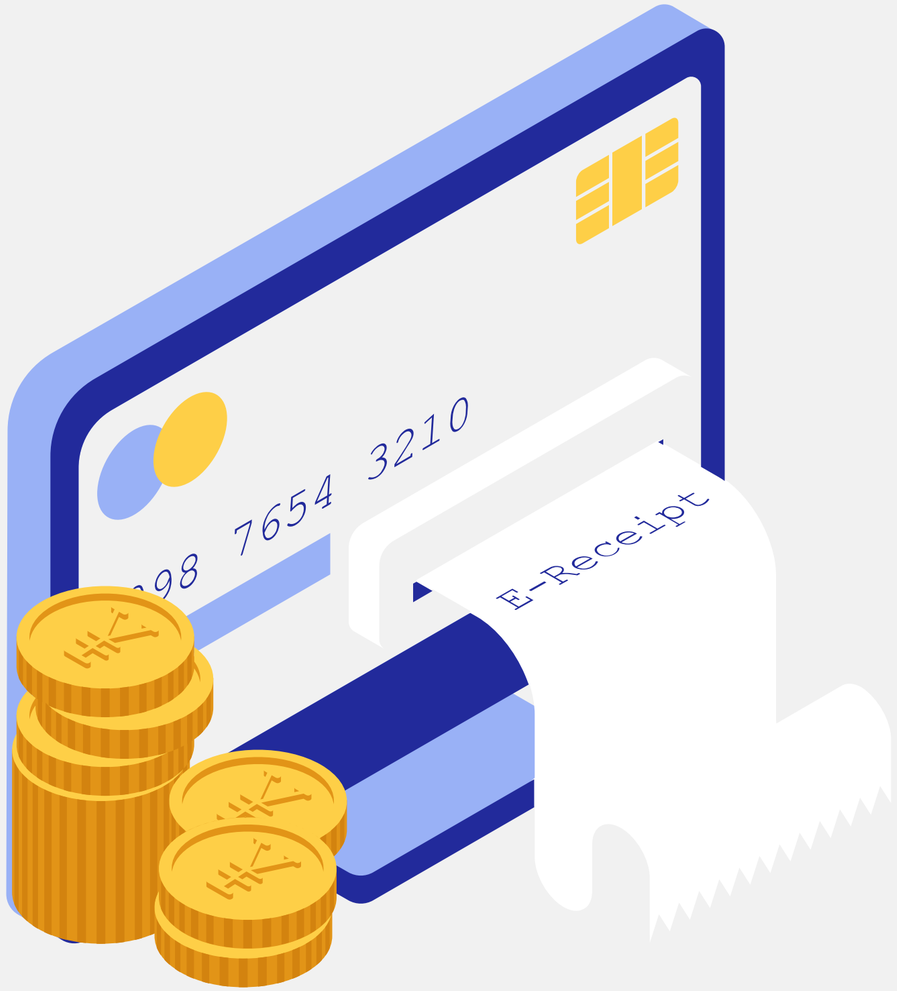
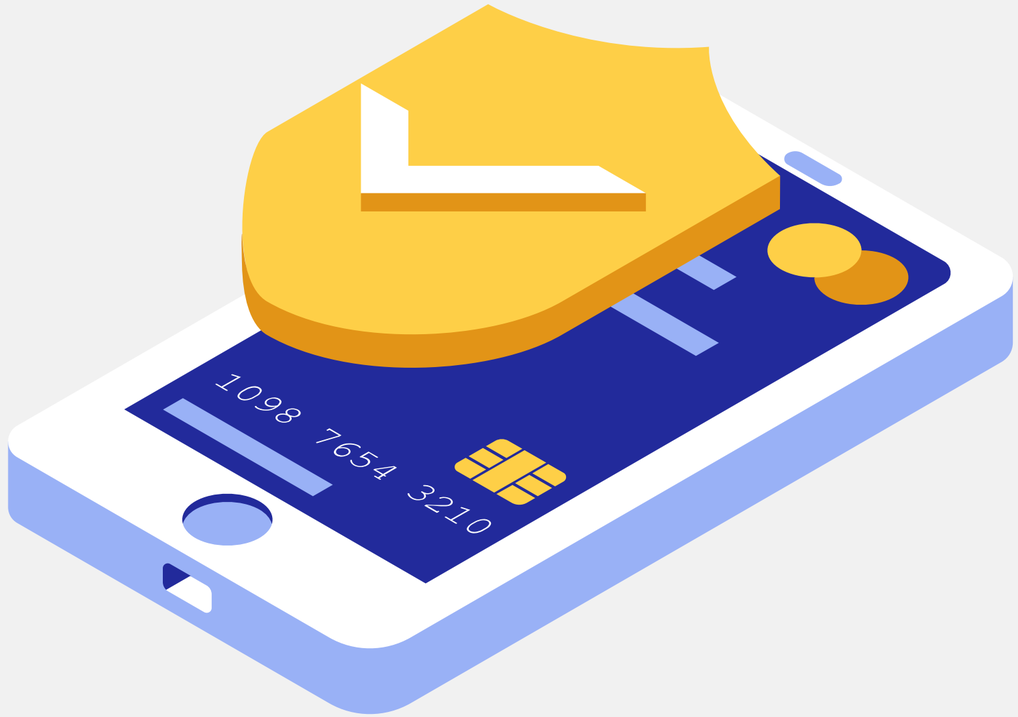



# Kevin Avicenna Widiarto

TUGAS TOPIC 5 & 6

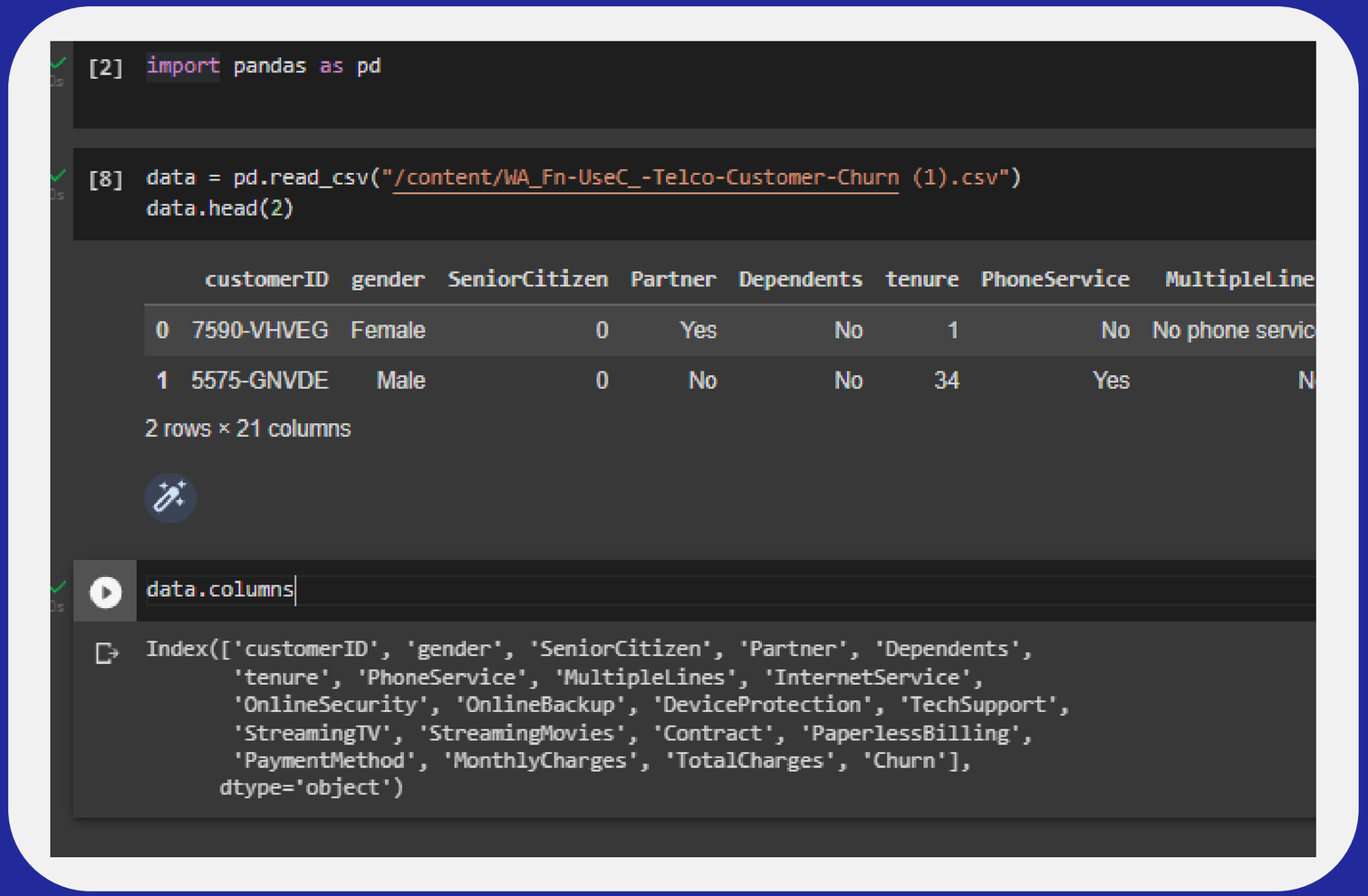
# TUGAS
# Yang berada di google colab

https://colab.research.google.com/drive/1SCvWx7kvyPbSJVPhXMT_ByQYMesIluen



# Missing Value Checking

step 1 yang dilakukan adalah melakukan pembacaan data dengan fungsi read_csv (karna file nya csv)



```
[2] import pandas as pd
```

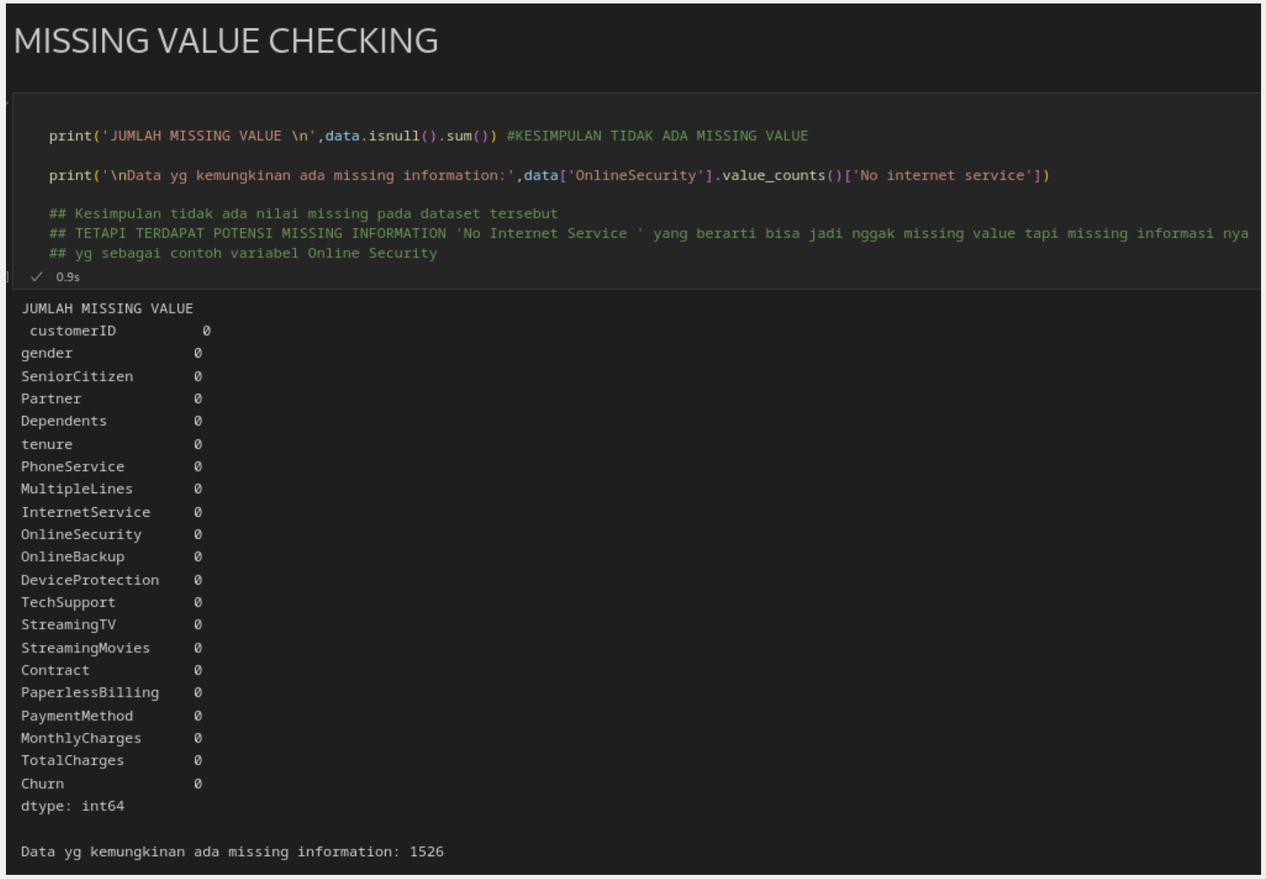
```
[8] data = pd.read_csv("/content/WA_Fn-UseC_-Telco-Customer-Churn (1).csv")
    data.head(2)
```

| | customerID | gender | SeniorCitizen | Partner | Dependents | tenure | PhoneService | MultipleLine |
|---|---|---|---|---|---|---|---|---|
| 0 | 7590-VHVEG | Female | 0 | Yes | No | 1 | No | No phone servic |
| 1 | 5575-GNVDE | Male | 0 | No | No | 34 | Yes | N |

2 rows × 21 columns

```
data.columns
```

```
Index(['customerID', 'gender', 'SeniorCitizen', 'Partner', 'Dependents',
       'tenure', 'PhoneService', 'MultipleLines', 'InternetService',
       'OnlineSecurity', 'OnlineBackup', 'DeviceProtection', 'TechSupport',
       'StreamingTV', 'StreamingMovies', 'Contract', 'PaperlessBilling',
       'PaymentMethod', 'MonthlyCharges', 'TotalCharges', 'Churn'],
      dtype='object')
```




# MISSING VALUE CHECKING

- Sebagai contoh saya menggunakan variabel Online Security yang terdapat nilai 'No Internet Service'
- sebab nilai tersebut berpotensi bisa jadi nggak missing value tapi missing informasi nya

# Handling Categorical Data Encoding

```
import pandas as pd

df_dummy = pd.get_dummies(data)
df_dummy.head()

df_2 = pd.concat([data, df_dummy], axis='columns')
df_2

data['MonthlyCharges'].astype

##Disini kita menggunakan concat untuk menggabungkan nilai
```

✓ 0.5s

```
<bound method NDFrame.astype of 0        29.85
1        56.95
2        53.85
3        42.30
4        70.70
         ...
7038     84.80
7039    103.20
7040     29.60
7041     74.40
7042    105.65
Name: MonthlyCharges, Length: 7043, dtype: float64>
```

# Anomalies and Outlier Handling

membuat grafik untuk dapat melihat nilai yang diatas upper dan lower

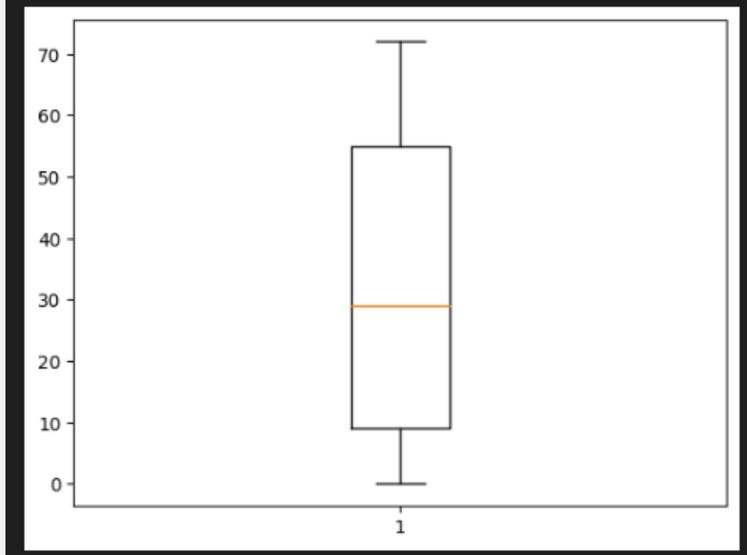
```
import matplotlib.pyplot as plt

# for i in data.columns:
#   plt.boxplot(data[i])
#   plt.show()

plt.boxplot(data['tenure'])
plt.show
```

✓ 0.2s

```
<function matplotlib.pyplot.show(close=None, block=None)>
```



```
Q1 = data['tenure'].quantile(0.25)
Q3 = data['tenure'].quantile(0.75)
IQR = Q3-Q1
lower_bound =Q1 - 1.5*IQR
upper_bound = Q3 +1.5*IQR
```

✓ 0.5s

```
outlier_up = data[data['tenure']>upper_bound]
outlier_lo = data[data['tenure']<lower_bound]

print(outlier_up)
print(outlier_lo)

#kesimpulan tidak ada nilai outlier pada kolom tenure
```

✓ 0.5s

```
Empty DataFrame
Columns: [customerID, gender, SeniorCitizen, Partner, Dependents, tenure, PhoneService, MultipleLines, InternetServ
MonthlyCharges, TotalCharges, Churn]
Index: []

[0 rows x 21 columns]
Empty DataFrame
Columns: [customerID, gender, SeniorCitizen, Partner, Dependents, tenure, PhoneService, MultipleLines, InternetServ
MonthlyCharges, TotalCharges, Churn]
Index: []

[0 rows x 21 columns]
```

# Anomalies and Outlier Handling

Menggunakan Rumus untuk mengetahui data yang terdapat outlier