

DAY 5

[09.02.2026]

EXP – 16 to 2

The image displays two screenshots of a Jupyter Notebook interface, likely from a web browser.

Top Screenshot:

- The notebook is titled "Untitled0.ipynb".
- The menu bar includes: File, Edit, View, Insert, Runtime, Tools, Help.
- The toolbar shows: Commands, + Code, + Text, Run all.
- The code cell [3] contains the following Python code:

```
import numpy as np
from scipy.stats import ttest_ind

A = np.random.normal(0.12, 0.02, 100) # design A
B = np.random.normal(0.15, 0.02, 100) # design B

t_stat, p_value = ttest_ind(A, B)
print("p-value:", p_value)
```
- The output shows: `p-value: 2.373392178609464e-24`.

Bottom Screenshot:

- The notebook is titled "Untitled0.ipynb".
- The menu bar includes: File, Edit, View, Insert, Runtime, Tools, Help.
- The toolbar shows: Commands, + Code, + Text, Run all.
- The code cell [1] contains the following Python code:

```
import numpy as np
from scipy.stats import t

drug = np.array([12,14,10,13,11,15,9,12,14,10])
placebo = np.array([5,6,4,7,5,6,4,5,6,5])

def confidence_interval(data):
    mean = np.mean(data)
    se = np.std(data, ddof=1)/np.sqrt(len(data))
    ci = t.ppf(0.975, len(data)-1)*se
    return mean-ci, mean+ci

print("Drug CI:", confidence_interval(drug))
print("Placebo CI:", confidence_interval(placebo))
```
- The output shows:

```
Drug CI: (np.float64(10.56928618802332), np.float64(13.43071381197668))
Placebo CI: (np.float64(4.6213528511437705), np.float64(5.978647148856229))
```



Untitled0.ipynb ☆ ☁

File Edit View Insert Runtime Tools Help

🔍 Commands + Code ▾ + Text ▶ Run all ▾

[2]
✓ 3s

```
import pandas as pd

age = [23,23,27,27,39,41,47,49,50,52,54,54,56,57,58,58,60,61]
fat = [9.5,26.5,7.8,17.8,31.4,25.9,27.4,27.2,31.2,34.6,42.5,28.8,33.4,30.2,34.1,32.9,41.2,35.7]

data = pd.DataFrame({'Age': age, 'Fat': fat})

print("Mean:\n", data.mean())
print("\nMedian:\n", data.median())
print("\nStandard Deviation:\n", data.std())

import matplotlib.pyplot as plt

data.boxplot()
plt.show()

plt.scatter(data['Age'], data['Fat'])
plt.xlabel("Age")
plt.ylabel("% Fat")
plt.show()

import scipy.stats as stats

stats.probplot(data['Age'], plot=plt)
plt.show()

stats.probplot(data['Fat'], plot=plt)
plt.show()
```



```
*** Mean:
    Age    46.444444
    Fat    28.783333
    dtype: float64
```

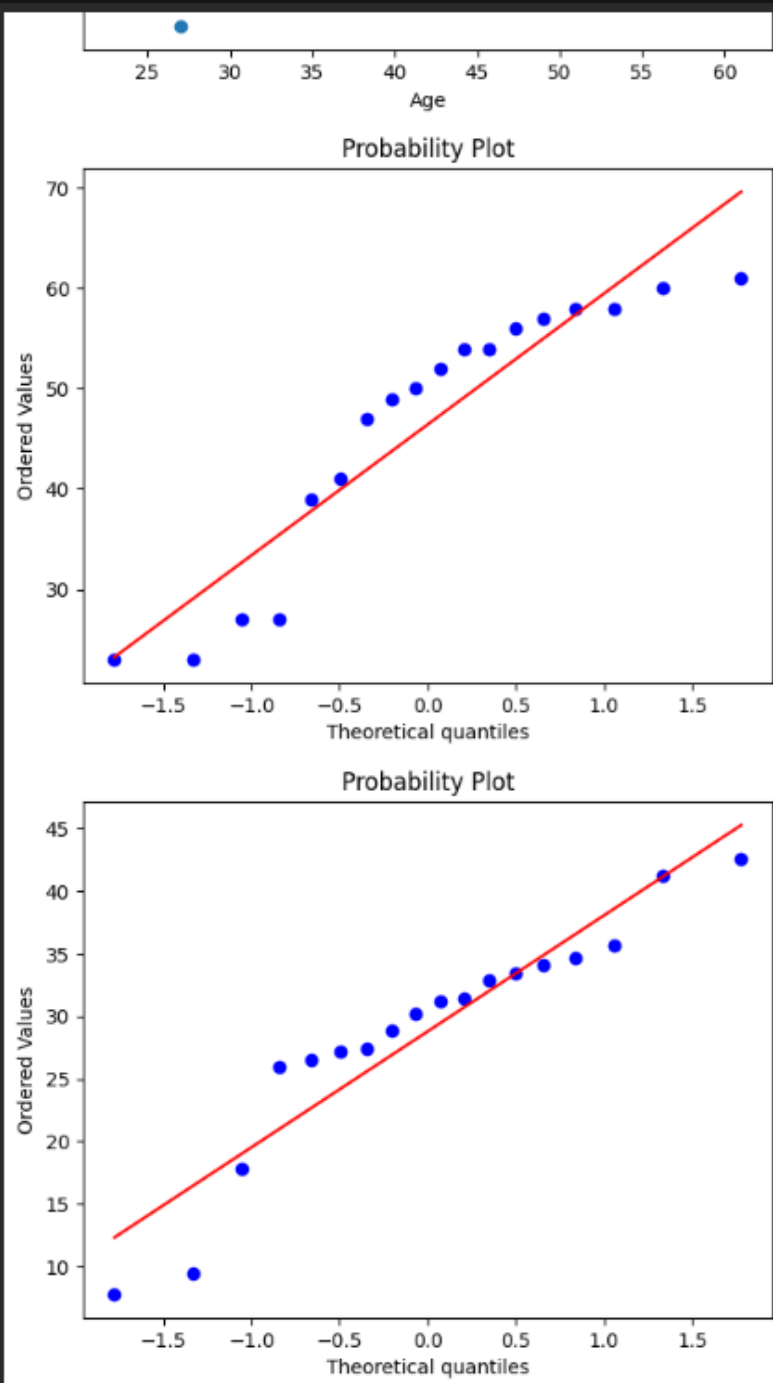


Untitled0.ipynb



File Edit View Insert Runtime Tools Help

Commands + Code + Text Run all





Untitled0.ipynb ☆ ☁

File Edit View Insert Runtime Tools Help

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[2]

✓ 3s



```
stats.probplot(data['Fat'], plot=plt)  
plt.show()
```

...

Median:

Age 51.0

Fat 30.7

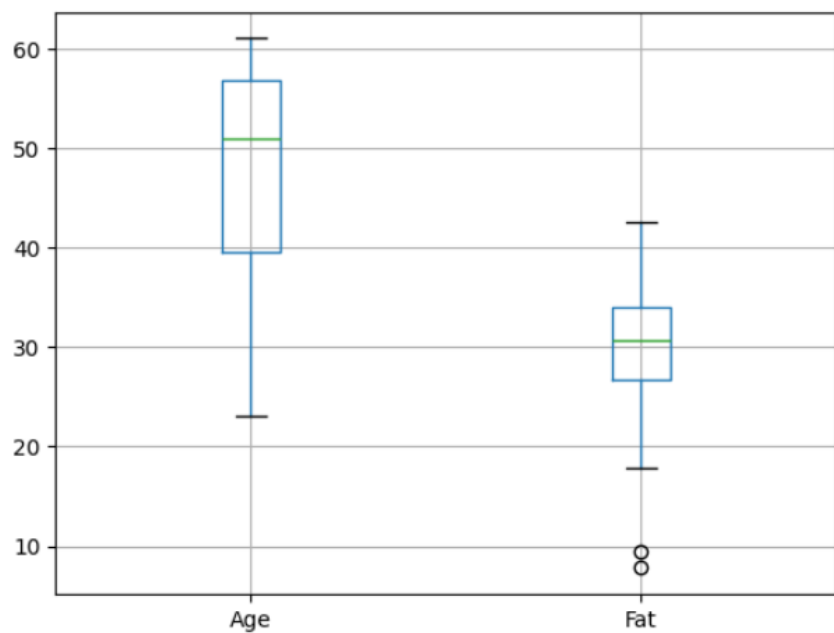
dtype: float64

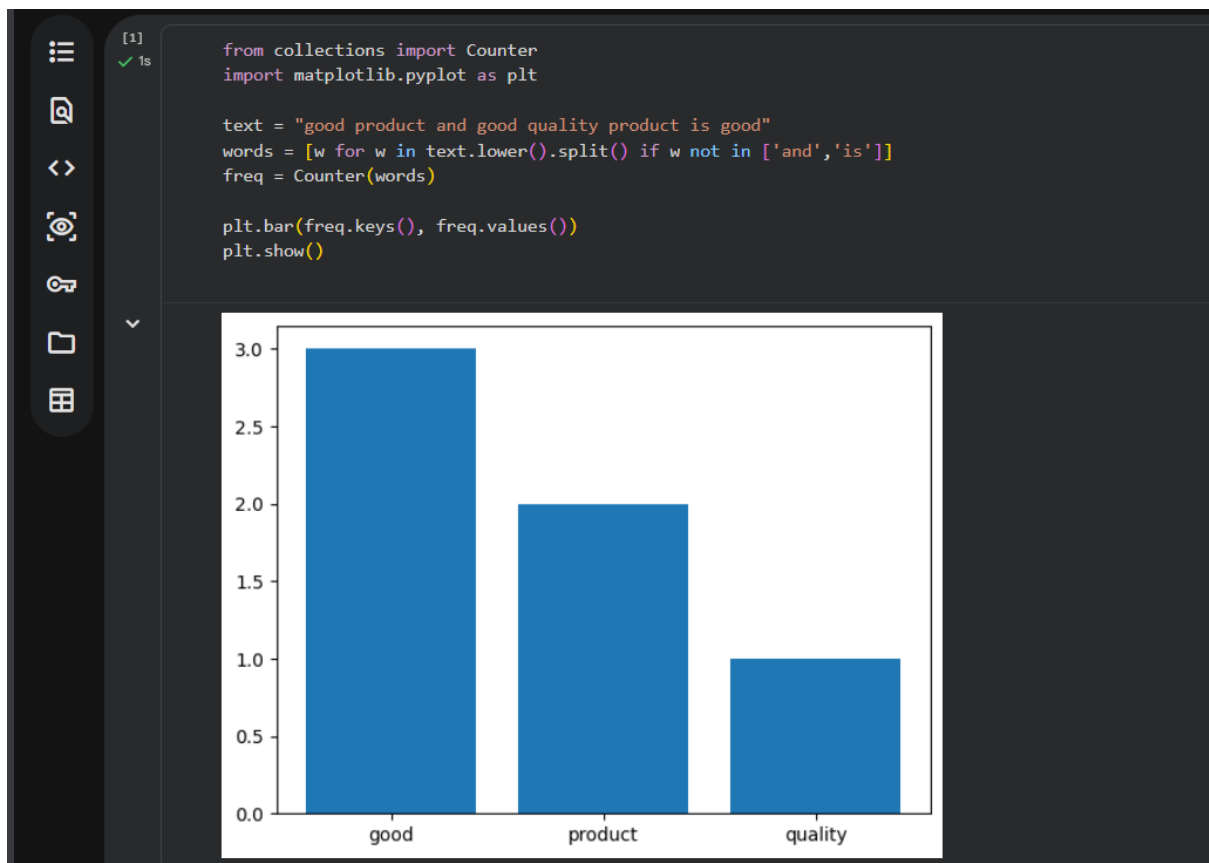
Standard Deviation:

Age 13.218624

Fat 9.254395

dtype: float64





Untitled0.ipynb ☆ ☁

File Edit View Insert Runtime Tools Help

Q Commands + Code + Text ▶ Run all ▼

30 1
Name: count, dtype: int64

[11] ✓ 0s

```
from collections import Counter

reviews = ["Good product", "Very good quality", "Product is good"]
words = " ".join(reviews).lower().split()
freq = Counter(words)
print(freq)
```

... Counter({'good': 3, 'product': 2, 'very': 1, 'quality': 1, 'is': 1})