In [ ]:
```python
import numpy as np
import pandas as pd
from math import sqrt
from itertools import combinations

df= pd.read_csv("C:/Users/mkahs/Desktop/winequality-white.csv",sep=';')
p=[]
q= []
for i in df.columns:
    s=0
    sigma_x=0
    sigma_y=0



    x = np.mean(df[i])
    y = np.mean(df['quality'])

    for j,k in zip(df[i],df['quality']):
        s = s + ((j-x)*(k-y))
        sigma_x= sigma_x+(j-x)**2
        sigma_y= sigma_y+(k-y)**2

    r = s/(sqrt(sigma_x*sigma_y))

    print("Pearson Coefficient between  [", i , "]  & Target Variable is: ", r
)
    p.append(abs(r))
    q.append(i)
    #print(r)


# print(len(p))
# print(len(q))
print("#######################################################")
dict1= dict(zip(q,p))
sorted(dict1.values())

# p.sort()
for key, value in dict1.items():
    if (0.3>abs(value)>=0.1):
        print("The correlation between [",key,"] and Target variable is SMALL"
)
    if (0.5>abs(value)>=0.3):
        print("The correlation between [",key,"] and Target variable is MEDIU
M")
    if (1>=abs(value)>=0.5):
        print("The correlation between [",key,"] and Target variable is LARGE"
)

# k=[]
# l= []
result=[]
x_cols = [x for x in df.columns if x != 'acceptability']
for var1 in x_cols:
    u = df[var1].unique()
```

```python
#      x_cols = [x for x in df.columns if x != var1]



    k=[]
    l= []


#     print (var1)

    for var2 in x_cols:
        s=0
        sigma_x=0
        sigma_y=0
        x = np.mean(df[var1])
        l= []
        y = np.mean(df[var2])
        for j,k in zip(df[var1],df[var2]):
            s = s + ((j-x)*(k-y))
            sigma_x= sigma_x+(j-x)**2
            sigma_y= sigma_y+(k-y)**2

        r = s/(sqrt(sigma_x*sigma_y))
        l.append(r)
        print(r)
#         print('\n')
#     print(l)
#     result.append(l)
    print('\n')
#     print(result)
#     print('\n')
# result.reshape(len(x_cols),len(x_cols))
# np.array(result).reshape(len(x_cols),len(x_cols) )
# print(result)


#         q = df[var2].unique()
#         print(var2)
```