Big Data Analysis Lab-02

Name: Gurvinder Kaur Matharu
PRN: 201990802077

```
from scipy import stats
```

Question 1

```
bp = [183, 152, 178, 157, 194, 163, 144, 114, 178, 152, 118, 158, 172, 138]
mu = 165
t_value,p_value = stats.ttest_1samp(bp,mu)
one_tailed_p_value=float("{:.6f}".format(p_value/2))
print('Test statistic is %f'%float("{:.6f}".format(t_value)))
print('p-value for one tailed test is %f'%one_tailed_p_value)
```

```
Test statistic is -1.243183
p-value for one tailed test is 0.117877
```

```
alpha = 0.05
if one_tailed_p_value<=alpha:
    print('Since p-value(=%f)'%p_value,'<','alpha(=%.2f)'%alpha,'''We reject the null hypo
So we conclude that there is no significant mean difference in systolic blood pressure.'''
else:
    print('Since p-value(=%f)'%one_tailed_p_value,'>','alpha(=%.2f)'%alpha,'''We do not re
```

```
Since p-value(=0.117877) > alpha(=0.05) We do not reject the null hypothesis H0.
```

Question 2

```
Ammonium_chloride=[13.4,10.9,11.2,11.8,14,15.3,14.2,12.6,17,16.2,16.5,15.7]
Urea=[12,11.7,10.7,11.2,14.8,14.4,13.9,13.7,16.9,16,15.6,16]
```

```
t_value,p_value=stats.ttest_ind(Ammonium_chloride,Urea)
print('Test statistic is %f'%float("{:.6f}".format(t_value)))
print('p-value for two tailed test is %f'%p_value)
if p_value<=alpha:
    print('Since p-value(=%f)'%p_value,'<','alpha(=%.2f)'%alpha,'''We reject the null hypo
effect of ammonium chloride and urea on grain yield of paddy are not equal.'''%alpha)
else:
    print('Since p-value(=%f)'%p_value,'>','alpha(=%.2f)'%alpha,'''We do not reject the nu
```

```
Test statistic is 0.184650
p-value for two tailed test is 0.855195
Since p-value(=0.855195) > alpha(=0.05) We do not reject the null hypothesis H0.
```

Question 3

```
alpha = 0.05
first_test =[23, 20, 19, 21, 18, 20, 18, 17, 23, 16, 19]
second_test=[24, 19, 22, 18, 20, 22, 20, 20, 23, 20, 18]
```

```
t_value,p_value=stats.ttest_rel(first_test,second_test)
one_tailed_p_value=float("{:.6f}".format(p_value/2))
print('Test statistic is %f'%float("{:.6f}".format(t_value)))
print('p-value for one_tailed_test is %f'%one_tailed_p_value)
alpha = 0.05
if one_tailed_p_value<=alpha:
    print('Since p-value(=%f)'%one_tailed_p_value,'<','alpha(=%.2f)'%alpha,'''We reject th
    So we conclude that the students have benefited by the tuition class.''')
else:
    print('Since p-value(=%f)'%one_tailed_p_value,'>','alpha(=%.2f)'%alpha,'''We do not re
So we conclude that the students have not benefited by the tuition class.''')
```

```
Test statistic is -1.707331
p-value for one_tailed_test is 0.059282
Since p-value(=0.059282) > alpha(=0.05) We do not reject the null hypothesis H0.
So we conclude that the students have not benefited by the tuition class.
```