CSE 635, Spring 2021, Homework 4
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1. perform t_test for Peppers. H0: mu(angles)=0 and H1: mu(angles)<>1

Code:

```
ds=read.table("peppers.txt", header = TRUE)
head(ds)
length(ds$angle)
mean(ds$angle)
sd(ds$angle)
summary(ds$angle)
boxplot(ds$angle)
test = t.test(ds$angle,mu = 0, conf.level = 0.95)
test
```

Result of t-test:

```
        One Sample t-test

data:  ds$angle
t = 3.1742, df = 27, p-value = 0.003733
alternative hypothesis: true mean is not equal to 0
95 percent confidence interval:
 1.123883 5.233259
sample estimates:
mean of x
3.178571
```

The result shows that p-value is very small (0.003733<0.05) so we must reject the null hypothesis.
The second indicator in t-test, confidence interval [1.123883 5.233259] doesn't include zero so both indicator shows that we have to reject H0.

2. perform t_test for paired observation in pulse.txt

Code:

```
ds=read.table("pulse.txt", header = TRUE)
D=ds$pre-ds$post
D
test_new = t.test(D,mu = 0, conf.level = 0.95)
test_new

hist(D)
boxplot(D)

mean(ds$pre)
mean(ds$post)
```

Result of t-test:

One Sample t-test

data: D
t = 2.4423, df = 14, p-value = 0.02846
alternative hypothesis: true mean is not equal to 0
95 percent confidence interval:
0.1786603 2.7546730
sample estimates:
mean of x
1.466667

The result shows that p-value is small (0.02846<0.05) so we must reject the null hypothesis
The second indicator in t-test, confidence interval [0.1786603 2.7546730] doesn't include zero so both indicator shows that we have to reject H0