

DAY-1 LAB EXPERIMENTS

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EXP_1 Analysing Student Performance Data

The screenshot shows a Google Colab notebook titled "Experiment 1 - Colab". The code cell [41] contains the following Python script:

```
import pandas as pd
import numpy as np

df=pd.read_csv("student_score.csv")
print(df.head())

...
Student Math Science English History
0 Arun 78 82 75 88
1 Karthik 85 88 90 84
2 Priya 92 91 89 93
3 Sanjay 67 70 72 68
4 Ananya 88 85 87 90

student_scores=df[["Math","Science","English","History"]].to_numpy()

average_scores = np.mean(student_scores, axis=0)

subjects = ["Math", "Science", "English", "History"]

print("Average Scores:")
for i in range(len(subjects)):
    print(subjects[i]+":",average_scores[i])

print("\nHighest Average subject:",subjects[np.argmax(average_scores)])
```

The output of the code is displayed below the code cell:

```
Average Scores:
Math : 81.96875
Science : 82.5625
English : 82.96875
History : 82.875

Highest Average subject: English
```

The notebook interface includes tabs for "Variables" and "Terminal". The status bar at the bottom shows the date (16-12-2025), time (21:14), and Python version (Python 3). The system tray indicates it's 26°C and mostly cloudy.

EXP_2 Analysing Sales Data

The screenshot shows a Google Colab notebook titled "FODS_Experiments - Colab". The code cell contains the following Python script:

```
import numpy as np
import pandas as pd

df=pd.read_csv("Sales.csv")
prices=df["Price"].to_numpy()

average_price=np.mean(prices)

print("Average price of all products sold:",average_price)
```

The output of the code is displayed below the cell, showing the calculated average price.

EXP_3 Analysing Dataset Containing Information about Houses in a Neighbourhood.

The screenshot shows a Google Colab notebook titled "FODS_Experiments - Colab". The code cell contains the following Python script:

```
import numpy as np
import pandas as pd

df=pd.read_csv("House_Prediction.csv")
print(df.head())

house_data = df[["beds", "price"]].to_numpy()
filtered_houses=house_data[house_data[:,0]>4]
average_price=np.mean(filtered_houses[:,1])

print("Average sale price of houses with more than 4 bedrooms is :",average_price)
```

The output of the code is displayed below the cell, showing the calculated average price for houses with more than 4 bedrooms.

EXP_4 Sales Performance of a Company over the Past Four Quarters.

The screenshot shows a Google Colab interface with several tabs at the top: Google Classroom - Login Gui, LAB EXPERIMENTS, House_Prediction - Google Sheets, Sales - Google Sheets, and FODS_Experiments - Colab. The main area displays Python code in a code cell:

```
import numpy as np
import pandas as pd

df=pd.read_csv("sales_performance.csv")
print(df.head())

... 0 20000Q1 1517 12359.095 1726.2440 257.649148 246.5 2161.6
1 20000Q2 1248 12592.539 1749.6000 298.437535 326.4 2272.7
2 20000Q3 1677 12607.676 1760.2586 318.550979 322.5 2636.7
3 20000Q4 1393 12679.338 1789.2533 352.695291 321.0 2198.7
4 2001Q1 1558 12643.283 1819.1398 296.974546 329.4 2170.1

year_data=df[df["date"].str.contains("2000")]
sales_data=year_data[["Revenue"]].to_numpy()
total_sales=np.sum(sales_data)
percentage_increase=((sales_data[3]-sales_data[0])/sales_data[0])*100

... print("Quarterly Sales Data:", sales_data)
print("Total Sales for the Year:", total_sales)
print("Percentage Increase from Q1 to Q4:", percentage_increase, "%")

... Quarterly Sales Data: [1517 1248 1677 1393]
Total Sales for the Year: 5835
Percentage Increase from Q1 to Q4: -8.174027686222889 %
```

The code reads a CSV file named "sales_performance.csv" and prints the first few rows. It then filters the data for the year 2000, extracts the revenue column, calculates the total sales, and computes the percentage increase from Q1 to Q4. The output shows quarterly sales data, total sales for the year, and the percentage increase.

EXP_5 Analysis of Fuel Efficiency of Different Car Models

The screenshot shows a Google Colab interface with several tabs at the top: Google Classroom - Login Gui, Day 1-Datasets - Score, Fuel_Efficiency datasets.xlsx, House_Prediction - Google Sheets, Sales - Google Sheets, and FODS_Experiments - Colab. The main area displays Python code in a code cell:

```
import pandas as pd
import numpy as np

df=pd.read_csv("fuel_Efficiency.csv")
print(df.head())

... 0 25 midsize car 29 4.0
1 26 midsize car 30 4.0
2 25 small sport utility vehicle 27 4.0
3 26 small sport utility vehicle 29 4.0
4 26 small sport utility vehicle 28 4.0

displacement drive fuel_type highway_mpg(Fuel Efficiency) make \
0 2.5 fwd gas 36 mazda
1 2.5 fwd gas 37 mazda
2 2.5 fwd gas 31 mazda
3 2.0 fwd gas 34 mazda
4 2.0 fwd gas 32 mazda

model transmission year \
0 b 2014
1 6 2014
2 cx-5 2wd a 2014
3 cx-5 2wd m 2014
4 cx-5 2wd a 2014

fuel_efficiency=df[["highway_mpg(Fuel Efficiency)"].to_numpy()
average_efficiency = np.mean(fuel_efficiency)
model1=fuel_efficiency[0]
model2=fuel_efficiency[1]
percentage_increase=((model2-model1)/model1)*100
```

The code reads a CSV file named "fuel_Efficiency.csv" and prints the first few rows. It then extracts the "highway_mpg(Fuel Efficiency)" column, calculates the average fuel efficiency, and computes the percentage increase between the first and second data points. The output shows fuel efficiency data and the percentage increase.

The screenshot shows a Jupyter Notebook interface with a dark theme. On the left, there's a sidebar titled "Files" containing a list of CSV files: sample_data, Fuel_Efficiency.csv, House_Prediction.csv, Sales.csv, sales_performance.csv, and student_score.csv. The main area has two code cells. The first cell, labeled [228], contains Python code to calculate average fuel efficiency and its percentage increase:

```
fuel_efficiency=df["highway_mpg(Fuel Efficiency)"].to_numpy()
average_efficiency = np.mean(fuel_efficiency)
model1=fuel_efficiency[0]
model2=fuel_efficiency[1]
percentage_increase=(model2-model1)/model1*100
```

The second cell, labeled [229], also contains similar code and prints the results:

```
print("Average Fuel Efficiency is:",average_efficiency)
print("Percentage Increase in Fuel Efficiency is:",percentage_increase)
```

The output pane shows the results of the second cell:

```
Average Fuel Efficiency is: 28.669090909090909
Percentage Increase in Fuel Efficiency is: 2.7777777777777776
```