

Homework 2

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Problem 2

```
#Manhattan Distance function
#Create 2 Vectors
V1 = [1, 2, 3, 4, 5]
V2 = [5, 4, 3, 2, 1]

def Manhattan_Distance(X, Y):
    temp = zip(X,Y)
    distance = sum(abs(x-y) for x, y in temp)
    return distance
#Take 2 vectors in
#Pair vector values with zip
#Calculate the distance between each pair
#Return the distance

Manhattan_Distance(V1, V2)
```

```
## 12
```

```
from math import sqrt
#Euclidean Distance Function
def Euclidean_Distance(X, Y):
    temp = zip(X,Y)
    distance = sqrt(sum( abs(x-y)**2 for x, y in temp))
    return distance

Euclidean_Distance(V1, V2)
```

```
## 6.324555320336759
```

Problem 4

```
#loading ggplot library
library(ggplot2)

#calculate and output the correlation with cor() between mpg and wt
correlation = cor(mtcars$mpg, mtcars$wt)
correlation
```

```
## [1] -0.8676594
```

```
#Create Scatter plot
ggplot(mtcars, aes(x=wt, y=mpg)) + geom_point() + scale_x_continuous("mtcars$wt") + scale_y_continuous("mtcars$mpg")
```

