

DV Laboratory Part B - Exercise 1

Using Python, create your own having columns plant name, sunlight exposure, plant height and answer the following questions:

```
In [20]: import matplotlib.pyplot as plt
import pandas as pd
```

```
In [21]: df = pd.read_csv('plants.csv')
df
```

```
Out[21]:
```

| | plant_name | sunlight_exposure | plant_height |
|---|-------------------------|-------------------|--------------|
| 0 | Chlorophytum comosum | 20 | 67 |
| 1 | Epipremnum aureum | 56 | 89 |
| 2 | Aloe barbadensis miller | 98 | 10 |
| 3 | Spathiphyllum | 32 | 73 |
| 4 | Ficus elastica | 18 | 90 |
| 5 | Sansevieria trifasciata | 28 | 90 |
| 6 | Ficus lyrata | 64 | 99 |
| 7 | Calathea spp. | 8 | 12 |
| 8 | Hedera helix | 78 | 43 |

```
In [22]: df = df[['sunlight_exposure', 'plant_height']]
df.head()
```

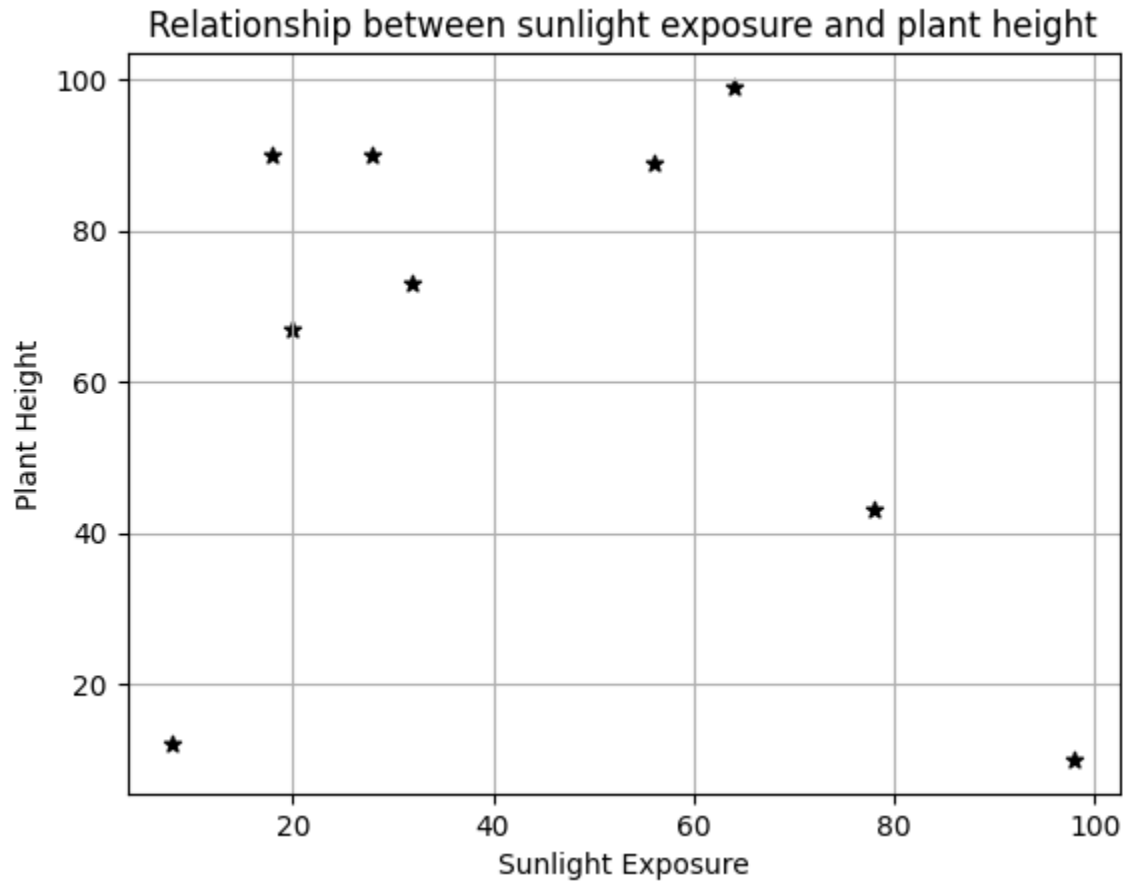
```
Out[22]:
```

| | sunlight_exposure | plant_height |
|---|-------------------|--------------|
| 0 | 20 | 67 |
| 1 | 56 | 89 |
| 2 | 98 | 10 |
| 3 | 32 | 73 |
| 4 | 18 | 90 |

II. Visualize the relationship between sunlight exposure and plant height using a scatterplot.

```
In [27]: plt.figure(dpi=100)
plt.scatter(df['sunlight_exposure'], df['plant_height'], color="black", marker="*")
plt.title('Relationship between sunlight exposure and plant height')
plt.xlabel('Sunlight Exposure')
```

```
plt.ylabel('Plant Height')
plt.grid(True)
plt.show()
```



III. Calculate the correlation coefficient between sunlight exposure and plant height. Is the correlation positive or negative? Is it strong or weak?

```
In [24]: correlation = df['sunlight_exposure'].corr(df['plant_height'])
print(f"Correlation between sunlight exposure and plant height: {correlation}")
```

Correlation between sunlight exposure and plant height: -0.2411875043974829

IV. Based on the correlation coefficient, can we conclude that there is a significant association between sunlight exposure and plant growth rate?

```
In [25]: threshold = 0.7
if abs(correlation) >= threshold:
    print("There is a significant association between sunlight exposure and plant growth")
else:
    print("There is no significant association between sunlight exposure and plant growth")
```

There is no significant association between sunlight exposure and plant growth rate.

I. Is there a relationship between the number of hours of sunlight exposure and the height of the plants?

No, based on the correlation coefficient, it is conclusive that there is no correlation between the number of hours of sunlight exposure and the plant height.