[22]
✓ 0s

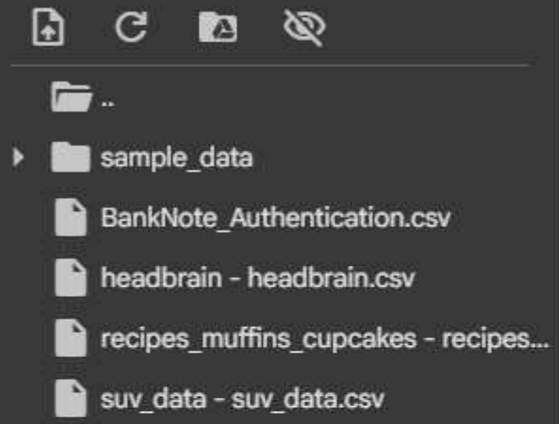
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np

data = pd.read_csv('/content/headbrain - headbrain.csv')
x, y = np.array(list(data['Head Size(cm^3)'])), np.array(list(data['Brain Weight(grams)']))
print(x[:5], y[:5])

def get_line(x, y):
    x_m, y_m = np.mean(x), np.mean(y)
    print(x_m, y_m)
    x_d, y_d = x - x_m, y - y_m
    m = np.sum(x_d * y_d) / np.sum(x_d ** 2)
    c = y_m - (m * x_m)
    print(m, c)
    return lambda x: m * x + c

lin = get_line(x, y)
X = np.linspace(np.min(x) - 100, np.max(x) + 100, 1000)
Y = np.array([lin(x) for x in X])

plt.plot(X, Y, color='red', label='Regression line')
plt.scatter(x, y, color='green', label='Scatter plot')
plt.xlabel('Head Size(cm^3)')
plt.ylabel('Brain Weight(grams)')
plt.legend()
plt.show()
```



[22]
✓ 0s

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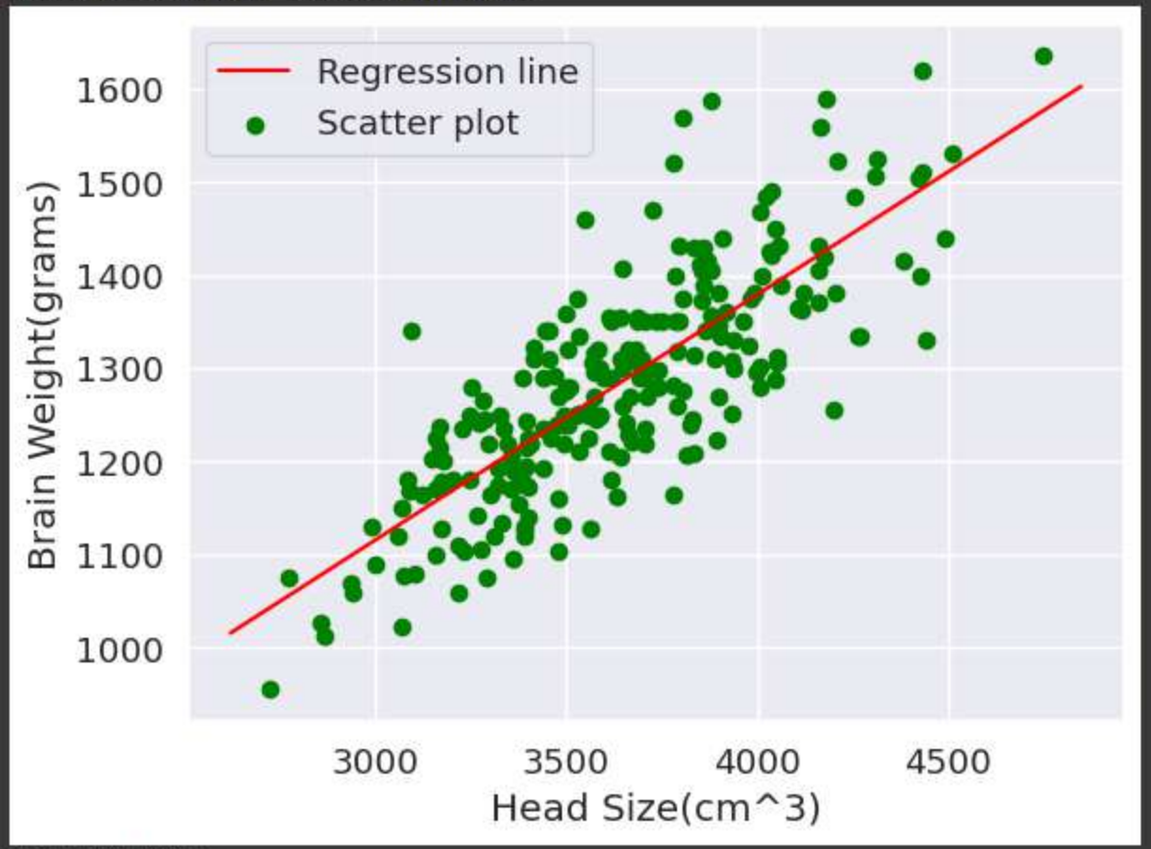
def get_error(line_func, x, y):
    y_m = np.mean(y)
    y_pred = np.array([line_func(_) for _ in x])
    ss_t = np.sum((y - y_m) ** 2)
    ss_r = np.sum((y - y_pred) ** 2)
    return 1 - (ss_r / ss_t)

print(get_error(lin, x, y))

from sklearn.linear_model import LinearRegression
x = x.reshape((len(x), 1))
reg = LinearRegression()
reg = reg.fit(x, y)
print(reg.score(x, y))
```

```
[4512 3738 4261 3777 4177] [1530 1297 1335 1282 1590]
3633.9915611814345 1282.873417721519
0.2634293394893993 325.5734210494428
```




```
0.639311719957
0.639311719957
```