In [1]:
```
# importing necessary libraries
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
```

In [2]:
```
# loading the data
inflation_rate = r"C:\Users\SamDutse\Desktop\Curent Work\dollar_inflation.csv"
data = pd.read_csv(inflation_rate)
```

In [3]:
```
#viewing the top five rows of the data
data.head()
```

Out[3]:

	Year	Dollar Value	Buying Power	Inflation Rate
0	1800	1.00	1.00	2.44
1	1801	1.01	0.99	0.79
2	1802	0.85	1.18	-15.75
3	1803	0.90	1.11	5.61
4	1804	0.94	1.06	4.42

In [4]:
```
#viewing the last five rows of the data
data.tail()
```

Out[4]:

	Year	Dollar Value	Buying Power	Inflation Rate
218	2018	19.94	0.05	2.49
219	2019	20.29	0.05	1.76
220	2020	20.54	0.05	1.23
221	2021	21.51	0.05	4.70
222	2022	23.56	0.04	#VALUE!

In [5]:
```
#viewing the dimension of the data
data.shape
```

Out[5]:
```
(223, 4)
```

In [6]:
```
#getting info on the data columns, Non null value counts and data types
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 223 entries, 0 to 222
Data columns (total 4 columns):
 #   Column          Non-Null Count  Dtype  
---  ------          --------------  -----  
 0   Year            223 non-null    int64  
 1   Dollar Value    223 non-null    float64
 2   Buying Power    223 non-null    float64
 3   Inflation Rate  223 non-null    object 
dtypes: float64(2), int64(1), object(1)
memory usage: 7.1+ KB
```

In [7]:
```
#data cleaning
#removing the year 2022 due to the #VALUE
```

```
data = data[data["Year"] != 2022]
data
```

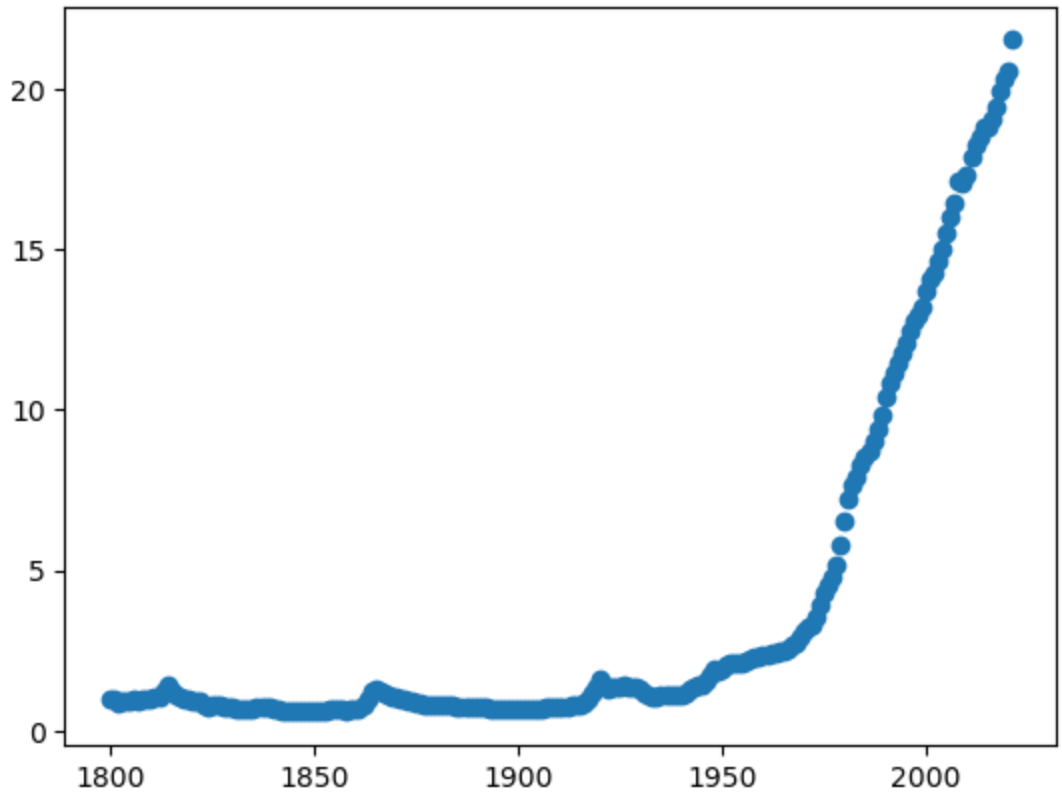
Out[7]:

	Year	Dollar Value	Buying Power	Inflation Rate
0	1800	1.00	1.00	2.44
1	1801	1.01	0.99	0.79
2	1802	0.85	1.18	-15.75
3	1803	0.90	1.11	5.61
4	1804	0.94	1.06	4.42
...	...	...	...	...
217	2017	19.45	0.05	2.13
218	2018	19.94	0.05	2.49
219	2019	20.29	0.05	1.76
220	2020	20.54	0.05	1.23
221	2021	21.51	0.05	4.70

222 rows × 4 columns

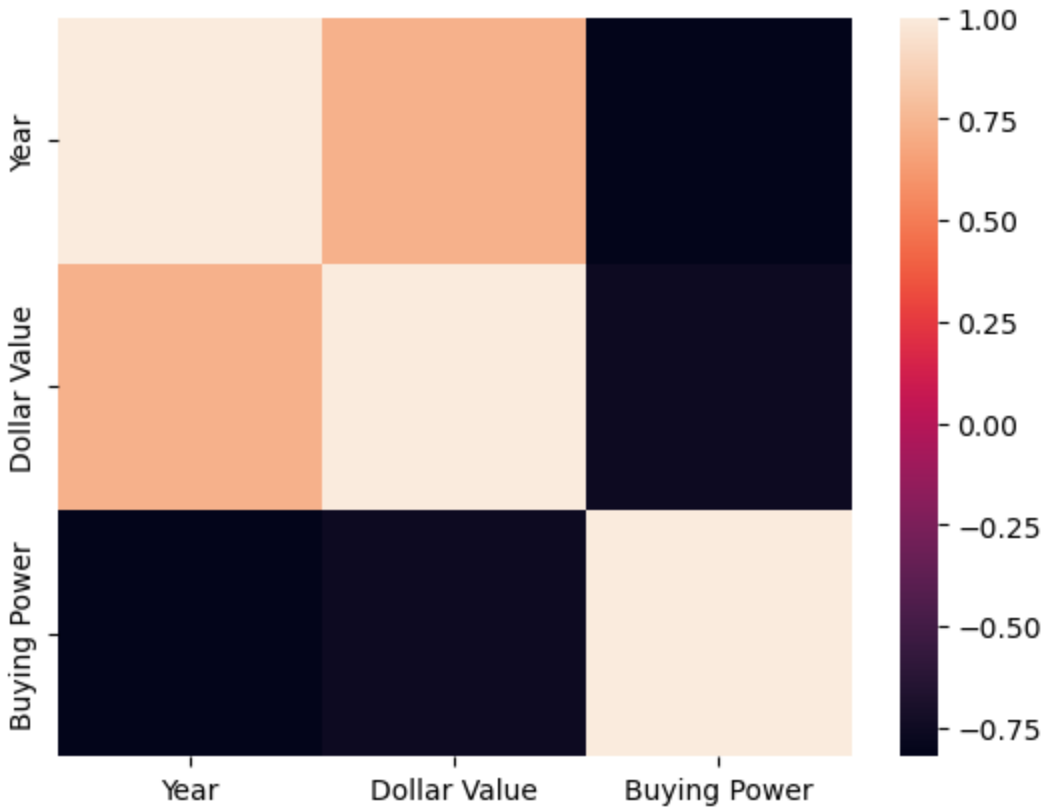
In [46]:
```
#data visualization
plt.scatter(x = data["Year"], y = data["Dollar Value"])
```

Out[46]:
```
<matplotlib.collections.PathCollection at 0x2c91bb7b7c0>
```



In [8]:
```
#Building the correlation matrix
sns.heatmap(data.corr())
```

Out[8]:
```
<AxesSubplot:>
```



In [9]:
```
# data splicing into independent and dependent variables
X = data.iloc[:, 0].values.reshape(-1, 1)
y = data.iloc[:, 1].values
```

In [10]:
```
#importing model and model selection
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
```

In [11]:
```
#splitting the data into training and testing data
X_train, X_test, y_train, y_test = train_test_split( X, y, test_size = 0.3, random_state
```

In [14]:
```
#fitting multiple linear regression model to training set
Regressor = LinearRegression()
Regressor.fit(X_train, y_train)
```

Out[14]:
```
LinearRegression()
```

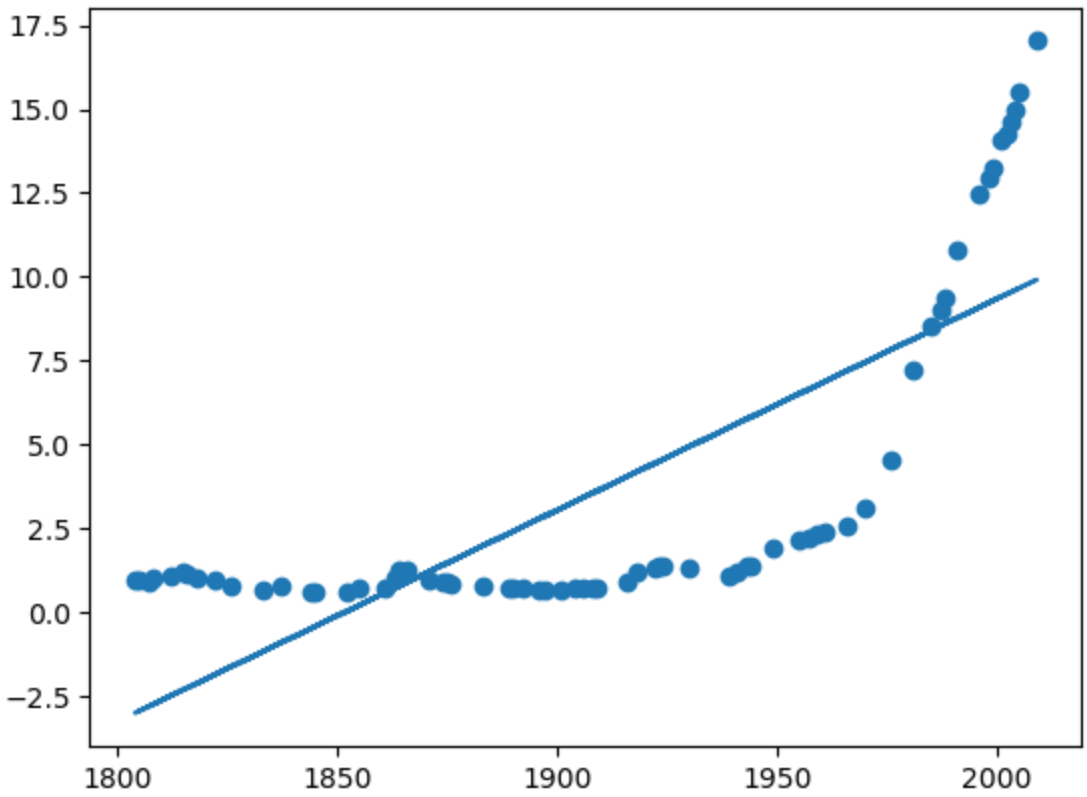
In [15]:
```
#predicting the test set result
Prediction = Regressor.predict(X_test)
Prediction
```

Out[15]:
```
array([ 4.93193616,  9.5339957 ,  7.45361262,  0.89725384,  8.14707364,
        5.62539719, -0.48966821,  1.21246339,  0.77117001, -2.75917702,
        1.96896633, -0.93096159, -2.94830276,  9.28182805,  0.7081281 ,
        7.20144497,  3.41893029,  9.59703761,  9.47095378,  2.3472178 ,
        3.60805603,  8.77749276,  4.5536847 ,  1.40158913,  1.52767295,
       -2.50700938,  6.63406777,  6.76015159,  4.49064278,  5.81452292,
        0.20379281,  4.42760087,  2.85155309,  3.29284647, -2.12875791,
       -2.31788364,  8.58836702, -2.82221894,  1.46463104,  6.88623542,
        2.78851118,  6.12973248,  2.41025971,  7.83186409,  5.75148101,
       -1.18312924,  6.50798395,  8.39924129,  9.21878614,  4.17543323,
        9.66007952,  8.52532511,  9.09270232, -2.25484173,  2.53634353,
        3.54501411,  5.49931337, -1.87659026,  9.40791187, -0.4266263 ,
        9.91224716, -3.01134467,  3.10372073,  4.04934941,  0.58204428,
        0.01466708, -1.62442262])
```

In [47]:
```
plt.scatter(X_test, y_test)
```

```
plt.plot(X_test, Prediction)
```

Out[47]:
```
[<matplotlib.lines.Line2D at 0x2c91b8866a0>]
```



In [20]:
```
#calculating the coefficient and intercept
m = Regressor.coef_
m
```

Out[20]:
```
array([0.06304191])
```

In [21]:
```
c = Regressor.intercept_
c
```

Out[21]:
```
-116.73895280375025
```

In [18]:
```
#evaluating the model
from sklearn.metrics import r2_score
r2_score(y_test, Prediction) * 100
```

Out[18]:
```
54.34015098914631
```

In [36]:
```
#building a predictor function
def Predictor(year):
    return m*year + c
print(Predictor(2022))
print(Predictor(2030))
```

```
[10.73179201]
[11.2361273]
```