UAS Data Mining

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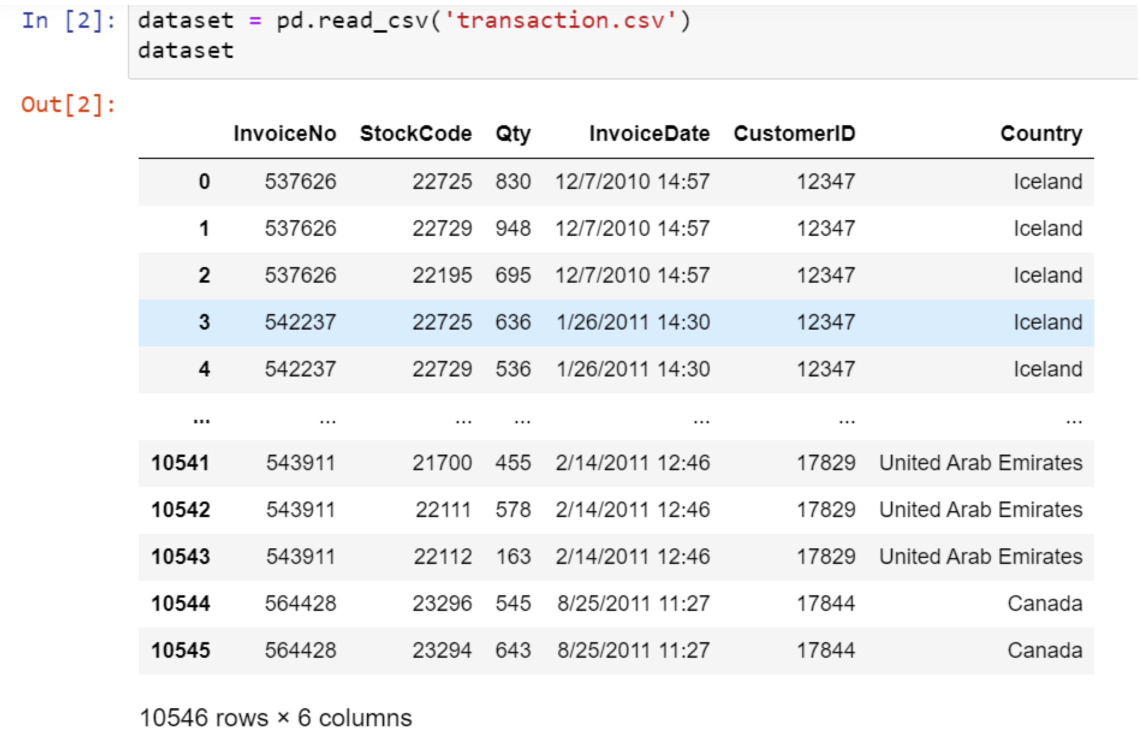
3 – D4 IT - B

Code 1



```
In [2]: dataset = pd.read_csv('transaction.csv')
        dataset
```

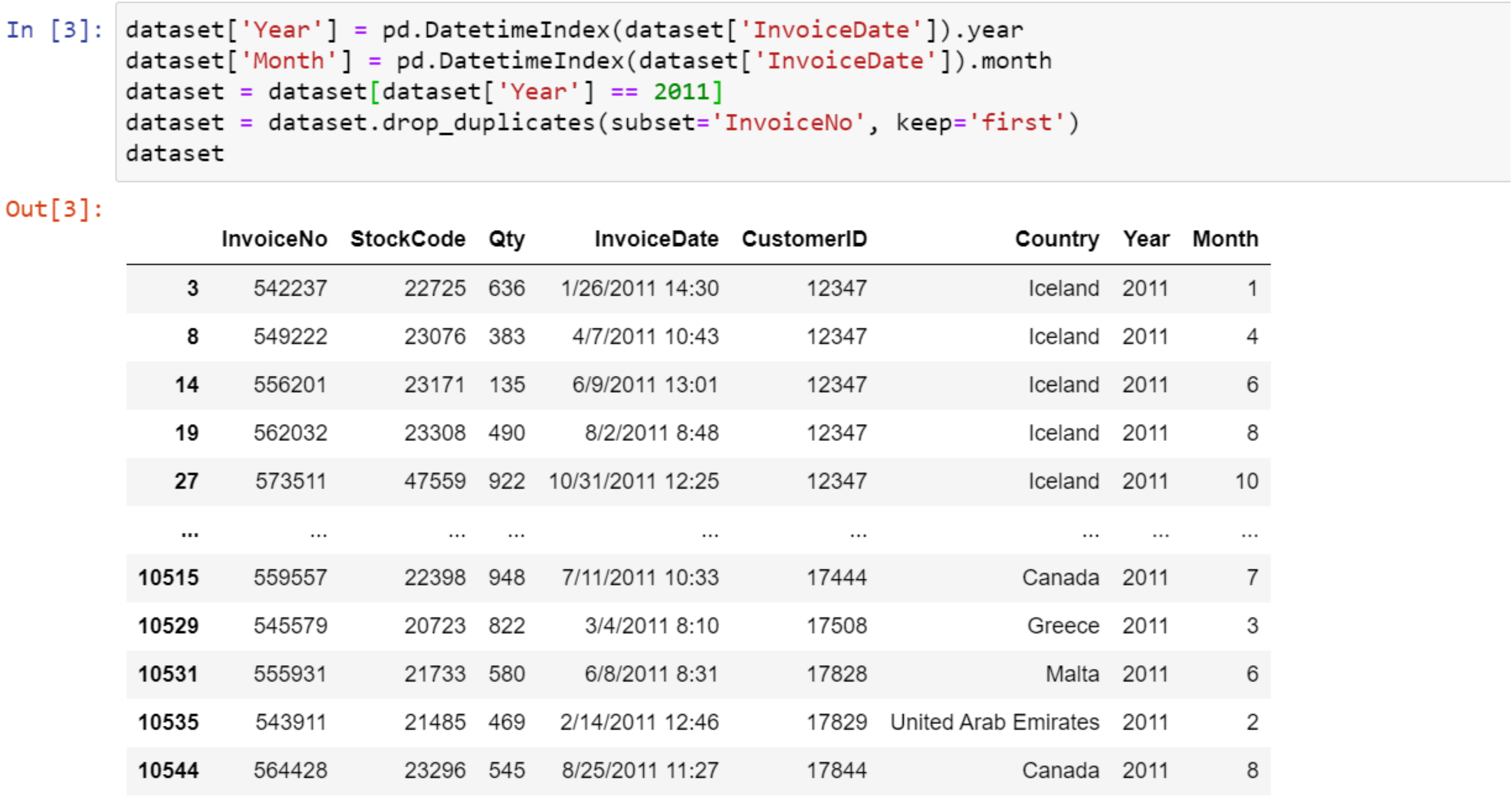
Out[2]:

	InvoiceNo	StockCode	Qty	InvoiceDate	CustomerID	Country
0	537626	22725	830	12/7/2010 14:57	12347	Iceland
1	537626	22729	948	12/7/2010 14:57	12347	Iceland
2	537626	22195	695	12/7/2010 14:57	12347	Iceland
3	542237	22725	636	1/26/2011 14:30	12347	Iceland
4	542237	22729	536	1/26/2011 14:30	12347	Iceland
...	...	...	...	...	...	...
10541	543911	21700	455	2/14/2011 12:46	17829	United Arab Emirates
10542	543911	22111	578	2/14/2011 12:46	17829	United Arab Emirates
10543	543911	22112	163	2/14/2011 12:46	17829	United Arab Emirates
10544	564428	23296	545	8/25/2011 11:27	17844	Canada
10545	564428	23294	643	8/25/2011 11:27	17844	Canada

10546 rows × 6 columns

Membaca data csv transaction

Code 2



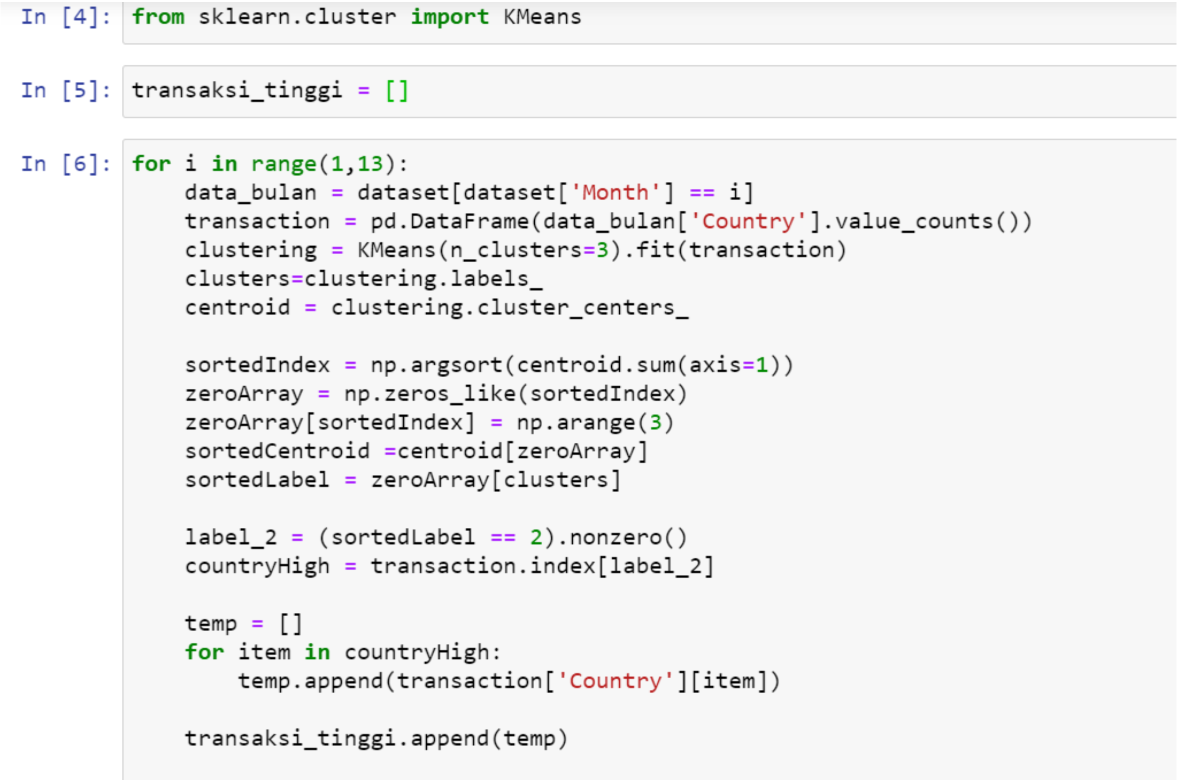
```
In [3]: dataset['Year'] = pd.DatetimeIndex(dataset['InvoiceDate']).year
        dataset['Month'] = pd.DatetimeIndex(dataset['InvoiceDate']).month
        dataset = dataset[dataset['Year'] == 2011]
        dataset = dataset.drop_duplicates(subset='InvoiceNo', keep='first')
        dataset
```

Out[3]:

	InvoiceNo	StockCode	Qty	InvoiceDate	CustomerID	Country	Year	Month
3	542237	22725	636	1/26/2011 14:30	12347	Iceland	2011	1
8	549222	23076	383	4/7/2011 10:43	12347	Iceland	2011	4
14	556201	23171	135	6/9/2011 13:01	12347	Iceland	2011	6
19	562032	23308	490	8/2/2011 8:48	12347	Iceland	2011	8
27	573511	47559	922	10/31/2011 12:25	12347	Iceland	2011	10
...	...	...	...	...	...	...	...	...
10515	559557	22398	948	7/11/2011 10:33	17444	Canada	2011	7
10529	545579	20723	822	3/4/2011 8:10	17508	Greece	2011	3
10531	555931	21733	580	6/8/2011 8:31	17828	Malta	2011	6
10535	543911	21485	469	2/14/2011 12:46	17829	United Arab Emirates	2011	2
10544	564428	23296	545	8/25/2011 11:27	17844	Canada	2011	8

Mengambil data tahun 2011, dan menghapus data dengan invoiceNo yang sama

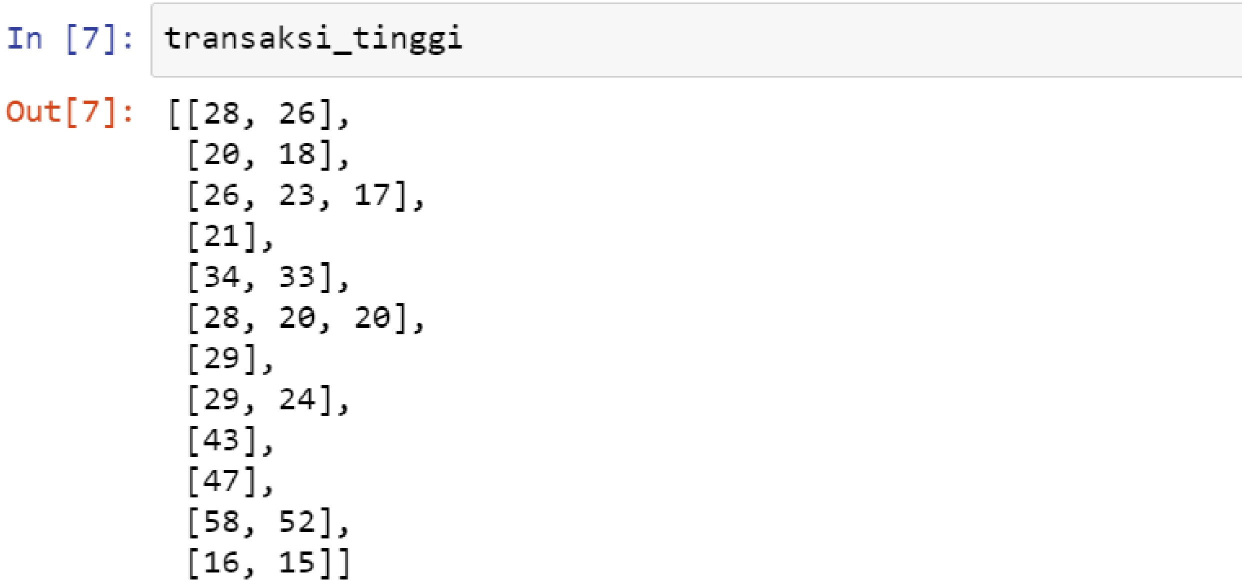
Code 3



```
In [4]: from sklearn.cluster import KMeans

In [5]: transaksi_tinggi = []

In [6]: for i in range(1,13):
            data_bulan = dataset[dataset['Month'] == i]
            transaction = pd.DataFrame(data_bulan['Country'].value_counts())
            clustering = KMeans(n_clusters=3).fit(transaction)
            clusters=clustering.labels_
            centroid = clustering.cluster_centers_

            sortedIndex = np.argsort(centroid.sum(axis=1))
            zeroArray = np.zeros_like(sortedIndex)
            zeroArray[sortedIndex] = np.arange(3)
            sortedCentroid =centroid[zeroArray]
            sortedLabel = zeroArray[clusters]

            label_2 = (sortedLabel == 2).nonzero()
            countryHigh = transaction.index[label_2]

            temp = []
            for item in countryHigh:
                temp.append(transaction['Country'][item])

            transaksi_tinggi.append(temp)
```

Mengambil data jumlah transaksi pada tiap
Bulan 1-12 untuk tiap2 Negara, kemudian
Mencari cluster dengan k=3, kemudian
Mengambil centroid dan mengurutkan
Cluster dan centroidnya untuk mencari
Label transaksi tinggi berdasarkan cluster
Tinggi, kemudian mengambil jumlah transaksi
Berdasarkan label transaksi tinggi

Code 4

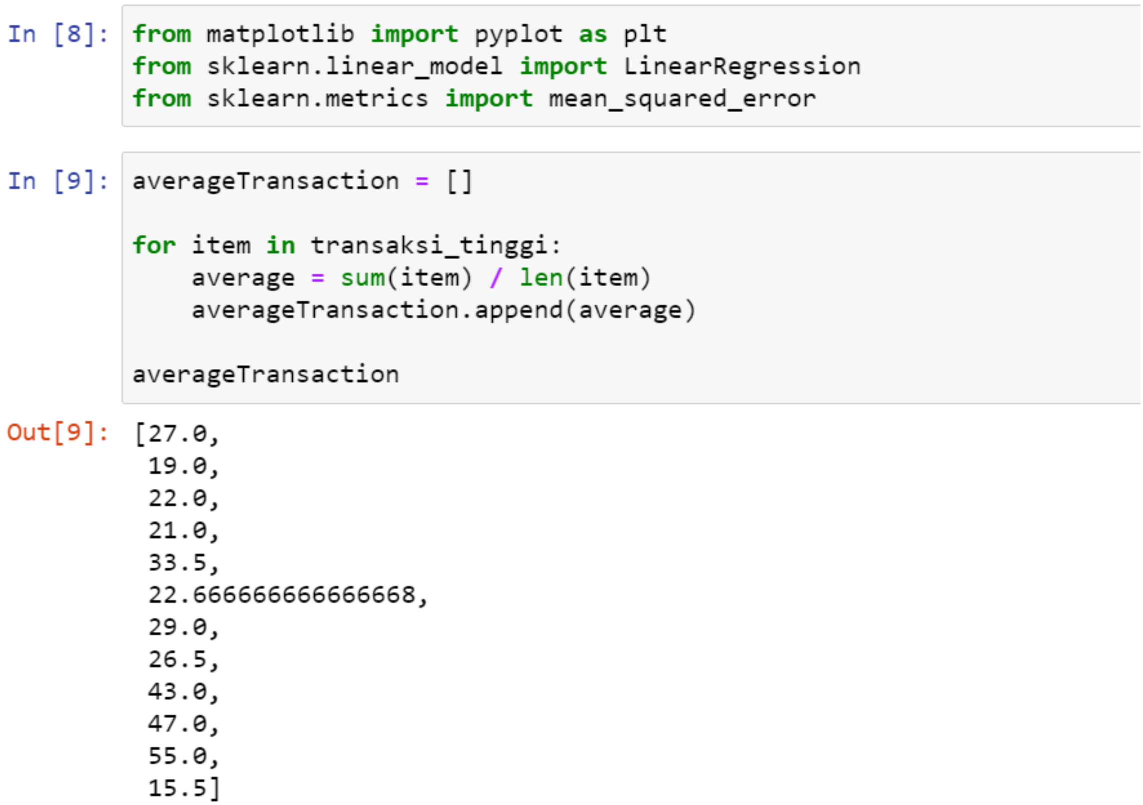


```
In [7]: transaksi_tinggi
```

```
Out[7]: [[28, 26],
         [20, 18],
         [26, 23, 17],
         [21],
         [34, 33],
         [28, 20, 20],
         [29],
         [29, 24],
         [43],
         [47],
         [58, 52],
         [16, 15]]
```

Menampilkan transaksi tinggi

Code 5



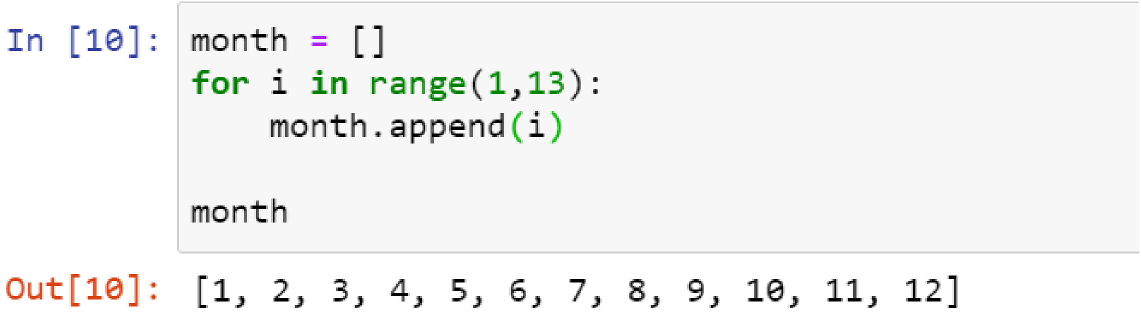
```
In [8]: from matplotlib import pyplot as plt
        from sklearn.linear_model import LinearRegression
        from sklearn.metrics import mean_squared_error
```

```
In [9]: averageTransaction = []

        for item in transaksi_tinggi:
            average = sum(item) / len(item)
            averageTransaction.append(average)

        averageTransaction
```

```
Out[9]: [27.0,
         19.0,
         22.0,
         21.0,
         33.5,
         22.666666666666668,
         29.0,
         26.5,
         43.0,
         47.0,
         55.0,
         15.5]
```

Menghitung average dari transaksi tinggi

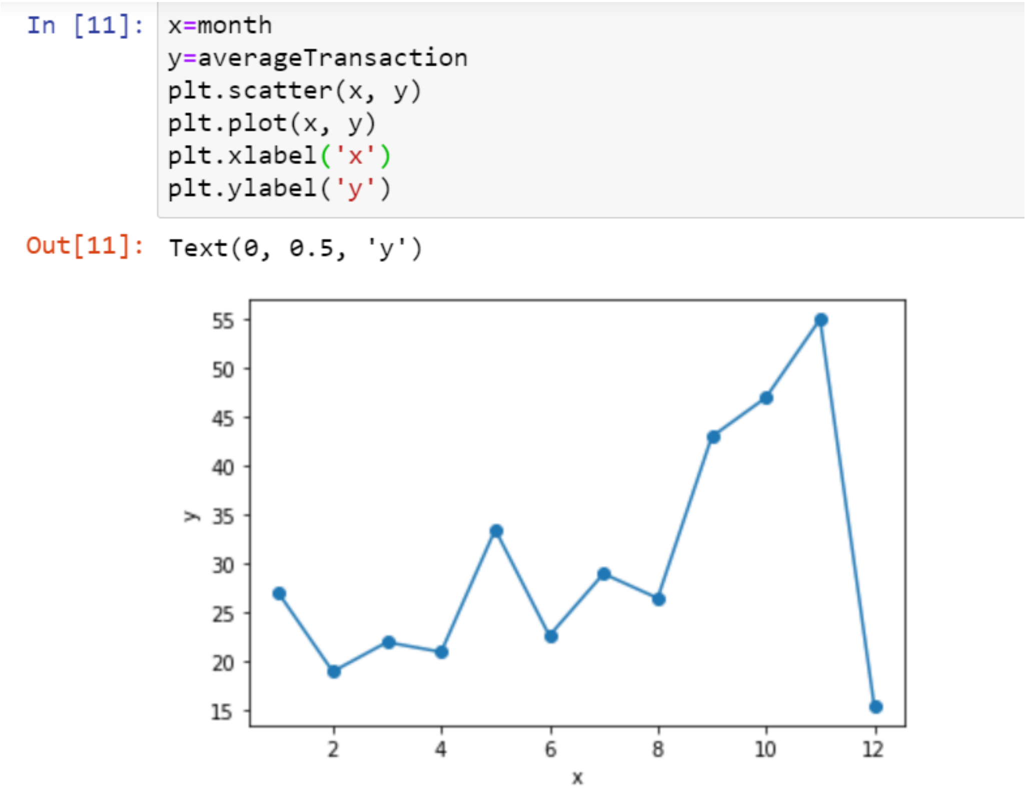
Code 6



```
In [10]: month = []
         for i in range(1,13):
             month.append(i)

         month

Out[10]: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]
```

Membuat index bulan 1 - 12

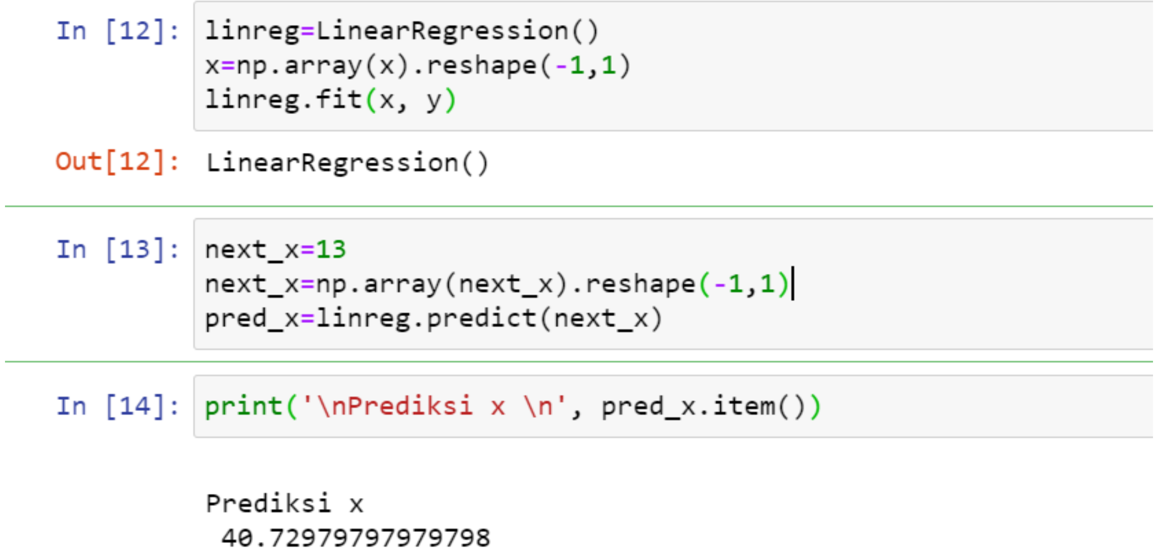
Code 7



```
In [11]: x=month
         y=averageTransaction
         plt.scatter(x, y)
         plt.plot(x, y)
         plt.xlabel('x')
         plt.ylabel('y')

Out[11]: Text(0, 0.5, 'y')
```

Memvisualisasikan rata2 transaksi tiap2 Negara dimana x = month, y = transaksi

Code 8



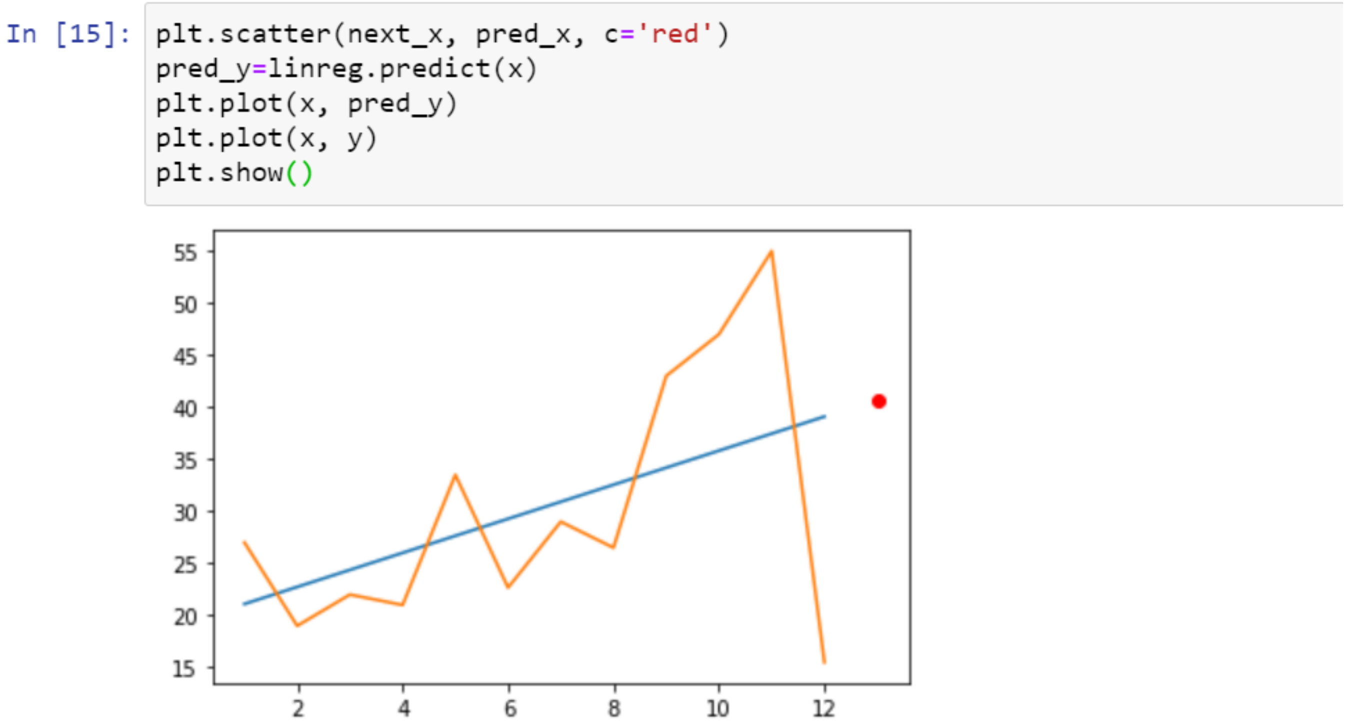
```
In [12]: linreg=LinearRegression()
         x=np.array(x).reshape(-1,1)
         linreg.fit(x, y)

Out[12]: LinearRegression()
```

```
In [13]: next_x=13
         next_x=np.array(next_x).reshape(-1,1)
         pred_x=linreg.predict(next_x)
```

```
In [14]: print('\nPrediksi x \n', pred_x.item())


         Prediksi x
          40.72979797979798
```

Prediksi bulan ke 13 menggunakan linear regression

Code 9



In [15]:

```
plt.scatter(next_x, pred_x, c='red')
pred_y=linreg.predict(x)
plt.plot(x, pred_y)
plt.plot(x, y)
plt.show()
```

Memvisualisasikan hasil prediksi