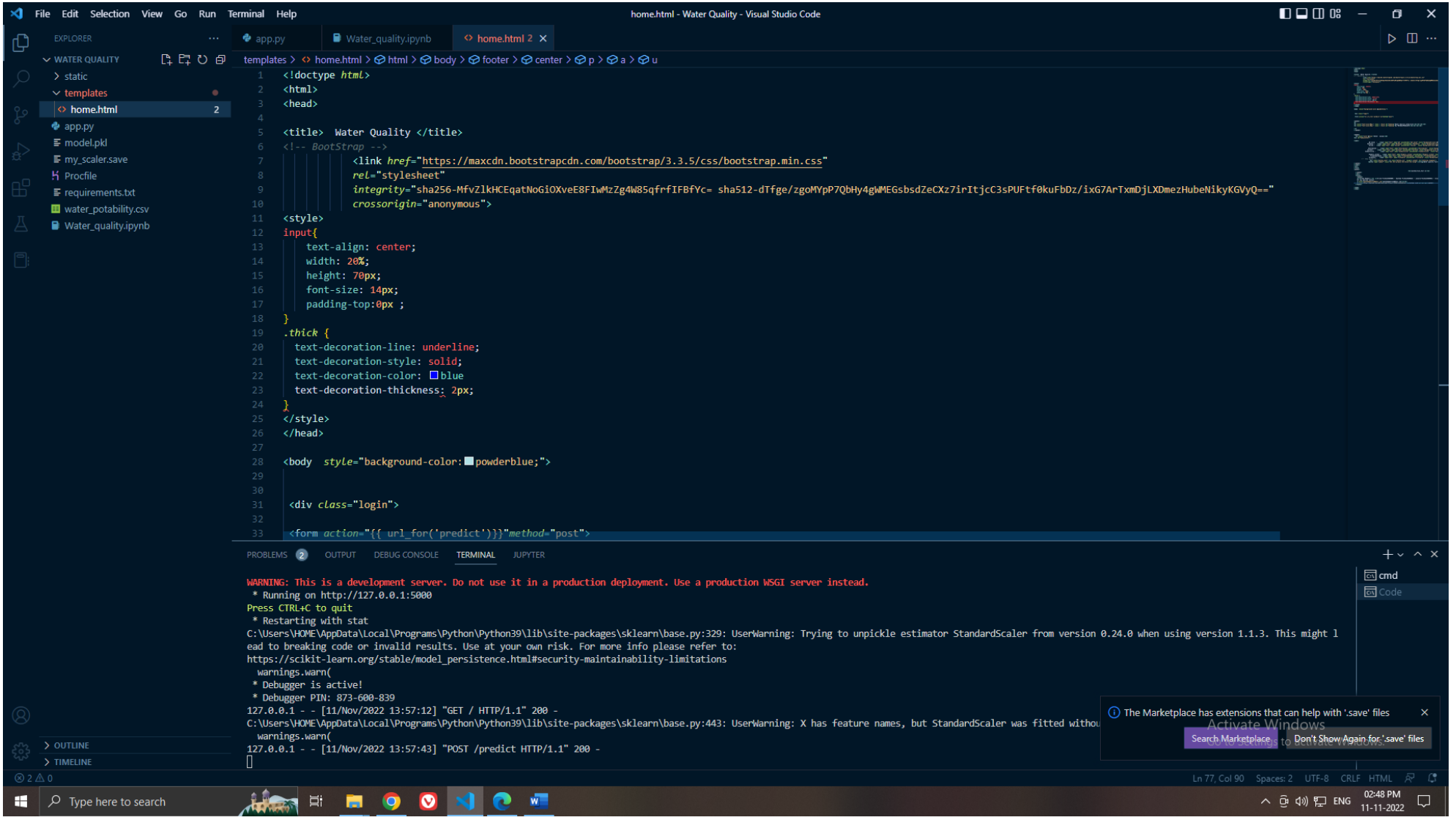
SPRINT 1

Project Deliverables (Code & Test Cases)

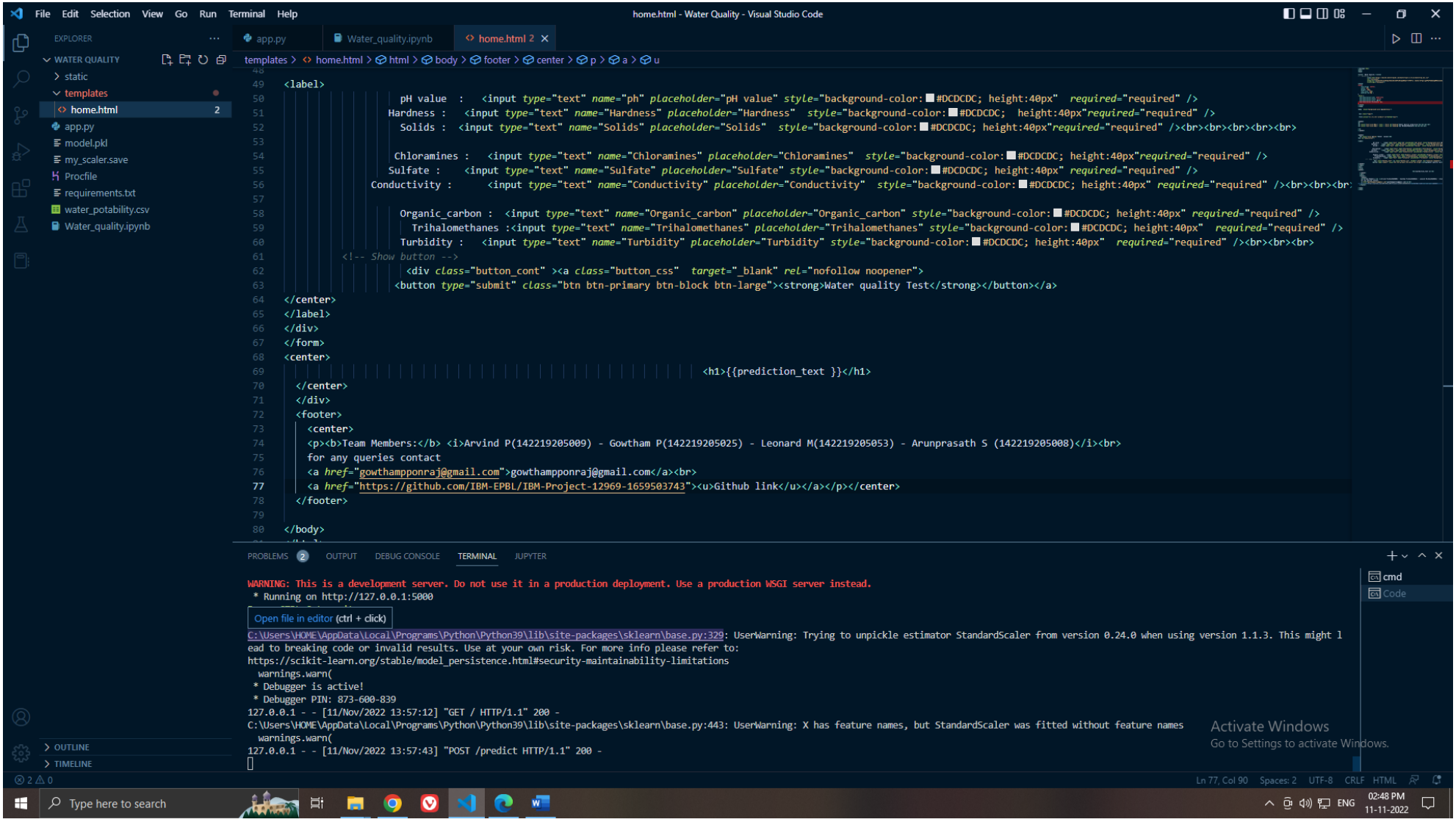
Date	04 November 2022
Team ID	PNT2022TMID21875
Project Name	Efficient Water Quality Analysis & Prediction using Machine Learning

HTML (Frontend):

In this sprint t , we have created a html code that is going to display on user's screen


File Edit Selection View Go Run Terminal Help
home.html - Water Quality - Visual Studio Code
EXPLORER
WATER QUALITY
static
templates
home.html 2
app.py
model.pkl
my_scaler.save
Procfile
requirements.txt
water_potability.csv
Water_quality.ipynb
app.py
Water_quality.ipynb
home.html 2
templates > home.html > html > body > footer > center > p > a > u
<!doctype html>
<html>
<head>
<title> Water Quality </title>
<!-- BootStrap -->
<link href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.5/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha256-MfvZlkHCEqatNoGiOXveE8FIwMzZg4W85qfrfIFBfYc= sha512-dTfge/zgoMYpP7QbHy4gWMEGsbsdZeCXz7irItjcC3sPUFtf0kuFbDz/ixG7ArTxmDjLXDmezHubeNikyKGVyQ=="
crossorigin="anonymous">
<style>
input{
text-align: center;
width: 20%;
height: 70px;
font-size: 14px;
padding-top:0px ;
}
.thick {
text-decoration-line: underline;
text-decoration-style: solid;
text-decoration-color: blue
text-decoration-thickness: 2px;
}
</style>
</head>
<body style="background-color:powderblue;">

<form action="{{ url_for('predict')}}"method="post">
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:329: UserWarning: Trying to unpickle estimator StandardScaler from version 0.24.0 when using version 1.1.3. This might l
ead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
warnings.warn(
* Debugger is active!
* Debugger PIN: 873-600-839
127.0.0.1 - - [11/Nov/2022 13:57:12] "GET / HTTP/1.1" 200 -
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:443: UserWarning: X has feature names, but StandardScaler was fitted witho
warnings.warn(
127.0.0.1 - - [11/Nov/2022 13:57:43] "POST /predict HTTP/1.1" 200 -
cmd
Code
The Marketplace has extensions that can help with '.save' files
Search Marketplace
Don't Show Again for '.save' files
OUTLINE
TIMELINE
Ln 77, Col 90 Spaces: 2 UTF-8 CRLF HTML
Type here to search
ENG
02:48 PM
11-11-2022


File Edit Selection View Go Run Terminal Help
home.html - Water Quality - Visual Studio Code
EXPLORER
WATER QUALITY
static
templates
home.html 2
app.py
model.pkl
my_scaler.save
Procfile
requirements.txt
water_potability.csv
Water_quality.ipynb
app.py
Water_quality.ipynb
home.html 2
templates > home.html > html > body > footer > center > p > a > u
pH value : <input type="text" name="ph" placeholder="pH value" style="background-color: #DCDCDC; height:40px" required="required" />
Hardness : <input type="text" name="Hardness" placeholder="Hardness" style="background-color: #DCDCDC; height:40px"required="required" />
Solids : <input type="text" name="Solids" placeholder="Solids" style="background-color: #DCDCDC; height:40px"required="required" />

Chloramines : <input type="text" name="Chloramines" placeholder="Chloramines" style="background-color: #DCDCDC; height:40px"required="required" />
Sulfate : <input type="text" name="Sulfate" placeholder="Sulfate" style="background-color: #DCDCDC; height:40px" required="required" />
Conductivity : <input type="text" name="Conductivity" placeholder="Conductivity" style="background-color: #DCDCDC; height:40px" required="required" />

Organic_carbon : <input type="text" name="Organic_carbon" placeholder="Organic_carbon" style="background-color: #DCDCDC; height:40px" required="required" />
Trihalomethanes :<input type="text" name="Trihalomethanes" placeholder="Trihalomethanes" style="background-color: #DCDCDC; height:40px" required="required" />
Turbidity : <input type="text" name="Turbidity" placeholder="Turbidity" style="background-color: #DCDCDC; height:40px" required="required" />

<!-- Show button -->

<button type="submit" class="btn btn-primary btn-block btn-large">Water quality Test</button>

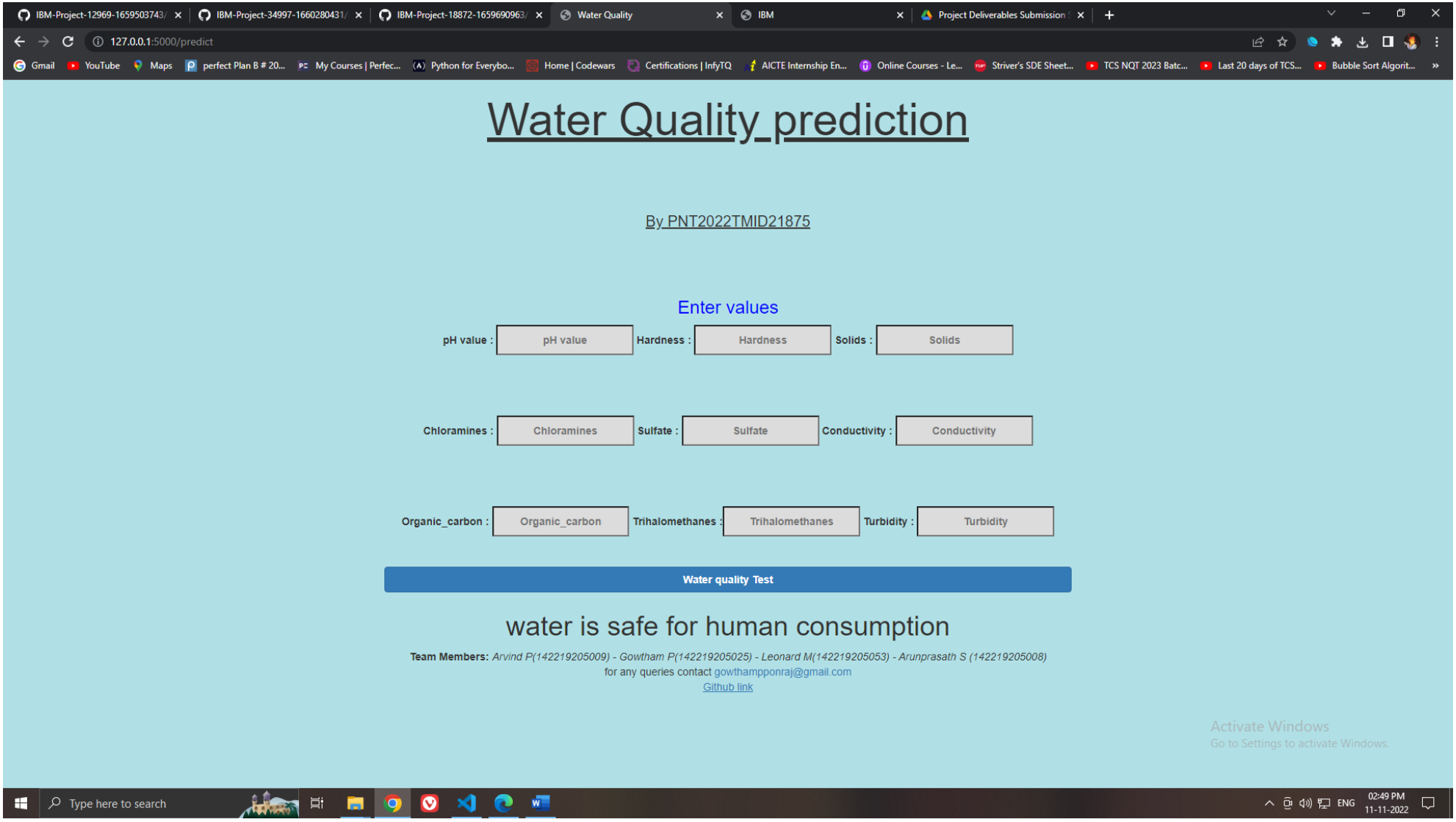
</label>

</form>

<h1>{{prediction_text }}</h1>

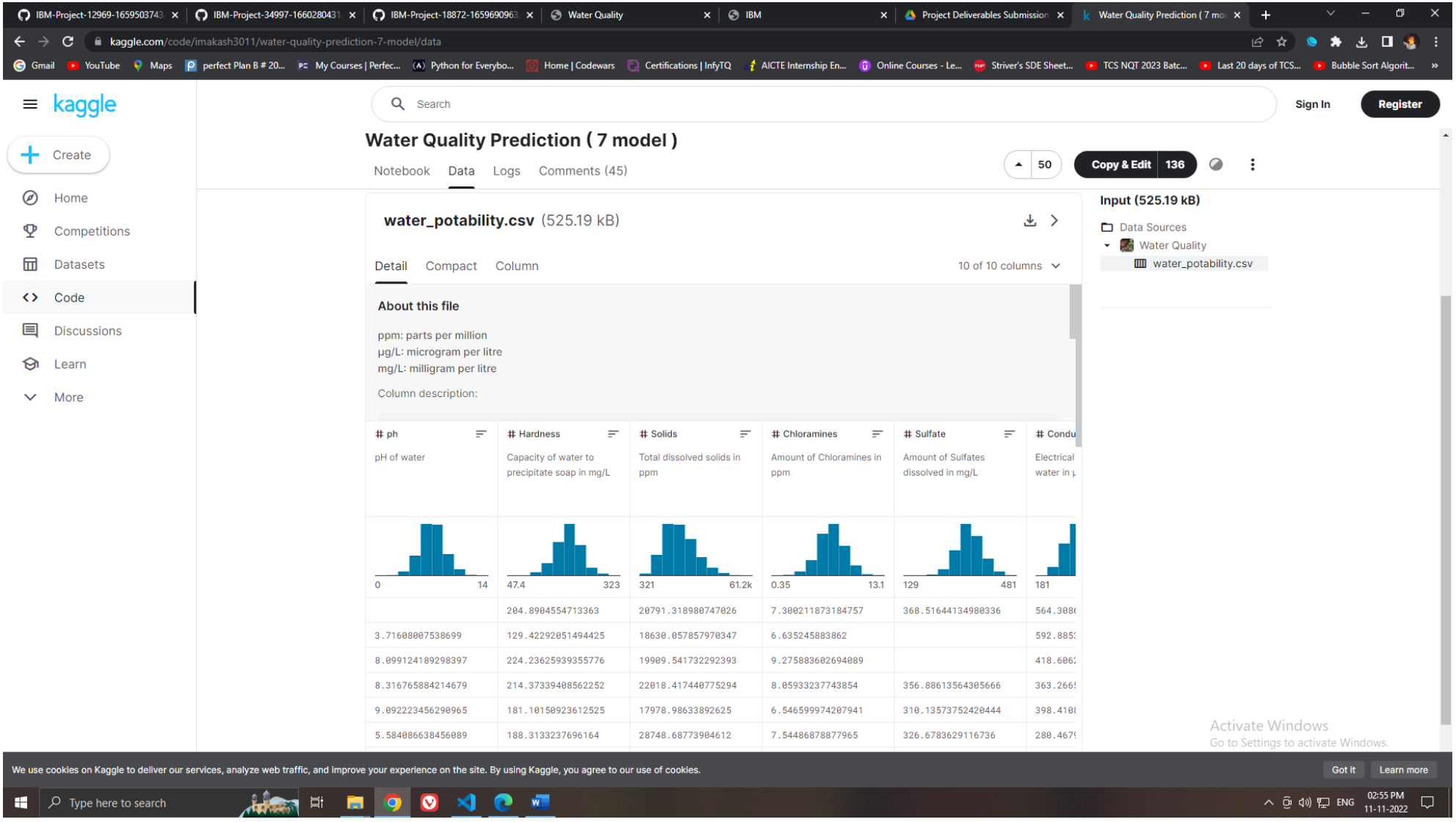
<footer>

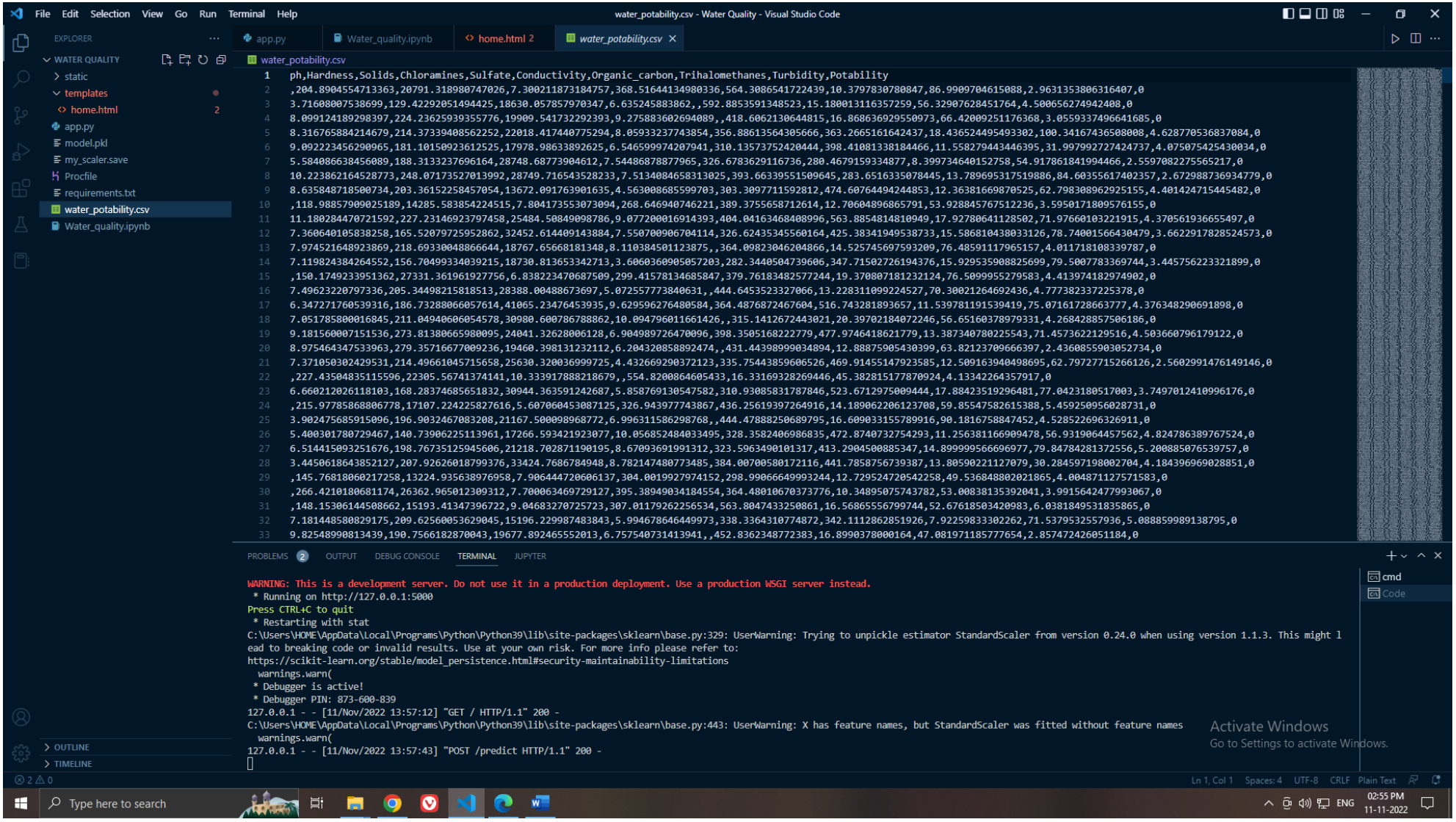
Team Members: Arvind P(142219205009) - Gowtham P(142219205025) - Leonard M(142219205053) - Arunprasath S (142219205008)
for any queries contact
gowthampponraj@gmail.com
<u>Github link</u>
</footer>
</body>
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Open file in editor (ctrl + click)
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:329: UserWarning: Trying to unpickle estimator StandardScaler from version 0.24.0 when using version 1.1.3. This might lead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
warnings.warn(
* Debugger is active!
* Debugger PIN: 873-600-839
127.0.0.1 - - [11/Nov/2022 13:57:12] "GET / HTTP/1.1" 200 -
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:443: UserWarning: X has feature names, but StandardScaler was fitted without feature names
warnings.warn(
127.0.0.1 - - [11/Nov/2022 13:57:43] "POST /predict HTTP/1.1" 200 -
cmd
Code
OUTLINE
TIMELINE
Activate Windows
Go to Settings to activate Windows.
Ln 77, Col 90 Spaces: 2 UTF-8 CRLF HTML
Type here to search
ENG
02:48 PM
11-11-2022

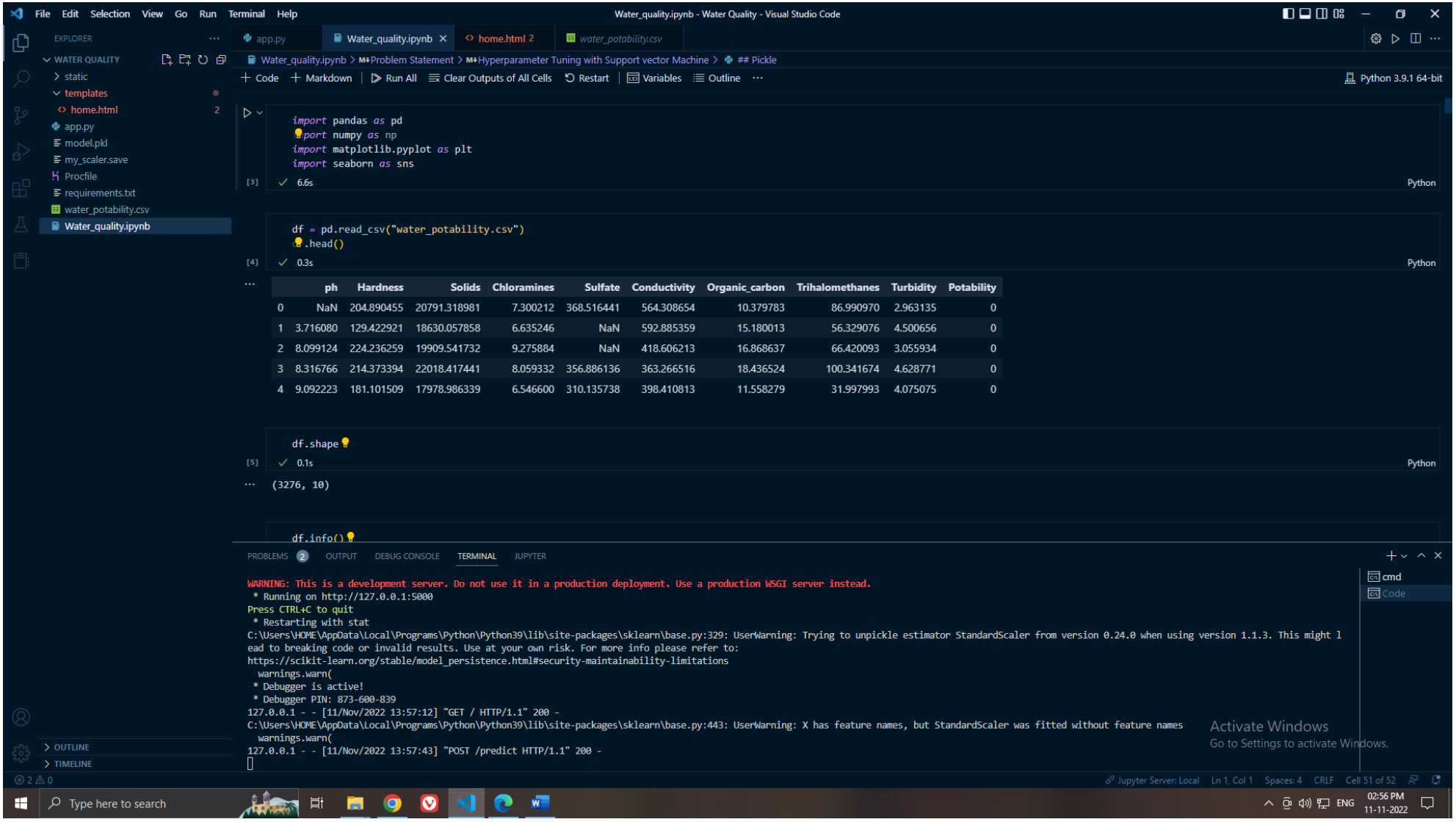

IBM-Project-12969-1659503743/
IBM-Project-34997-1660280431/
IBM-Project-18872-1659690963/
Water Quality
IBM
Project Deliverables Submission
127.0.0.1:5000/predict
Gmail
YouTube
Maps
perfect Plan B # 20...
My Courses | Perfec...
Python for Everybo...
Home | Codewars
Certifications | InfyTQ
AICTE Internship En...
Online Courses - Le...
Striver's SDE Sheet...
TCS NQT 2023 Batc...
Last 20 days of TCS...
Bubble Sort Algorit...
Water Quality prediction
By PNT2022TMID21875
Enter values
pH value :
pH value
Hardness :
Hardness
Solids :
Solids
Chloramines :
Chloramines
Sulfate :
Sulfate
Conductivity :
Conductivity
Organic_carbon :
Organic_carbon
Trihalomethanes :
Trihalomethanes
Turbidity :
Turbidity
Water quality Test
water is safe for human consumption
Team Members: Arvind P(142219205009) - Gowtham P(142219205025) - Leonard M(142219205053) - Arunprasath S (142219205008)
for any queries contact gowthampponraj@gmail.com
Github link
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
02:49 PM
11-11-2022

Data Collection and Preprocessing:

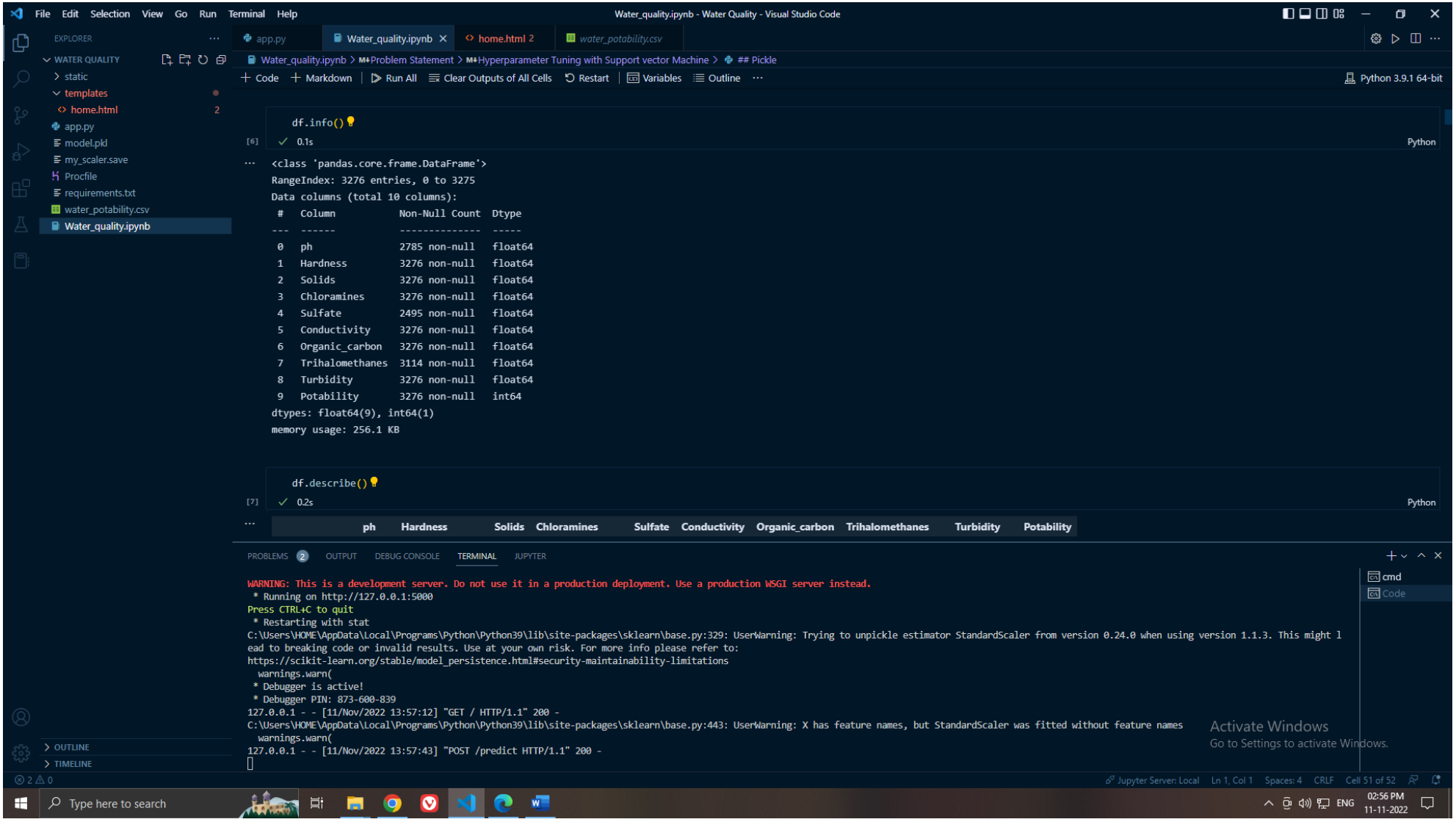
- We have collected data from various sources like sample readings from our college chemistry lab , Kaggle and sources from google
- We have also wrote a preprocessing code to clean , transform , remove the duplicates and intergrate (consolidate) into a single dataset to feed it into the ML model to train the model

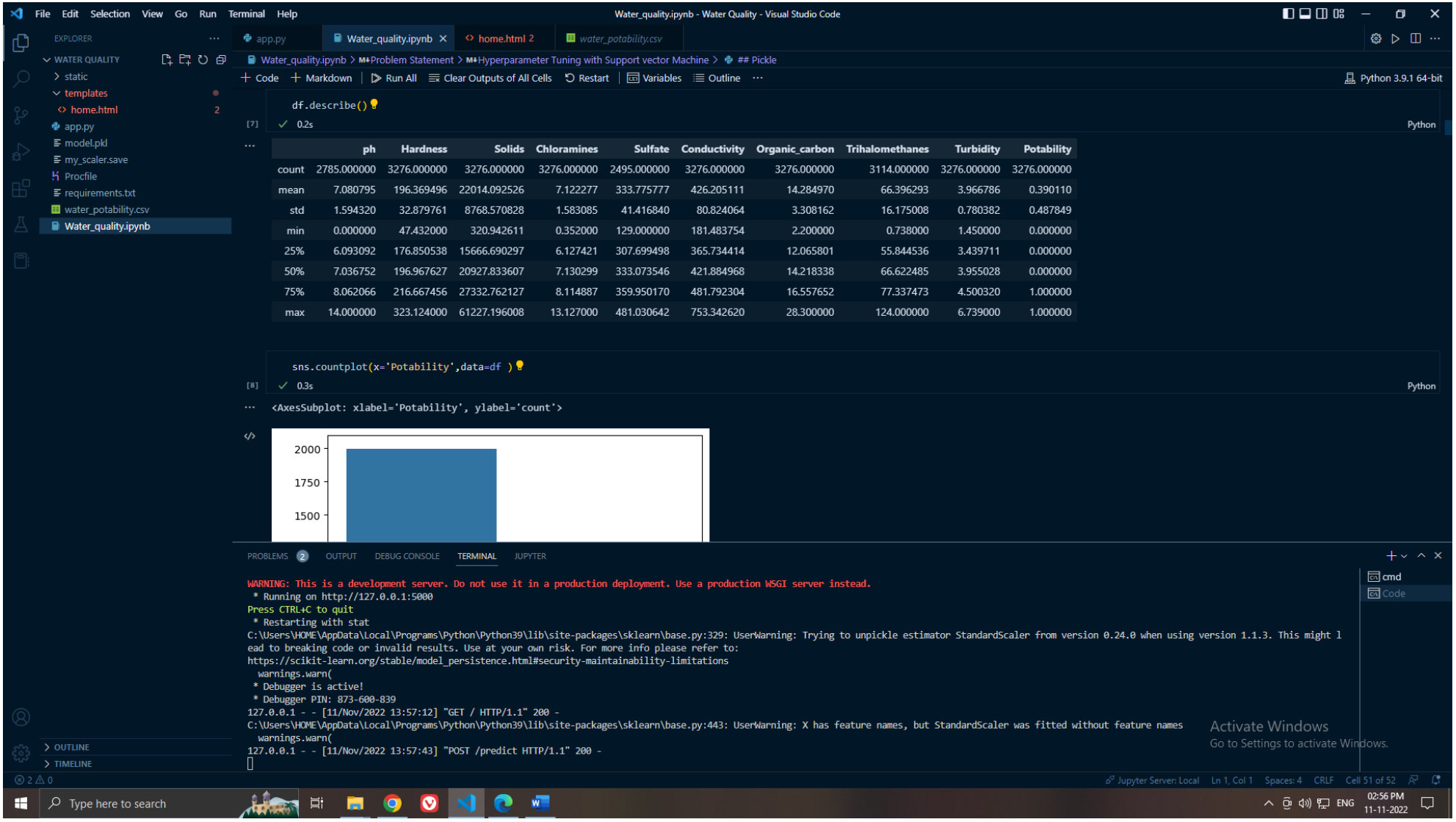


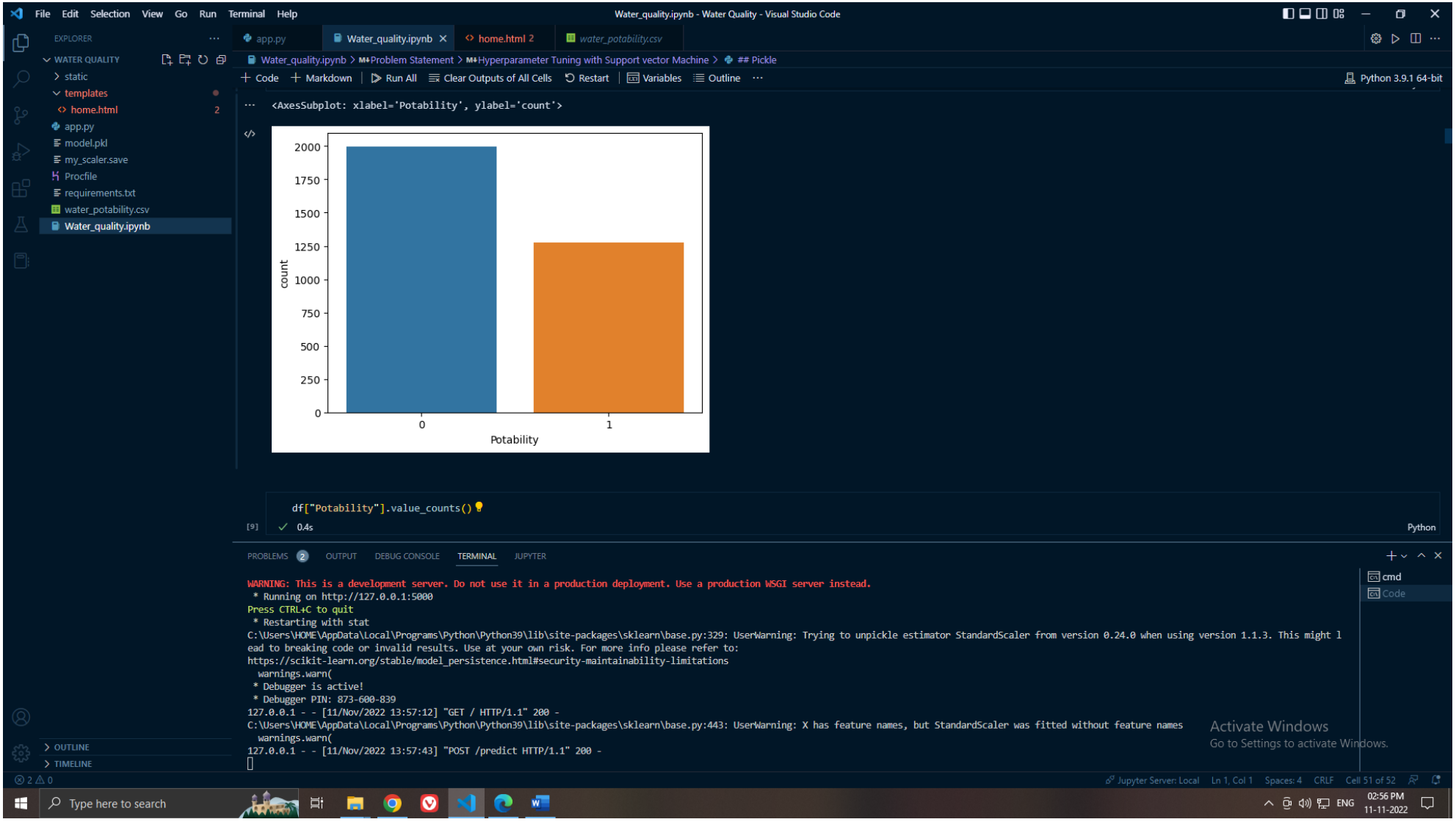

File Edit Selection View Go Run Terminal Help
water_potability.csv - Water Quality - Visual Studio Code
EXPLORER
WATER QUALITY
static
templates
home.html 2
app.py
model.pkl
my_scaler.save
Procfile
requirements.txt
water_potability.csv
Water_quality.ipynb
app.py
Water_quality.ipynb
home.html 2
water_potability.csv
water_potability.csv
ph,Hardness,Solids,Chloramines,Sulfate,Conductivity,Organic_carbon,Trihalomethanes,Turbidity,Potability
,204.8904554713363,20791.318980747026,7.300211873184757,368.51644134980336,564.3086541722439,10.3797830780847,86.9909704615088,2.9631353806316407,0
3.71608007538699,129.42292051494425,18630.057857970347,6.635245883862,,592.8853591348523,15.180013116357259,56.32907628451764,4.500656274942408,0
8.099124189298397,224.23625939355776,19909.541732292393,9.275883602694089,,418.6062130644815,16.868636929550973,66.42009251176368,3.0559337496641685,0
8.316765884214679,214.37339408562252,22018.417440775294,8.059332377438544,356.88613564305666,363.2665161642437,18.436524495493302,100.34167436508008,4.628770536837084,0
9.092223456290965,181.10150923612525,17978.98633892625,6.546599974207941,310.13573752420444,398.41081338184466,11.558279443446395,31.997992727424737,4.075075425430034,0
5.584086638456089,188.3133237696164,28748.68773904612,7.544868788779 65,326.6783629116736,280.4679159334877,8.399734640152758,54.917861841994466,2.5597082275565217,0
10.223862164528773,248.07173527013992,28749.716543528233,7.5134084658313025,393.66339551509645,283.6516335078445,13.789695317519886,84.60355617402357,2.672988736934779,0
8.635848718500734,203.36152258457054,13672.091763901635,4.563008685599703,303.3097711592812,474.60764494244853,12.36381669870525,62.798308962925155,4.401424715445482,0
,118.98857909025189,14285.583854224515,7.804173553073094,268.6469407462 21,389.3755658712614,12.70604896865791,53.928845767512236,3.5950171809576155,0
11.180284470721592,227.23146923797458,25484.50849098786,9.077200016914393,404.04163468408996,563.8854814810949,17.92780641128502,71.97660103221915,4.370561936655497,0
7.360640105838258,165.52079725952862,32452.614409143884,7.550700906704114,326.62435345560164,425.38341949538733,15.586810438033126,78.74001566430479,3.6622917828524573,0
7.974521648923869,218.69330048866644,18767.65668181348,8.110384501123875,,364.09823046204866,14.525745697593209,76.48591117965157,4.011718108339787,0
7.119824384264552,156.70499334039215,18730.813653342713,3.6060360905057203,282.3440504739606,347.71502726194376,15.929535908825699,79.5007783369744,3.445756223321899,0
,150.1749233951362,27331.361961927756,6.838223470687509,299.41578134685847,379.76183482577244,19.370807181232124,76.5099955279583,4.413974182974902,0
7.49623220797336,205.34498215818513,28388.00488673697,5.072557773840631,,444.6453523327066,13.228311099224527,70.30021264692436,4.777382337225378,0
6.347271760539316,186.73288066057614,41065.23476453935,9.629596276480584,364.4876872467604,516.743281893657,11.539781191539419,75.07161728663777,4.376348290691898,0
7.051785800016845,211.04940606054578,30980.600786788862,10.094796011661426,,315.1412672443021,20.39702184072246,56.65160378979331,4.268428857506186,0
9.181560007151536,273.81380665980095,24041.32628006128,6.904989726470096,398.3505168222779,477.9746418621779,13.387340780225543,71.4573622129516,4.503660796179122,0
8.975464347533963,279.35716677009236,19460.398131232112,6.204320858892474,,431.44398999034894,12.88875905430399,63.82123709666397,2.4360855903052734,0
7.371050302429531,214.49661045715658,25630.320036999725,4.432669290372123,335.75443859606526,469.91455147923585,12.509163940498695,62.79727715266126,2.5602991476149146,0
,227.43504835115596,22305.56741374141,10.333917888218679,,554.8200864605433,16.33169328269446,45.382815177870924,4.13342264357917,0
6.660212026118103,168.28374685651832,30944.363591242687,5.858769130547582,310.93085831787846,523.6712975009444,17.88423519296481,77.0423180517003,3.7497012410996176,0
,215.97785868806778,17107.224225827616,5.607060453087125,326.9439777 43867,436.25619397264916,14.189062206123708,59.85547582615388,5.459250950 28731,0
3.902475685915096,196.9032467083208,21167.500098968772,6.996311586298768,,444.47888250689795,16.6090331557899 16,90.1816758847452,4.528522696326911,0
5.400301780729467,140.73906225113961,17266.593421923077,10.056852484033495,328.3582406986835,472.8740732754293,11.256381166909478,56.9319064457562,4.824786389767524,0
6.514415093251676,198.76735125945606,21218.702871190195,8.670936911991312,323.5963490101317,413.2904500885347,14.899999566696977,79.84784281372556,5.200885076539757,0
3.4450618643852127,207.92626018799376,33424.7686784948,8.782147480773485,384.00700580172116,441.7858756739387,13.80590221127079,30.284597198002704,4.184396969028851,0
,145.76818060217258,13224.935638976958,7.906444720606137,304.0019927974152,298.99066649993244,12.729524720542258,49.536848802021865,4.004871127571583,0
,266.4210180681174,26362.965012309312,7.700063469729127,395.38949034184554,364.48010670373776,10.34895075743782,53.00838135392041,3.9915642477993067,0
,148.15306144508662,15193.41347396722,9.04683270725723,307.01179262256534,563.8047433250861,16.568655567997 44,52.67618503420983,6.038184953183586 5,0
7.1814485808291 75,209.625600536290 45,15196.229987483843,5.994678646449973,338.3364310774872,342.1112862851926,7.92259833302262,71.5379532557936,5.088859989138795,0
9.82548990813439,190.7566182870043,19677.892465552013,6.757540731413941,,452.8362348772383,16.8990378000164,47.081971185777654,2.857472426051184,0
PROBLEMS 2
OUTPUT
DEBUG CONSOLE
TERMINAL
JUPYTER
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:329: UserWarning: Trying to unpickle estimator StandardScaler from version 0.24.0 when using version 1.1.3. This might l
ead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
warnings.warn(
* Debugger is active!
* Debugger PIN: 873-600-839
127.0.0.1 - - [11/Nov/2022 13:57:12] "GET / HTTP/1.1" 200 -
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:443: UserWarning: X has feature names, but StandardScaler was fitted without feature names
warnings.warn(
127.0.0.1 - - [11/Nov/2022 13:57:43] "POST /predict HTTP/1.1" 200 -
cmd
Code
Activate Windows
Go to Settings to activate Windows.
OUTLINE
TIMELINE
Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Plain Text
Type here to search
ENG
02:55 PM
11-11-2022



	ph	Hardness	Solids	Chloramines	Sulfate	Conductivity	Organic_carbon	Trihalomethanes	Turbidity	Potability
0	NaN	204.890455	20791.318981	7.300212	368.516441	564.308654	10.379783	86.990970	2.963135	0
1	3.716080	129.422921	18630.057858	6.635246	NaN	592.885359	15.180013	56.329076	4.500656	0
2	8.099124	224.236259	19909.541732	9.275884	NaN	418.606213	16.868637	66.420093	3.055934	0
3	8.316766	214.373394	22018.417441	8.059332	356.886136	363.266516	18.436524	100.341674	4.628771	0
4	9.092223	181.101509	17978.986339	6.546600	310.135738	398.410813	11.558279	31.997993	4.075075	0


File Edit Selection View Go Run Terminal Help
Water_quality.ipynb - Water Quality - Visual Studio Code
EXPLORER
WATER QUALITY
static
templates
home.html 2
app.py
model.pkl
my_scaler.save
Procfile
requirements.txt
water_potability.csv
Water_quality.ipynb
app.py
Water_quality.ipynb
home.html 2
water_potability.csv
Water_quality.ipynb > Problem Statement > Hyperparameter Tuning with Support vector Machine > ## Pickle
Code
Markdown
Run All
Clear Outputs of All Cells
Restart
Variables
Outline
Python 3.9.1 64-bit
df.info()
[6] 0.1s
Python
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3276 entries, 0 to 3275
Data columns (total 10 columns):
Column Non-Null Count Dtype
--- ------ -------------- -----
0 ph 2785 non-null float64
1 Hardness 3276 non-null float64
2 Solids 3276 non-null float64
3 Chloramines 3276 non-null float64
4 Sulfate 2495 non-null float64
5 Conductivity 3276 non-null float64
6 Organic_carbon 3276 non-null float64
7 Trihalomethanes 3114 non-null float64
8 Turbidity 3276 non-null float64
9 Potability 3276 non-null int64
dtypes: float64(9), int64(1)
memory usage: 256.1 KB
df.describe()
[7] 0.2s
Python
ph Hardness Solids Chloramines Sulfate Conductivity Organic_carbon Trihalomethanes Turbidity Potability
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:329: UserWarning: Trying to unpickle estimator StandardScaler from version 0.24.0 when using version 1.1.3. This might l
ead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
warnings.warn(
* Debugger is active!
* Debugger PIN: 873-600-839
127.0.0.1 - - [11/Nov/2022 13:57:12] "GET / HTTP/1.1" 200 -
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:443: UserWarning: X has feature names, but StandardScaler was fitted without feature names
warnings.warn(
127.0.0.1 - - [11/Nov/2022 13:57:43] "POST /predict HTTP/1.1" 200 -
cmd
Code
OUTLINE
TIMELINE
Activate Windows
Go to Settings to activate Windows.
Jupyter Server: Local Ln 1, Col 1 Spaces: 4 CRLF Cell 51 of 52
Type here to search
ENG
02:56 PM
11-11-2022


File Edit Selection View Go Run Terminal Help
Water_quality.ipynb - Water Quality - Visual Studio Code
EXPLORER
WATER QUALITY
static
templates
home.html 2
app.py
model.pkl
my_scaler.save
Procfile
requirements.txt
water_potability.csv
Water_quality.ipynb
app.py
Water_quality.ipynb
home.html 2
water_potability.csv
Water_quality.ipynb > Problem Statement > Hyperparameter Tuning with Support vector Machine > ## Pickle
Code
Markdown
Run All
Clear Outputs of All Cells
Restart
Variables
Outline
Python 3.9.1 64-bit
df.describe()
0.2s
Python
ph Hardness Solids Chloramines Sulfate Conductivity Organic_carbon Trihalomethanes Turbidity Potability
count 2785.000000 3276.000000 3276.000000 3276.000000 2495.000000 3276.000000 3276.000000 3114.000000 3276.000000 3276.000000
mean 7.080795 196.369496 22014.092526 7.122277 333.775777 426.205111 14.284970 66.396293 3.966786 0.390110
std 1.594320 32.879761 8768.570828 1.583085 41.416840 80.824064 3.308162 16.175008 0.780382 0.487849
min 0.000000 47.432000 320.942611 0.352000 129.000000 181.483754 2.200000 0.738000 1.450000 0.000000
25% 6.093092 176.850538 15666.690297 6.127421 307.699498 365.734414 12.065801 55.844536 3.439711 0.000000
50% 7.036752 196.967627 20927.833607 7.130299 333.073546 421.884968 14.218338 66.622485 3.955028 0.000000
75% 8.062066 216.667456 27332.762127 8.114887 359.950170 481.792304 16.557652 77.337473 4.500320 1.000000
max 14.000000 323.124000 61227.196008 13.127000 481.030642 753.342620 28.300000 124.000000 6.739000 1.000000
sns.countplot(x='Potability',data=df)
0.3s
Python
<AxesSubplot: xlabel='Potability', ylabel='count'>
2000
1750
1500
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:329: UserWarning: Trying to unpickle estimator StandardScaler from version 0.24.0 when using version 1.1.3. This might lead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
warnings.warn(
* Debugger is active!
* Debugger PIN: 873-600-839
127.0.0.1 - - [11/Nov/2022 13:57:12] "GET / HTTP/1.1" 200 -
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:443: UserWarning: X has feature names, but StandardScaler was fitted without feature names
warnings.warn(
127.0.0.1 - - [11/Nov/2022 13:57:43] "POST /predict HTTP/1.1" 200 -
cmd
Code
OUTLINE
TIMELINE
Activate Windows
Go to Settings to activate Windows.
Jupyter Server: Local Ln 1, Col 1 Spaces: 4 CRLF Cell 51 of 52
Type here to search
ENG
02:56 PM
11-11-2022


File Edit Selection View Go Run Terminal Help
Water_quality.ipynb - Water Quality - Visual Studio Code
EXPLORER
WATER QUALITY
static
templates
home.html
app.py
model.pkl
my_scaler.save
Procfile
requirements.txt
water_potability.csv
Water_quality.ipynb
app.py
Water_quality.ipynb
home.html 2
water_potability.csv
Water_quality.ipynb > Problem Statement > Hyperparameter Tuning with Support vector Machine > ## Pickle
Code
Markdown
Run All
Clear Outputs of All Cells
Restart
Variables
Outline
Python 3.9.1 64-bit
<AxesSubplot: xlabel='Potability', ylabel='count'>
count
Potability
df["Potability"].value_counts()
0.4s
Python
PROBLEMS 2
OUTPUT
DEBUG CONSOLE
TERMINAL
JUPYTER
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:329: UserWarning: Trying to unpickle estimator StandardScaler from version 0.24.0 when using version 1.1.3. This might l
ead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
warnings.warn(
* Debugger is active!
* Debugger PIN: 873-600-839
127.0.0.1 - - [11/Nov/2022 13:57:12] "GET / HTTP/1.1" 200 -
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:443: UserWarning: X has feature names, but StandardScaler was fitted without feature names
warnings.warn(
127.0.0.1 - - [11/Nov/2022 13:57:43] "POST /predict HTTP/1.1" 200 -
cmd
Code
Activate Windows
Go to Settings to activate Windows.
OUTLINE
TIMELINE
Type here to search
ENG
02:56 PM
11-11-2022