As a general note, be sure to keep a record of any resources that you use or refer to in the creation of your project. You will need to report your sources as part of the project submission.

1. What is our independent variable? What is our dependent variable?

   - Independent variable – Color change of the words
   - Dependent variable – response time of participant

2. What is an appropriate set of hypotheses for this task?

   - Null: $H_{congruent} = H_{incongruent}$. No change in response times
   - Alt: $H_{congruent} < H_{incongruent}$. Increased response times due to the Stroop effect.

   What kind of statistical test do you expect to perform?
   - Dependent-Samples t Test, 1 tail

   Justify your choices.
   - Dependent test was chosen because the same subject is taking the test twice. 1-tail test was chosen because it is expected that the independent variable (incongruent words) will increase cognitive thought which will then introduce a delayed response.

   Record the times that you received on the Stroop task
   - Congruent: 22.549
   - Incongruent: 27.104

3. Report some descriptive statistics regarding this dataset. Include at least one measure of central tendency and at least one measure of variability.

   - $X\text{-bar}_{diff}$: -7.96. The negative value represents additional lag in response.
   - SD_{diff}: 4.86. Standard Deviation from the difference mean.

4. Provide one or two visualizations that show the distribution of the sample data. Write one or two sentences noting what you observe about the plot or plots.

Congruent

	11	14	17	20	23	More
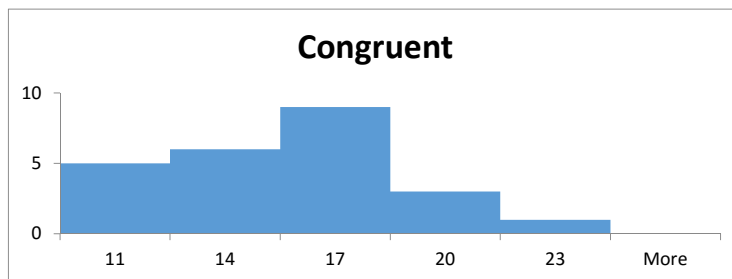
   - The Congruent histogram above shows a negative skewed sample.
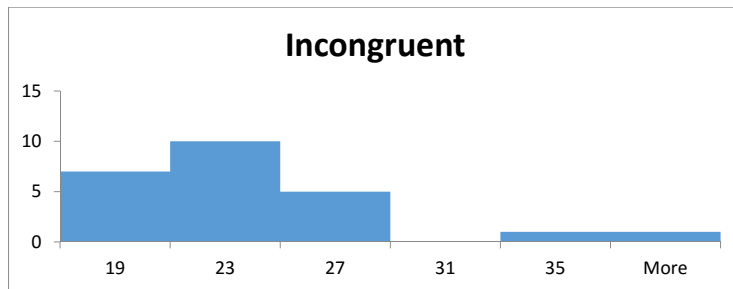
- The Incongruent histogram above shows a negative skewed sample.

5. Now, perform the statistical test and report your results. What is your confidence level and your critical statistic value?

Diff	
Mean	-7.96
Standard Error	0.99
Median	-7.67
Mode	#N/A
Standard Deviation	4.86
Sample Variance	23.67
Kurtosis	1.71
Skewness	-1.07
Range	19.97
Minimum	-21.92
Maximum	-1.95
Sum	-191.16
Count	24.00
Confidence Level (95.0%)	2.05

- CI (95%) = (-7.96-2.05), (-7.96+2.05) = -10.01, -5.91

Do you reject the null hypothesis or fail to reject it?

t-Test: Paired Two Sample for Means

	Variable 1	Variable 2
Mean	14.05	22.02
Variance	12.67	23.01
Observations	24	24
Pearson Correlation	0.35	
Hypothesized Mean Difference	0	
df	23	
t Stat	-8.02	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.71	
P(T<=t) two-tail	0.00	
t Critical two-tail	2.07	

- Null hypotheses gets rejected because T_{STAT} is in the critical region.

Come to a conclusion in terms of the experiment task. Did the results match up with your expectations?
- Since I expected a slower response time because of the stroop effect, the results matched my expectations.

6. Optional: What do you think is responsible for the effects observed?
- Delayed cognitive response due to the Stroop effect.

   Can you think of an alternative or similar task that would result in a similar effect?
- Spatial stroop effect demonstrated by the relation of a pointed arrow.