IST 687
Homework 2
Due Date: 10/19

Step 1: What is the hp (hp stands for "horse power")

```
#Add mtcars dataset and name it myCars
data(mtcars)
myCars <- mtcars

#What is the highest hp? Which car has the highest hp? create sorted dataframe based on hp.
myCars_Sort_Descending_by_hp <- myCars[order(-myCars$hp),]
head(myCars_Sort_Descending_by_hp,1)
##              mpg cyl disp  hp drat   wt qsec vs am gear carb
## Maserati Bora  15   8  301 335 3.54 3.57 14.6  0  1    5    8
```

Step 2: Explore mpg (mpg stands for "miles per gallon")

```
#what is the highest mpg? which car has the highest mpg? create sorted dataframe based on mpg.
myCars_Sort_Descending_by_mpg <- myCars[order(-myCars$mpg),]
head(myCars_Sort_Descending_by_mpg,1)
##                mpg cyl disp hp drat    wt qsec vs am gear carb
## Toyota Corolla 33.9   4 71.1 65 4.22 1.835 19.9  1  1    4    1
```

Step 3: Which car has the "best" combination of mpg and hp?

```
#add hp and mpg to determine best combination
myCars$Best_Combination_Unweighted <- myCars$mpg + myCars$hp
myCars_Sort_Descending_by_Best_Combination_Unweighted <- myCars[order(-myCars$Best_Combinati
on_Unweighted),]
head(myCars_Sort_Descending_by_Best_Combination_Unweighted,5)
##                   mpg cyl disp  hp drat    wt  qsec vs am gear carb
## Maserati Bora     15.0   8  301 335 3.54 3.570 14.60  0  1    5    8
## Ford Pantera L    15.8   8  351 264 4.22 3.170 14.50  0  1    5    4
## Duster 360        14.3   8  360 245 3.21 3.570 15.84  0  0    3    4
## Camaro Z28        13.3   8  350 245 3.73 3.840 15.41  0  0    3    4
## Chrysler Imperial 14.7   8  440 230 3.23 5.345 17.42  0  0    3    4
##                   Best_Combination_Unweighted
## Maserati Bora                           350.0
## Ford Pantera L                          279.8
## Duster 360                              259.3
## Camaro Z28                              258.3
## Chrysler Imperial                       244.7
```

Step 4 Which car has “best” car combination of mpg and hp, where mpg and hp must be given equal weight?

```
#normalize then add hp and mpg to determine best combination
myCars$mpg_relative_to_average <- myCars[,1]/mean(myCars[,1])
myCars$hp_relative_to_average <- myCars[,4]/mean(myCars[,4])
myCars$Best_Combination_Weighted <- myCars$mpg_relative_to_average + myCars$hp_relative_to_av
erage
myCars_Sort_Descending_by_Best_Combination_Weighted <- myCars[order(-myCars$Best_Combination
_Weighted),]
head(myCars_Sort_Descending_by_Best_Combination_Weighted,1)
##              mpg cyl disp  hp drat   wt qsec vs am gear carb
## Maserati Bora  15   8  301 335 3.54 3.57 14.6  0  1    5    8
##              Best_Combination_Unweighted mpg_relative_to_average
## Maserati Bora                         350              0.7466169
##              hp_relative_to_average Best_Combination_Weighted
## Maserati Bora               2.283767                 3.030383
```