA2	-0.115212	-0.114165	0.866185	-0.889635	0.937147	-0.726460	0.887778	-0.767766	
pH2	-0.262587	-0.259082	0.223304	0.547436	0.583807	0.174204	-0.480397	0.732628	
pH1	0.020778	0.020315	-0.611798	0.743735	0.106417	0.663591	-0.717815	0.913807	

70 rows × 70 columns

In [ ]:
```

```