
In-Class Activity: • Explore advanced statistical concepts such as correlation coefficients, hypothesis testing, and CHI-square testing.

ASSIGNMENT:

QUESTION: Apply advanced statistical techniques to a dataset, presenting findings and insights.

ANSWER:

IMPORTING LIBRARIES

```
# Importing the library
import pandas as pd
import numpy as np
from scipy import stats
```

UPLOADING THE DATASET

```
# Uploading a dataset
data = pd.read_excel('/content/sample_data/V00STECHFELLOWS.xlsx')
```

```
# Explore data
print(data.head())
```

	NAME	ID	GROUP	HEIGHT	WEIGHT	GENDER
0	Maryam	101	A	170	65	F
1	Ahmad	102	B	165	55	M
2	Lukhman	103	A	180	70	M
3	Vasty	104	B	155	50	F
4	Hamza	105	A	175	68	M

DATA EXPLORING

```
# Explore data
print(data.tail())
```

	NAME	ID	GROUP	HEIGHT	WEIGHT	GENDER
5	Hafsiyya	106	B	160	52	F
6	Adewumi	107	A	172	67	M
7	Rose	108	B	158	49	F
8	Salisu	109	A	168	63	M
9	Ruqayya	110	B	162	53	F

```
# Exploratory Data Analysis (EDA)
# Perform basic statistics
summary_stats = data.describe()
```

```
# Present findings and insights
# Summarize key findings
print("Summary Statistics:")
print(summary_stats)
```

```
Summary Statistics:
              ID      HEIGHT      WEIGHT
count  10.00000  10.000000  10.000000
mean   105.50000  166.50000  59.200000
std     3.02765   7.947746   8.162244
min    101.00000  155.00000  49.000000
25%    103.25000  160.50000  52.250000
50%    105.50000  166.50000  59.000000
75%    107.75000  171.50000  66.500000
max     110.00000  180.00000  70.000000
```

```
# Correlation coefficients
correlation_ID = data.corr()
print(correlation_ID)
```

```
              ID      HEIGHT      WEIGHT
ID           1.000000 -0.288594 -0.274266
HEIGHT      -0.288594  1.000000  0.964300
WEIGHT      -0.274266  0.964300  1.000000
```

```
<ipython-input-41-c7dcf54e79a3>:2: FutureWarning: The default value of numeric_
correlation_ID = data.corr()
```

VARIANCE

```
# Variance
Variance = np.var(summary_stats)
```

```
# Displaying the Variance of the dataset
print(Variance)
```

```
ID           1846.540755
HEIGHT       4709.745621
WEIGHT        513.822295
dtype: float64
```

