Lesson 1 Exercise
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Class: ENEL 525

1. Complete code:

```python
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd

# Creating the dataset
num_samples = 1000
num_ft = 2

"""--------Exercise 3--------"""
adult = [10,5]*np.random.randn(num_samples,num_ft) + [150,50]
child = [10,5]*np.random.randn(num_samples,num_ft) + [50,25]
dataset_array = np.concatenate((adult, child), axis=0)

target_1 = np.zeros(1000)
target_2 = np.ones(1000)
targets_array = np.concatenate((target_1, target_2), axis=0)

# Scatter plot
classes = ["Adults", "Children"]

scatter_plot =
plt.scatter(dataset_array[:,0],dataset_array[:,1],c=targets_array)

plt.legend(handles=scatter_plot.legend_elements()[0], labels=classes)
plt.title("Lesson 1 Exercise 3 Dataset")
plt.xlabel("Height (cm)")
plt.ylabel("Weight (kg)")
plt.show()

# Convert to dataframes
dataset = pd.DataFrame(dataset_array)
targets = pd.DataFrame(targets_array)

# Export as csv files
dataset.to_csv("dataset.csv", index=False)
targets.to_csv("targets.csv", index=False)

# Read csv files
check_dataset = pd.read_csv("dataset.csv")
check_targets = pd.read_csv("targets.csv")
```
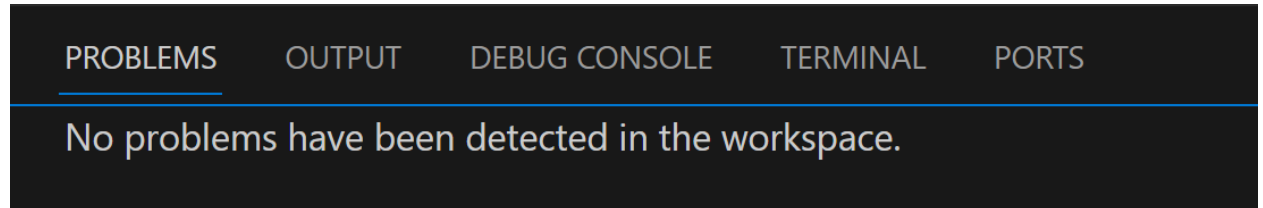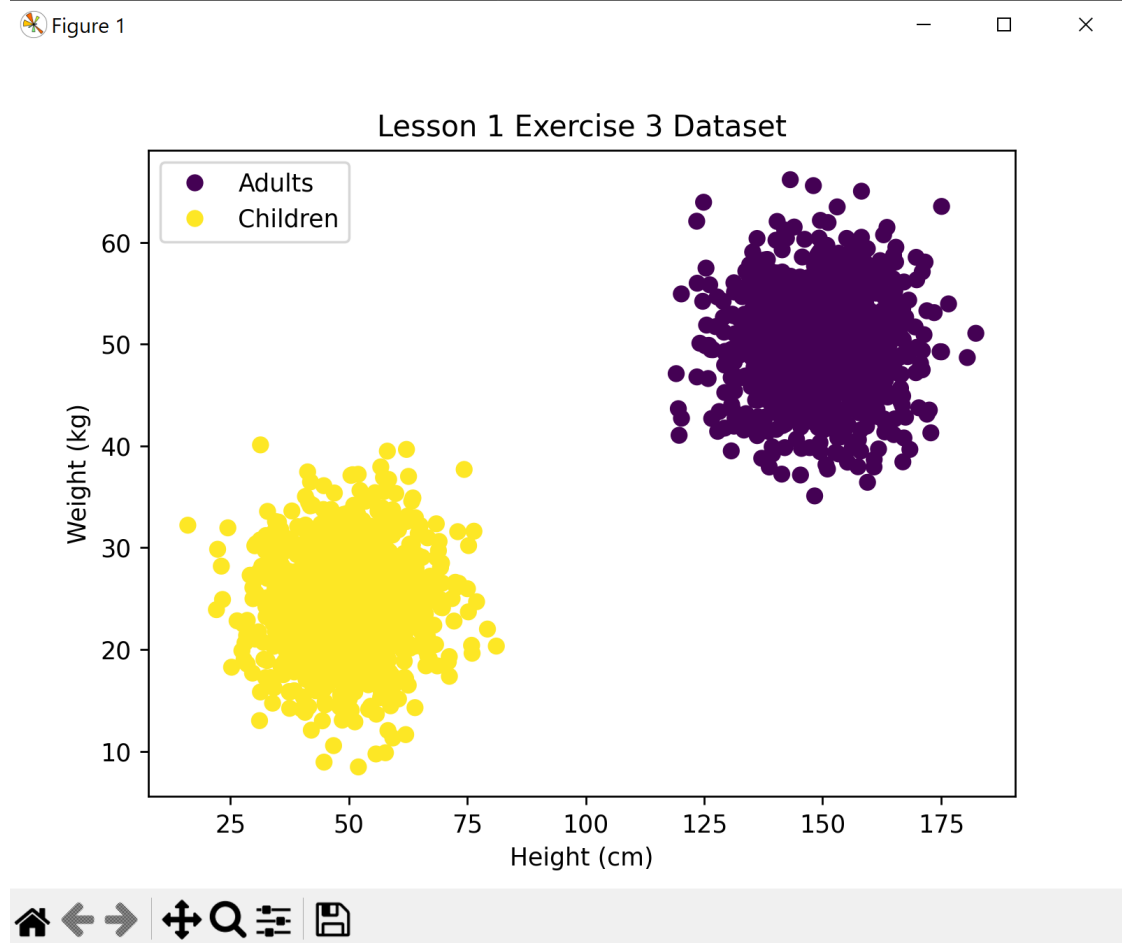
```
# Print the read in csv files
print(f"Dataset read from csv file:\n\n{check_dataset}")
print(f"Targets read from csv file:\n\n{check_targets}")
```

Problems tab in VSCode:

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

No problems have been detected in the workspace.

2. Scatter plot of the dataset:

Figure 1

3. CSV files created in my directory:

```
PS C:\Users\Harry\Desktop\ENEL525\enel-525\project\lesson1exercise> ls


    Directory: C:\Users\Harry\Desktop\ENEL525\enel-525\project\lesson1exercise


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----         2023-11-23   1:49 PM         56053 ENEL 525 Project Lesson 1 Exercise.pdf
-a----         2023-11-24   6:05 AM          1259 lesson1ex3.py
-a----         2023-11-24   5:53 AM             0 lesson1exercise.docx


PS C:\Users\Harry\Desktop\ENEL525\enel-525\project\lesson1exercise> python .\lesson1ex3.py
PS C:\Users\Harry\Desktop\ENEL525\enel-525\project\lesson1exercise> ls


    Directory: C:\Users\Harry\Desktop\ENEL525\enel-525\project\lesson1exercise


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----         2023-11-24   6:16 AM         75682 dataset.csv
-a----         2023-11-23   1:49 PM         56053 ENEL 525 Project Lesson 1 Exercise.pdf
-a----         2023-11-24   6:15 AM          1263 lesson1ex3.py
-a----         2023-11-24   5:53 AM             0 lesson1exercise.docx
-a----         2023-11-24   6:16 AM         10003 targets.csv
```

4. Partial output from using print command to read csv files:

```
PS C:\Users\Harry\Desktop\ENEL525\enel-525\project\lesson1exercise> python .\lesson1ex3.py
Dataset read from csv file:

               0          1
0      150.822495  49.798712
1      146.427925  57.013556
2      164.767070  42.307519
3      146.872986  54.332364
4      159.028376  48.374302
...           ...        ...
1995    68.593782  18.445313
1996    56.934505  17.930318
1997    63.093893  31.529944
1998    48.311362  33.549236
1999    40.754391  18.081318

[2000 rows x 2 columns]
Targets read from csv file:

         0
0      0.0
1      0.0
2      0.0
3      0.0
4      0.0
...    ...
1995   1.0
1996   1.0
1997   1.0
1998   1.0
1999   1.0

[2000 rows x 1 columns]
```