lab1-20212

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0.1 Lab 1

Responsible AI

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- Carné: 20212

[ ]:
```
import math
import pandas as pd
from sklearn import linear_model
from sklearn.metrics import mean_absolute_error
import matplotlib.pyplot as plt
from scipy.stats import pearsonr
```

0. Cargar los datos de estatura y peso

[ ]:
```
url = 'http://wiki.stat.ucla.edu/socr/index.php?
 ↪title=SOCR_Data_Dinov_020108_HeightsWeights&oldid=12529'

height_weight_df = pd.read_html(url)[1][['Height(Inches)','Weight(Pounds)']]
```

[ ]:
```
height_weight_df
```

[ ]:
```
     Height(Inches)  Weight(Pounds)
0             65.78          112.99
1             71.52          136.49
2             69.40          153.03
3             68.22          142.34
4             67.79          144.30
..              …               …
195           65.80          120.84
196           66.11          115.78
197           68.24          128.30
198           68.02          127.47
199           71.39          127.88

[200 rows x 2 columns]
```

0.1.1 1. Count records in the dataframe

[ ]:
```
height_weight_df.shape[0]
```

[ ]:
```
200
```

0.1.2 2. Crear una regresion lineal con estatura como variable explicatoria y peso como variable explicada

[ ]:
```
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression

X = height_weight_df['Height(Inches)'].values.reshape(-1, 1)
y = height_weight_df['Weight(Pounds)'].values.reshape(-1, 1)

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,␣
 ↪random_state=42)

model = LinearRegression()
model.fit(X_train, y_train)
```

[ ]:
```
LinearRegression()
```

0.1.3 3. Hallar el intercepto

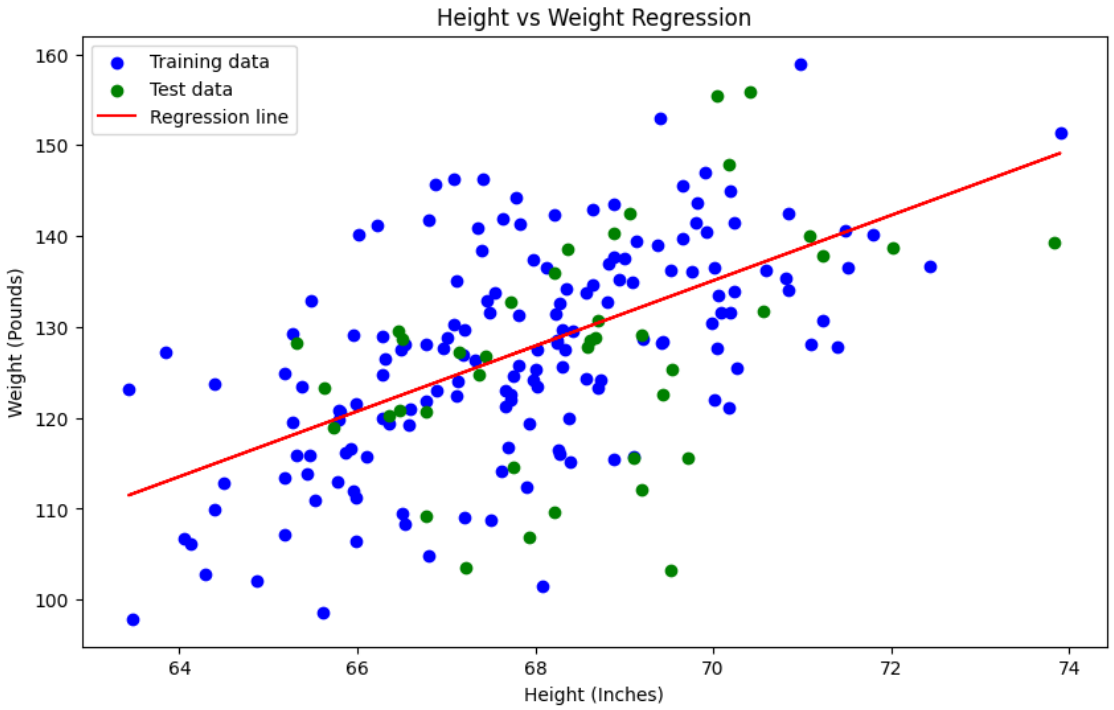
[ ]:
```
model.intercept_
```

[ ]:
```
array([-116.49201196])
```

0.1.4 4. Hacer la grafica

[ ]:
```
plt.figure(figsize=(10, 6))
plt.scatter(X_train, y_train, color='blue', label='Training data')
plt.scatter(X_test, y_test, color='green', label='Test data')
plt.plot(X_train, model.predict(X_train), color='red', label='Regression line')

plt.xlabel('Height (Inches)')
plt.ylabel('Weight (Pounds)')
plt.title('Height vs Weight Regression')
plt.legend()
plt.show()
```



0.1.5 5. Hallar correlacion y valor p

[ ]:
```
# Calcular la correlación de Pearson y el valor p
correlation, p_value = pearsonr(height_weight_df['Height(Inches)'],␣
 ↪height_weight_df['Weight(Pounds)'])

print(f'Correlación: {correlation}')
print(f'Valor p: {p_value}')
```

```
Correlación: 0.5568647346122992
Valor p: 1.1029015151266312e-17
```

0.1.6 6. Interpretar el valor p

Como el valor p es menor a 0.05, la correlación es estadísticamente significativa.