In [54]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from tabulate import tabulate
%matplotlib inline
train = pd.read_csv('AirPassengers.csv')
```

In [55]:
```
train['Month'] = pd.to_datetime(train['Month'], format='%Y-%m')
train['Year'] = train['Month'].dt.year
```

In [56]:
```
train.head()
```

Out[56]:

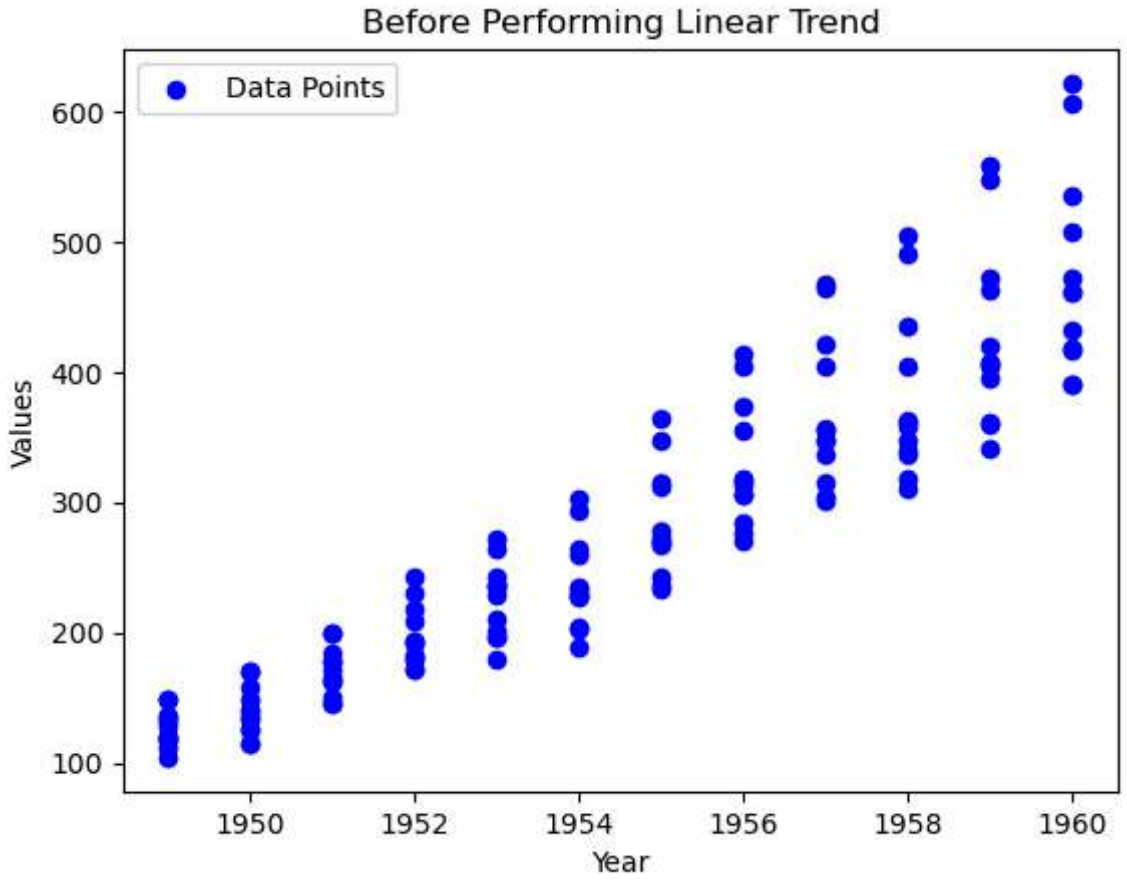
	Month	#Passengers	Year
0	1949-01-01	112	1949
1	1949-02-01	118	1949
2	1949-03-01	132	1949
3	1949-04-01	129	1949
4	1949-05-01	121	1949

In [57]:
```
train.columns
```

Out[57]:
```
Index(['Month', '#Passengers', 'Year'], dtype='object')
```

In [58]:
```
year_data = train['Year'].values.reshape(-1, 1)
values_data = train['#Passengers'].values
```

In [59]:
```
plt.scatter(year_data, values_data, color='blue', label='Data Points')
plt.xlabel('Year')
plt.ylabel('Values')
plt.title('Before Performing Linear Trend')
plt.legend()
plt.show()
```



In [60]:
```
from sklearn.linear_model import LinearRegression
```

In [61]:
```
model = LinearRegression()
model.fit(year_data, values_data)
```

Out[61]:
```
▾ LinearRegression
LinearRegression()
```

In [62]:
```
train.head()
```

Out[62]:

	Month	#Passengers	Year
0	1949-01-01	112	1949
1	1949-02-01	118	1949
2	1949-03-01	132	1949
3	1949-04-01	129	1949
4	1949-05-01	121	1949

In [39]:
```
intercept = model.intercept_
coefficients = model.coef_
print("Intercept: ",intercept, "Coefiicients:", coefficients)
```

```
Intercept:  -62115.06371406373 Coefiicients: [31.92395105]
```

In [63]:
```
new_years = np.array(train['Year']).reshape(-1, 1)
```

In [64]:
```
predicted_values = model.predict(new_years)
```

In [65]:
```
plt.scatter(year_data, values_data, color='blue', label='Data Points')
plt.plot(year_data, model.predict(year_data), color='red', label='Linear Regressior
plt.scatter(new_years, predicted_values, color='green', label='Predicted Values')
plt.xlabel('Year')
plt.ylabel('Values')
plt.title('Linear Regression Example')
plt.legend()
plt.show()
```