

Description:

The following document enlists the code used for each question of the document titled "LEGO - Project: Test a Perceptual Phenomenon", attached to the same zip file.

Question 2 code:

```
#Importing libraries and reading data
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
data = pd.read_csv('stroopdata.csv')
print(data)
#Describing statistical measures of data
data.describe()
```

Question 4 code:

```
#Importing libraries
import seaborn as sns
color = sns.color_palette()
sns.set_style('darkgrid')
from scipy import stats
from scipy.stats import norm, skew

#Calculating normalized distribution metrics
(mu1, sigma1) = norm.fit(data.Congruent)
print( "For congruent word's normalized time distribution: \n mu = {:.2f} and sigma = {:.2f}\n".format(mu1, sigma1))
(mu2, sigma2) = norm.fit(data.Incongruent)
print( "For incongruent word's time distribution: \n mu = {:.2f} and sigma = {:.2f}\n".format(mu2, sigma2))

#First graph code
ax = sns.distplot(data.Congruent , fit=norm, rug = True)
plt.title('Congruent words test time distribution')
plt.legend(['Normal dist. ($\mu=${:.2f} and $\sigma=${:.2f})'.format(mu1, sigma1)], loc='best')
plt.ylabel('Frequency')
plt.xlabel('Time [s]')
plt.show()

#Second graph code
ax2 = sns.distplot(data.Incongruent , fit=norm, rug = True)
plt.title('Incongruent words test time distribution')
```

```
plt.legend(['Normal dist. ( $\mu$ = $ {:.2f} and  $\sigma$ = $ {:.2f}
)'.format(mu2, sigma2)], loc='best')
plt.ylabel('Frequency')
plt.xlabel('Times [s]')
plt.show()
```

Question 5 code:

```
#Statistical test code
stats.ttest_rel(data.Congruent, data.Incongruent)
tvalue = stats.ttest_rel(data.Congruent, data.Incongruent)[0]
pvalue = stats.ttest_rel(data.Congruent, data.Incongruent)[1]
print("The t-value for a paired t-test is:{}".format(tvalue))
print("The p-value for a paired t-test is:{}".format(pvalue))
```