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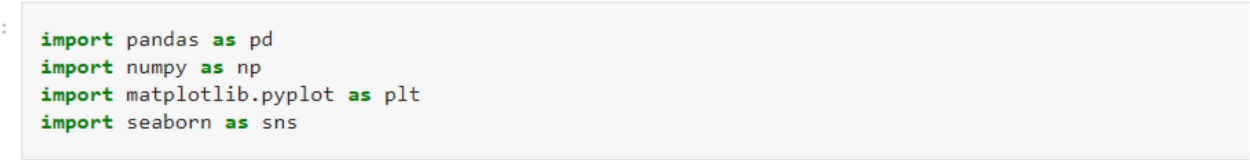
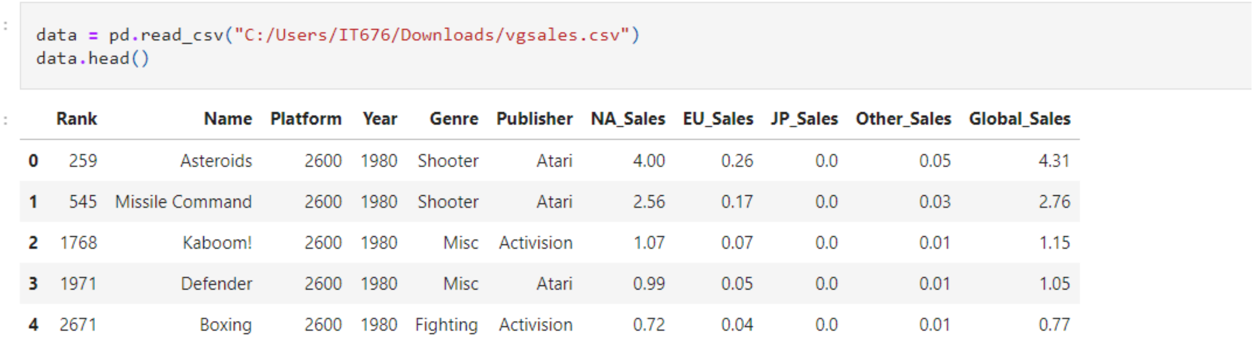
- **Project Title: Video Games sales Prediction**
  Dataset:
  https://www.kaggle.com/gregorut/videogamesales

Importing Python Libraries



```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

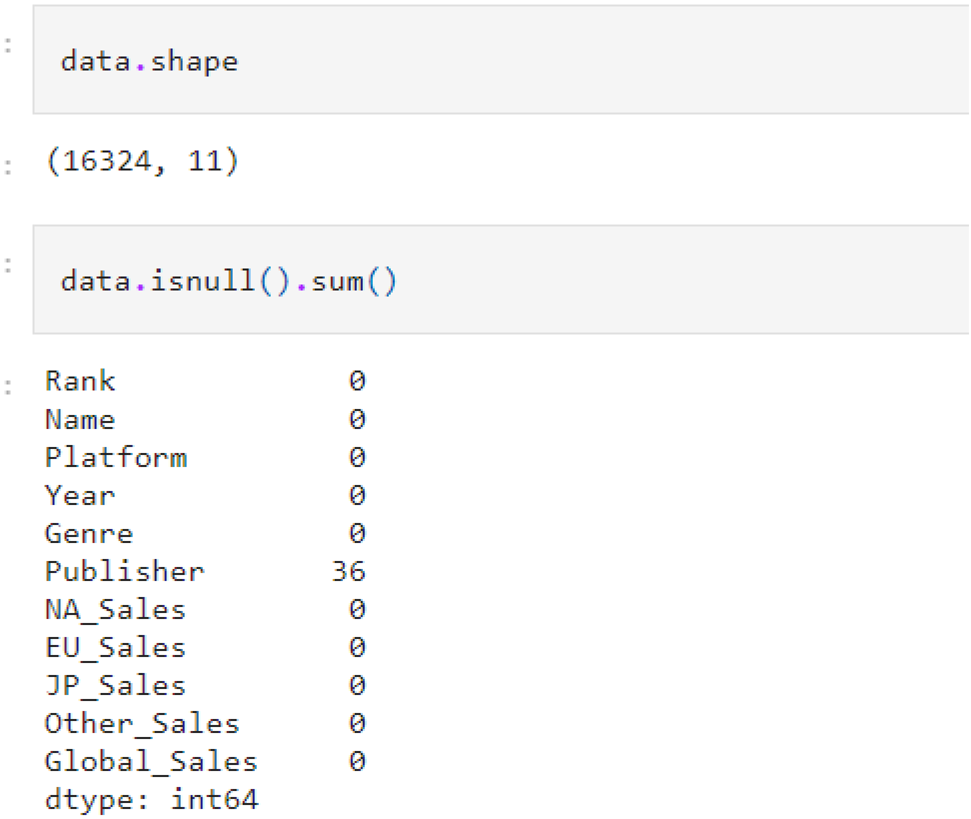
Importing datasets and printing datasets head:



```
data = pd.read_csv("C:/Users/IT676/Downloads/vgsales.csv")
data.head()
```

	Rank	Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales
0	259	Asteroids	2600	1980	Shooter	Atari	4.00	0.26	0.0	0.05	4.31
1	545	Missile Command	2600	1980	Shooter	Atari	2.56	0.17	0.0	0.03	2.76
2	1768	Kaboom!	2600	1980	Misc	Activision	1.07	0.07	0.0	0.01	1.15
3	1971	Defender	2600	1980	Misc	Atari	0.99	0.05	0.0	0.01	1.05
4	2671	Boxing	2600	1980	Fighting	Activision	0.72	0.04	0.0	0.01	0.77

Information about the datasets:



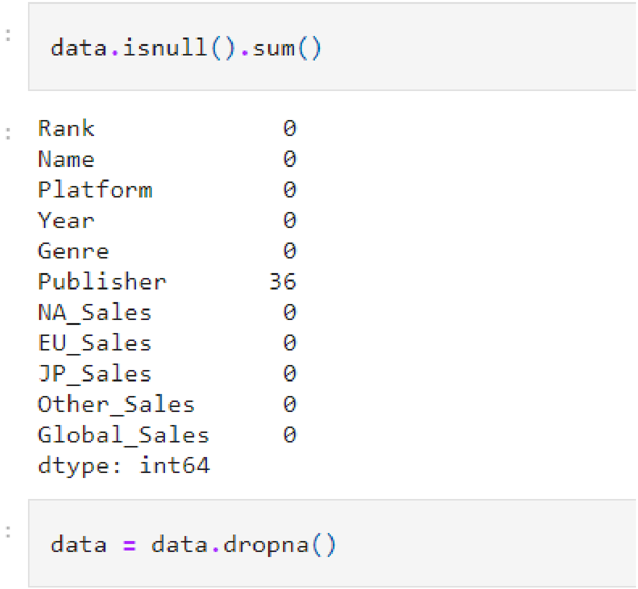
```
data.shape
```

```
(16324, 11)
```

```
data.isnull().sum()
```

```
Rank              0
Name              0
Platform          0
Year              0
Genre             0
Publisher        36
NA_Sales          0
EU_Sales          0
JP_Sales          0
Other_Sales       0
Global_Sales      0
dtype: int64
```

Checking and dropping null values:

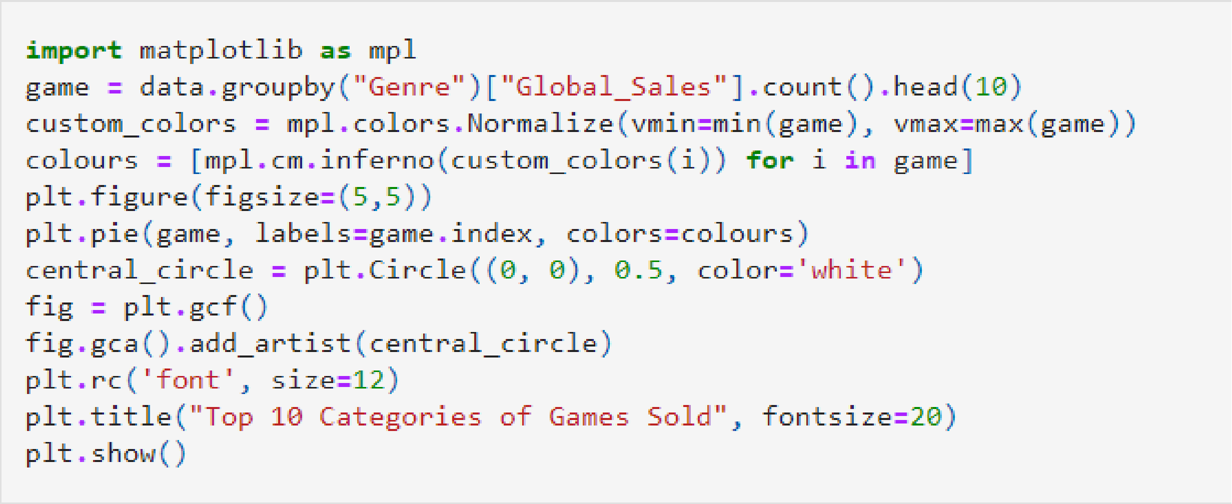


```
data.isnull().sum()
```

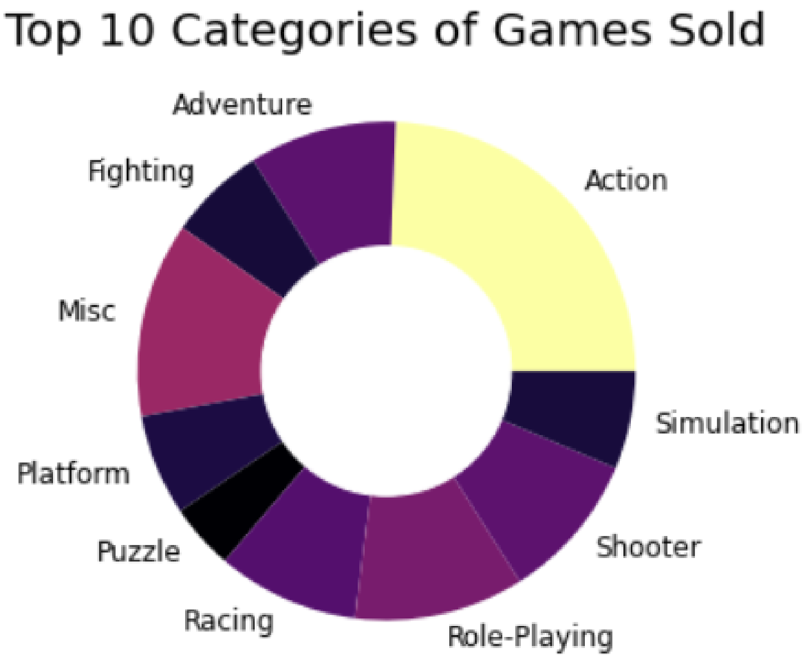
```
Rank              0
Name              0
Platform          0
Year              0
Genre             0
Publisher        36
NA_Sales          0
EU_Sales          0
JP_Sales          0
Other_Sales       0
Global_Sales      0
dtype: int64
```

```
data = data.dropna()
```

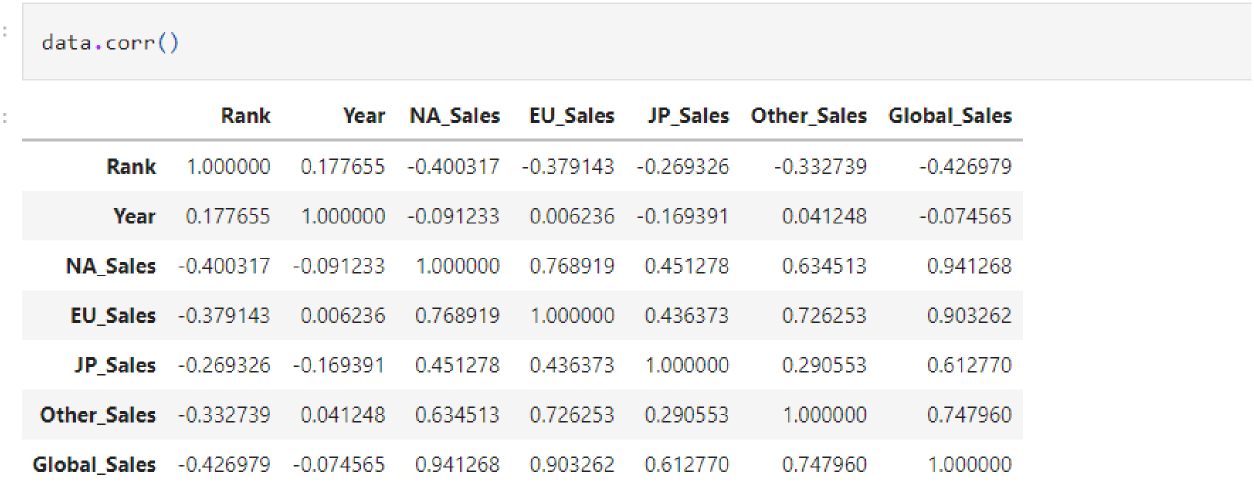
Visualizing the categories of games sold:



```
import matplotlib as mpl
game = data.groupby("Genre")["Global_Sales"].count().head(10)
custom_colors = mpl.colors.Normalize(vmin=min(game), vmax=max(game))
colours = [mpl.cm.inferno(custom_colors(i)) for i in game]
plt.figure(figsize=(5,5))
plt.pie(game, labels=game.index, colors=colours)
central_circle = plt.Circle((0, 0), 0.5, color='white')
fig = plt.gcf()
fig.gca().add_artist(central_circle)
plt.rc('font', size=12)
plt.title("Top 10 Categories of Games Sold", fontsize=20)
plt.show()
```

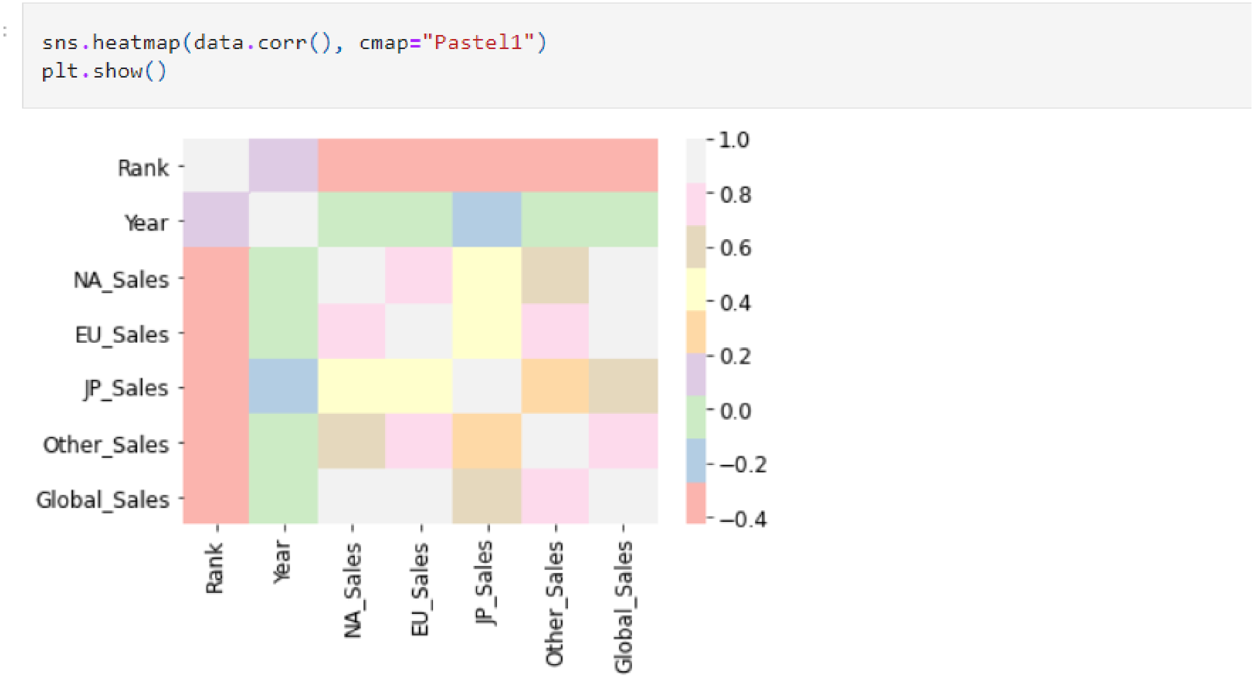


Building , printing , visualizing correlation matrix



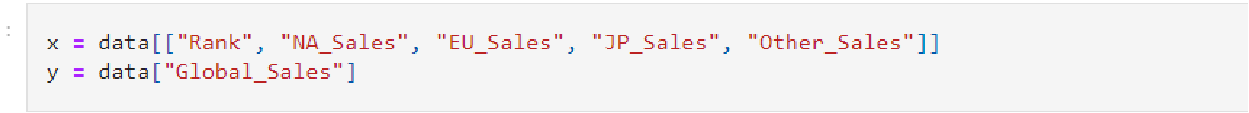
```
data.corr()
```

	Rank	Year	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales
Rank	1.000000	0.177655	-0.400317	-0.379143	-0.269326	-0.332739	-0.426979
Year	0.177655	1.000000	-0.091233	0.006236	-0.169391	0.041248	-0.074565
NA_Sales	-0.400317	-0.091233	1.000000	0.768919	0.451278	0.634513	0.941268
EU_Sales	-0.379143	0.006236	0.768919	1.000000	0.436373	0.726253	0.903262
JP_Sales	-0.269326	-0.169391	0.451278	0.436373	1.000000	0.290553	0.612770
Other_Sales	-0.332739	0.041248	0.634513	0.726253	0.290553	1.000000	0.747960
Global_Sales	-0.426979	-0.074565	0.941268	0.903262	0.612770	0.747960	1.000000

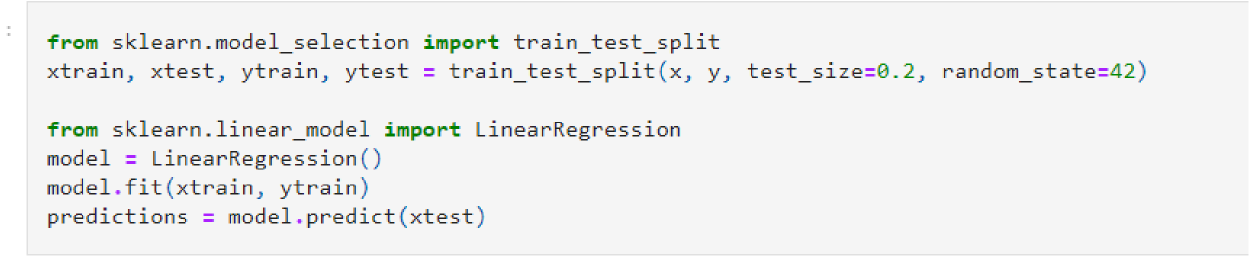


```
sns.heatmap(data.corr(), cmap="Pastel1")
plt.show()
```

Splitting data , building ML model:

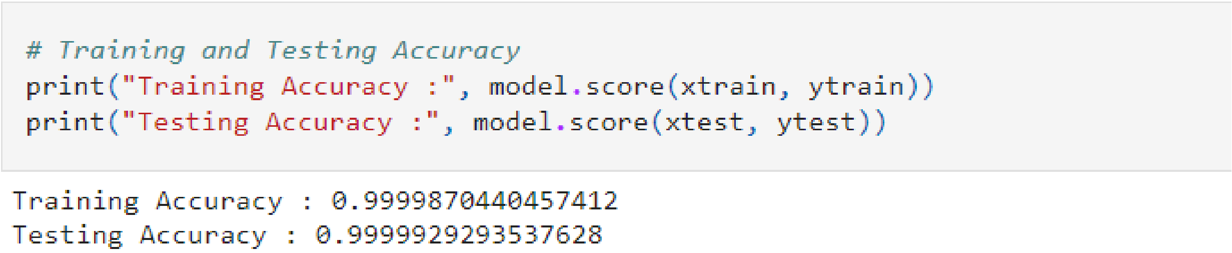


```
x = data[["Rank", "NA_Sales", "EU_Sales", "JP_Sales", "Other_Sales"]]
y = data["Global_Sales"]
```



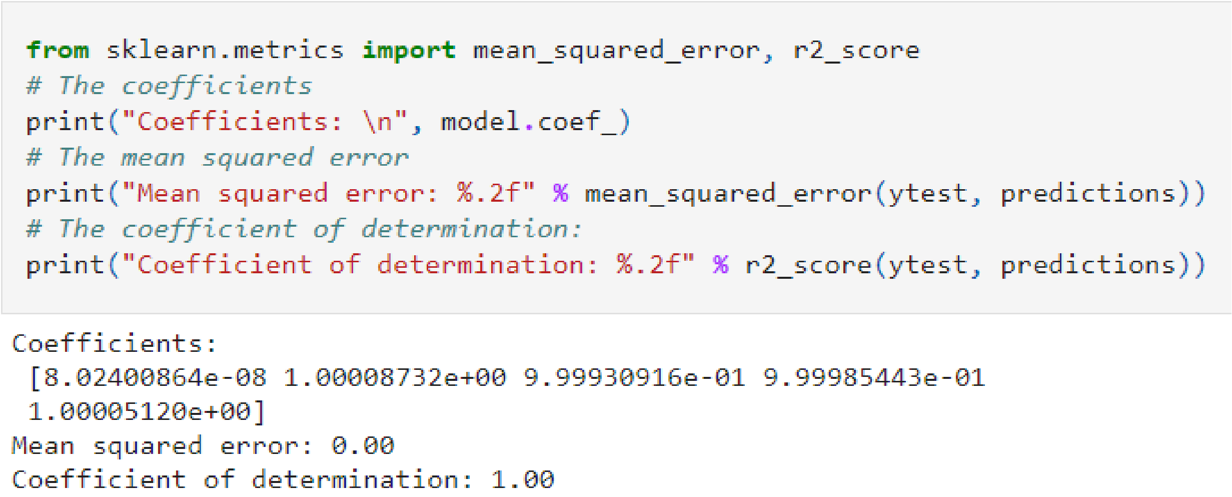
```
from sklearn.model_selection import train_test_split
xtrain, xtest, ytrain, ytest = train_test_split(x, y, test_size=0.2, random_state=42)

from sklearn.linear_model import LinearRegression
model = LinearRegression()
model.fit(xtrain, ytrain)
predictions = model.predict(xtest)
```

Accuracy, MSE, r2, coefficient Scores:



```
# Training and Testing Accuracy
print("Training Accuracy :", model.score(xtrain, ytrain))
print("Testing Accuracy :", model.score(xtest, ytest))
```

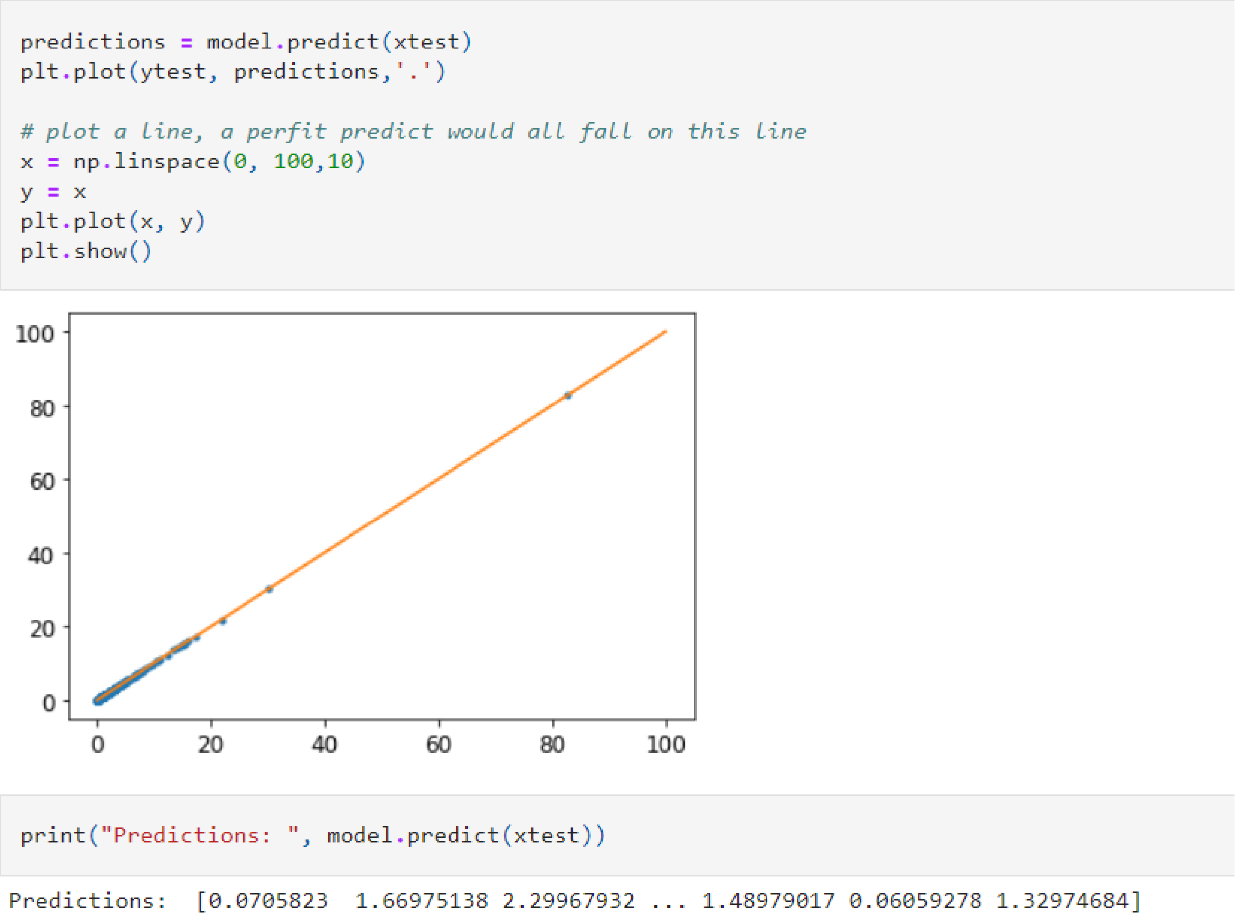
```
Training Accuracy : 0.9999870440457412
Testing Accuracy : 0.9999929293537628
```



```
from sklearn.metrics import mean_squared_error, r2_score
# The coefficients
print("Coefficients: \n", model.coef_)
# The mean squared error
print("Mean squared error: %.2f" % mean_squared_error(ytest, predictions))
# The coefficient of determination:
print("Coefficient of determination: %.2f" % r2_score(ytest, predictions))
```

```
Coefficients:
 [8.02400864e-08 1.00008732e+00 9.99930916e-01 9.99985443e-01
 1.00005120e+00]
Mean squared error: 0.00
Coefficient of determination: 1.00
```

Printing and plotting predictions:



```
predictions = model.predict(xtest)
plt.plot(ytest, predictions,'.')

# plot a line, a perfit predict would all fall on this line
x = np.linspace(0, 100,10)
y = x
plt.plot(x, y)
plt.show()
```

```
print("Predictions: ", model.predict(xtest))
```

```
Predictions:  [0.0705823  1.66975138 2.29967932 ... 1.48979017 0.06059278 1.32974684]
```