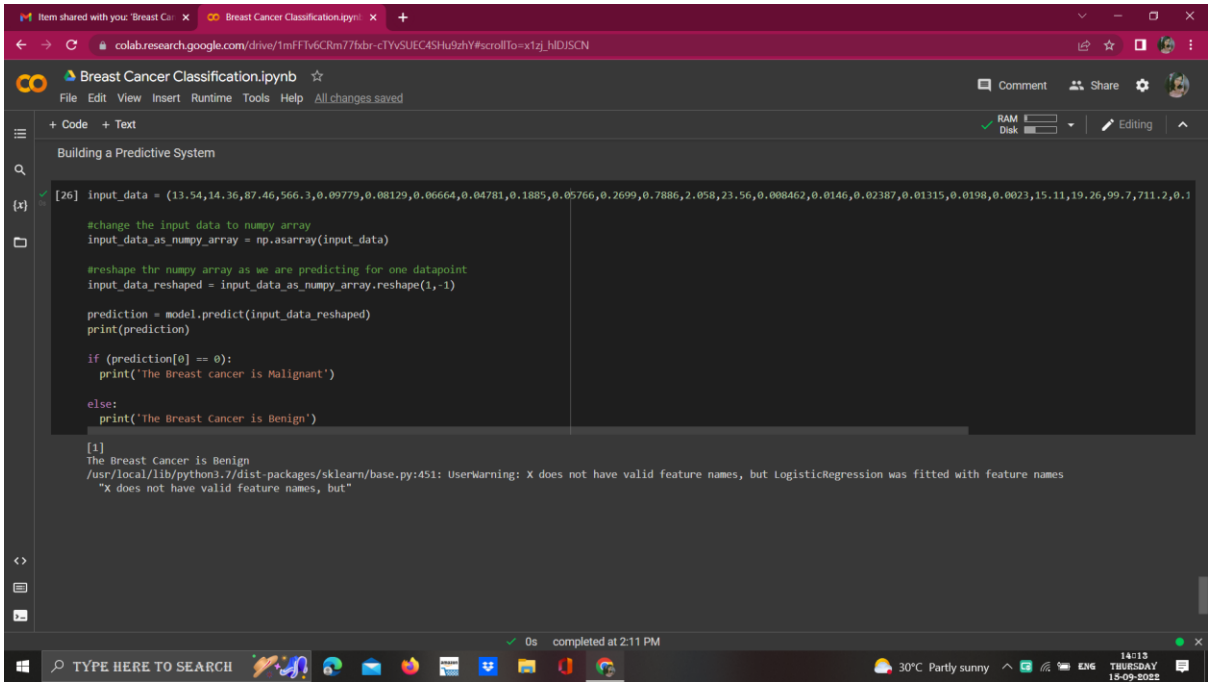
CMS SCREENS


Breast Cancer Classification.ipynb
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Building a Predictive System
[26] input_data = (13.54,14.36,87.46,566.3,0.09779,0.08129,0.06664,0.04781,0.1885,0.05766,0.2699,0.7886,2.058,23.56,0.008462,0.0146,0.02387,0.01315,0.0198,0.0023,15.11,19.26,99.7,711.2,0.1
#change the input data to numpy array
input_data_as_numpy_array = np.asarray(input_data)
#reshape thr numpy array as we are predicting for one datapoint
input_data_reshaped = input_data_as_numpy_array.reshape(1,-1)
prediction = model.predict(input_data_reshaped)
print(prediction)
if (prediction[0] == 0):
print('The Breast cancer is Malignant')
else:
print('The Breast Cancer is Benign')
[1]
The Breast Cancer is Benign
/usr/local/lib/python3.7/dist-packages/sklearn/base.py:451: UserWarning: X does not have valid feature names, but LogisticRegression was fitted with feature names
"X does not have valid feature names, but"
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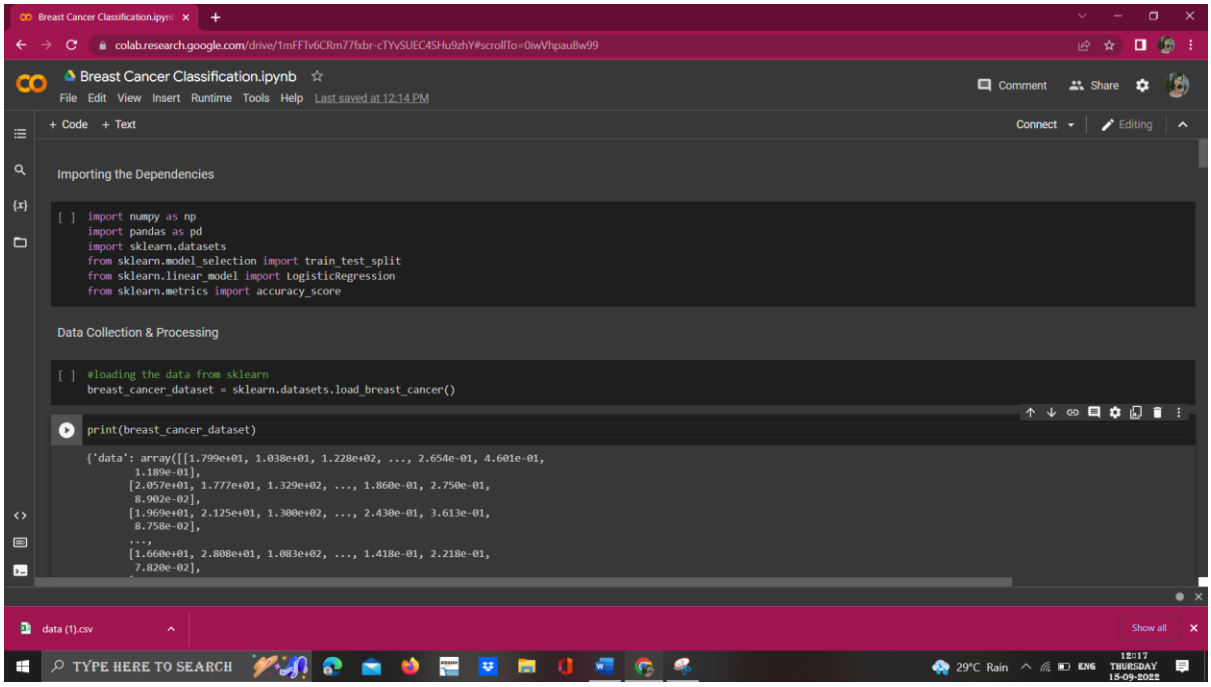
Breast Cancer Classification.ipynb
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Importing the Dependencies
import numpy as np
import pandas as pd
import sklearn.datasets
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score
Data Collection & Processing
#loading the data from sklearn
breast_cancer_dataset = sklearn.datasets.load_breast_cancer()
print(breast_cancer_dataset)
{'data': array([[1.799e+01, 1.038e+01, 1.228e+02, ..., 2.654e-01, 4.601e-01,
1.189e-01],
[2.057e+01, 1.777e+01, 1.329e+02, ..., 1.860e-01, 2.750e-01,
8.902e-02],
[1.969e+01, 2.125e+01, 1.300e+02, ..., 2.430e-01, 3.613e-01,
8.758e-02],
...,
[1.660e+01, 2.808e+01, 1.083e+02, ..., 1.418e-01, 2.218e-01,
7.820e-02],
data (1).csv
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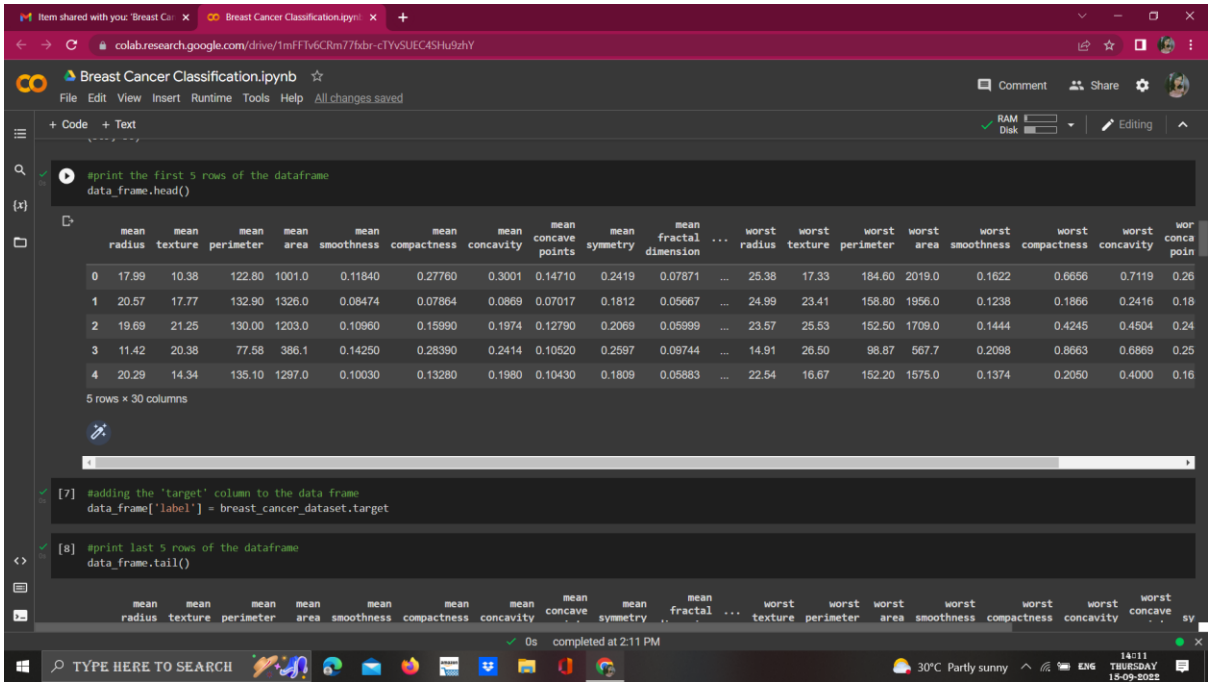
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Breast Cancer Classification.ipynb
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#print the first 5 rows of the dataframe
data_frame.head()
mean radius mean texture mean perimeter mean area mean smoothness mean compactness mean concavity mean concave points mean symmetry mean fractal dimension ... worst radius worst texture worst perimeter worst area worst smoothness worst compactness worst concavity wor conca poin
0 17.99 10.38 122.80 1001.0 0.11840 0.27760 0.3001 0.14710 0.2419 0.07871 ... 25.38 17.33 184.60 2019.0 0.1622 0.6656 0.7119 0.26
1 20.57 17.77 132.90 1326.0 0.08474 0.07864 0.0869 0.07017 0.1812 0.05667 ... 24.99 23.41 158.80 1956.0 0.1238 0.1866 0.2416 0.18
2 19.69 21.25 130.00 1203.0 0.10960 0.15990 0.1974 0.12790 0.2069 0.05999 ... 23.57 25.53 152.50 1709.0 0.1444 0.4245 0.4504 0.24
3 11.42 20.38 77.58 386.1 0.14250 0.28390 0.2414 0.10520 0.2597 0.09744 ... 14.91 26.50 98.87 567.7 0.2098 0.8663 0.6869 0.25
4 20.29 14.34 135.10 1297.0 0.10030 0.13280 0.1980 0.10430 0.1809 0.05883 ... 22.54 16.67 152.20 1575.0 0.1374 0.2050 0.4000 0.16
5 rows × 30 columns
[7] #adding the 'target' column to the data frame
data_frame['label'] = breast_cancer_dataset.target
[8] #print last 5 rows of the dataframe
data_frame.tail()
mean radius mean texture mean perimeter mean area mean smoothness mean compactness mean concavity mean concave mean symmetry mean fractal ... worst texture worst perimeter worst area worst smoothness worst compactness worst concavity worst concave sy
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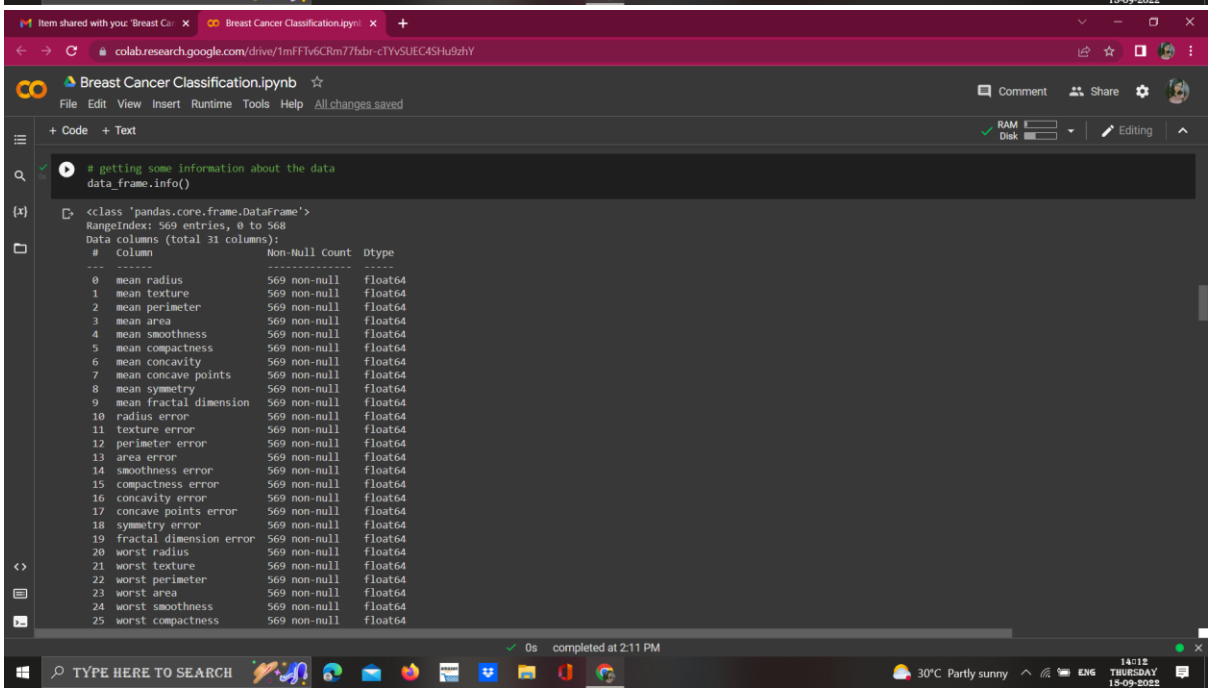
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Breast Cancer Classification.ipynb
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# getting some information about the data
data_frame.info()
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 569 entries, 0 to 568
Data columns (total 31 columns):
Column Non-Null Count Dtype
0 mean radius 569 non-null float64
1 mean texture 569 non-null float64
2 mean perimeter 569 non-null float64
3 mean area 569 non-null float64
4 mean smoothness 569 non-null float64
5 mean compactness 569 non-null float64
6 mean concavity 569 non-null float64
7 mean concave points 569 non-null float64
8 mean symmetry 569 non-null float64
9 mean fractal dimension 569 non-null float64
10 radius error 569 non-null float64
11 texture error 569 non-null float64
12 perimeter error 569 non-null float64
13 area error 569 non-null float64
14 smoothness error 569 non-null float64
15 compactness error 569 non-null float64
16 concavity error 569 non-null float64
17 concave points error 569 non-null float64
18 symmetry error 569 non-null float64
19 fractal dimension error 569 non-null float64
20 worst radius 569 non-null float64
21 worst texture 569 non-null float64
22 worst perimeter 569 non-null float64
23 worst area 569 non-null float64
24 worst smoothness 569 non-null float64
25 worst compactness 569 non-null float64
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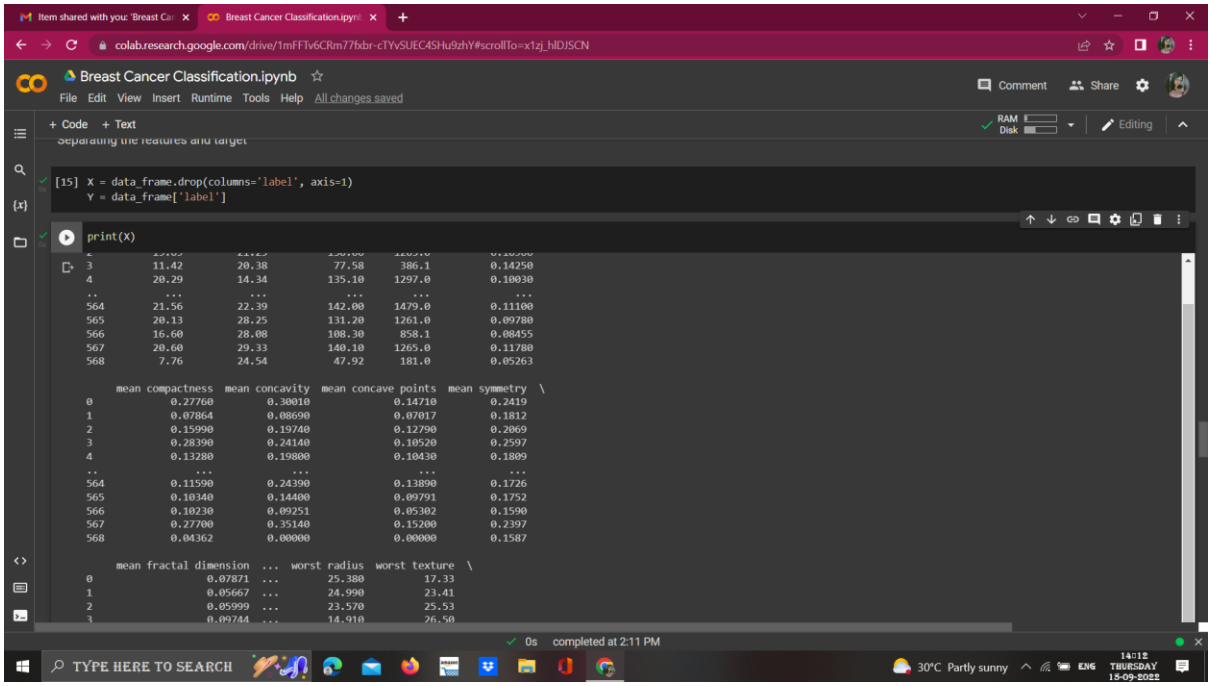
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Breast Cancer Classification.ipynb
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Editing
Separating the features and target
[15] X = data_frame.drop(columns='label', axis=1)
Y = data_frame['label']
print(X)
3 11.42 20.38 77.58 386.1 0.14250
4 20.29 14.34 135.10 1297.0 0.10030
.. ..
564 21.56 22.39 142.00 1479.0 0.11100
565 20.13 28.25 131.20 1261.0 0.09780
566 16.60 28.08 108.30 858.1 0.08455
567 20.60 29.33 140.10 1265.0 0.11780
568 7.76 24.54 47.92 181.0 0.05263
mean compactness mean concavity mean concave points mean symmetry \
0 0.27760 0.30010 0.14710 0.2419
1 0.07864 0.08690 0.07017 0.1812
2 0.15990 0.19740 0.12790 0.2069
3 0.28390 0.24140 0.10520 0.2597
4 0.13280 0.19800 0.10430 0.1809
.. ..
564 0.11590 0.24390 0.13890 0.1726
565 0.10340 0.14400 0.09791 0.1752
566 0.10230 0.09251 0.05302 0.1590
567 0.27700 0.35140 0.15200 0.2397
568 0.04362 0.00000 0.00000 0.1587
mean fractal dimension ... worst radius worst texture \
0 0.07871 ... 25.380 17.33
1 0.05667 ... 24.990 23.41
2 0.05999 ... 23.570 25.53
3 0.09744 ... 14.910 26.50
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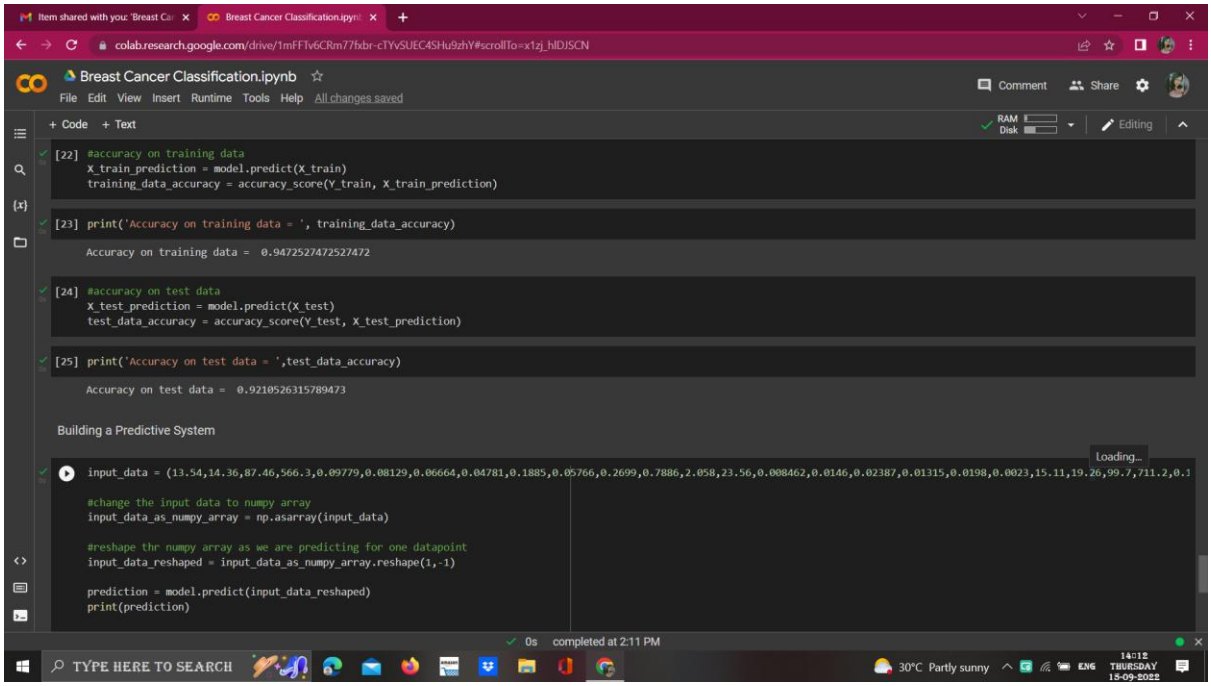
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colab.research.google.com/drive/1mFFTv6CRm77fxbr-cTYvSUEC4SHu9zhY#scrollTo=x1zj_hlDJSCN
Breast Cancer Classification.ipynb
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[22] #accuracy on training data
X_train_prediction = model.predict(X_train)
training_data_accuracy = accuracy_score(Y_train, X_train_prediction)
[23] print('Accuracy on training data = ', training_data_accuracy)
Accuracy on training data = 0.9472527472527472
[24] #accuracy on test data
X_test_prediction = model.predict(X_test)
test_data_accuracy = accuracy_score(Y_test, X_test_prediction)
[25] print('Accuracy on test data = ',test_data_accuracy)
Accuracy on test data = 0.9210526315789473
Building a Predictive System
Loading...
input_data = (13.54,14.36,87.46,566.3,0.09779,0.08129,0.06664,0.04781,0.1885,0.05766,0.2699,0.7886,2.058,23.56,0.008462,0.0146,0.02387,0.01315,0.0198,0.0023,15.11,19.26,99.7,711.2,0.1
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