HW 2

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```
#install.packages("survey")

myCars = mtcars

#step 1
# 1
max(myCars$hp)
```

```
## [1] 335
```

```
# 2
myCars[which.max(myCars$hp), ] # returns row
```

```
##               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
```

```
rownames(myCars[which.max(myCars$hp), ]) # extract row name
```

```
## [1] "Maserati Bora"
```

```
#step 2
# 3
max(myCars$mpg)
```

```
## [1] 33.9
```

```
# 4
myCars[which.max(myCars$mpg), ]
```

```
##                 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
```

```
rownames(myCars[which.max(myCars$mpg), ])
```

```
## [1] "Toyota Corolla"
```

```
# 5
myCarsMpg = myCars[order(myCars$mpg), ]

# step 3
#6
myCarsMpg[order(myCarsMpg$hp), ]
```

```
##                     mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Honda Civic        30.4   4  75.7  52 4.93 1.615 18.52  1  1    4    2
## Merc 240D          24.4   4 146.7  62 3.69 3.190 20.00  1  0    4    2
## Toyota Corolla     33.9   4  71.1  65 4.22 1.835 19.90  1  1    4    1
## Fiat X1-9          27.3   4  79.0  66 4.08 1.935 18.90  1  1    4    1
## Fiat 128           32.4   4  78.7  66 4.08 2.200 19.47  1  1    4    1
## Porsche 914-2      26.0   4 120.3  91 4.43 2.140 16.70  0  1    5    2
## Datsun 710         22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
## Merc 230           22.8   4 140.8  95 3.92 3.150 22.90  1  0    4    2
```

```
## Toyota Corona       21.5   4 120.1  97 3.70 2.465 20.01  1  0    3    1
## Valiant             18.1   6 225.0 105 2.76 3.460 20.22  1  0    3    1
## Volvo 142E          21.4   4 121.0 109 4.11 2.780 18.60  1  1    4    2
## Mazda RX4           21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag       21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
## Hornet 4 Drive      21.4   6 258.0 110 3.08 3.215 19.44  1  0    3    1
## Lotus Europa        30.4   4  95.1 113 3.77 1.513 16.90  1  1    5    2
## Merc 280C           17.8   6 167.6 123 3.92 3.440 18.90  1  0    4    4
## Merc 280            19.2   6 167.6 123 3.92 3.440 18.30  1  0    4    4
## AMC Javelin         15.2   8 304.0 150 3.15 3.435 17.30  0  0    3    2
## Dodge Challenger    15.5   8 318.0 150 2.76 3.520 16.87  0  0    3    2
## Hornet Sportabout   18.7   8 360.0 175 3.15 3.440 17.02  0  0    3    2
## Pontiac Firebird    19.2   8 400.0 175 3.08 3.845 17.05  0  0    3    2
## Ferrari Dino        19.7   6 145.0 175 3.62 2.770 15.50  0  1    5    6
## Merc 450SLC         15.2   8 275.8 180 3.07 3.780 18.00  0  0    3    3
## Merc 450SE          16.4   8 275.8 180 3.07 4.070 17.40  0  0    3    3
## Merc 450SL          17.3   8 275.8 180 3.07 3.730 17.60  0  0    3    3
## Cadillac Fleetwood  10.4   8 472.0 205 2.93 5.250 17.98  0  0    3    4
## Lincoln Continental 10.4   8 460.0 215 3.00 5.424 17.82  0  0    3    4
## Chrysler Imperial   14.7   8 440.0 230 3.23 5.345 17.42  0  0    3    4
## Camaro Z28          13.3   8 350.0 245 3.73 3.840 15.41  0  0    3    4
## Duster 360          14.3   8 360.0 245 3.21 3.570 15.84  0  0    3    4
## Ford Pantera L      15.8   8 351.0 264 4.22 3.170 14.50  0  1    5    4
## Maserati Bora       15.0   8 301.0 335 3.54 3.570 14.60  0  1    5    8
```

```
bestMPG = mean(myCarsMpg$mpg)
bestHP = mean(myCarsMpg$hp)

bestCars = myCars[myCars$mpg > bestMPG,] # I only want the cars that have best mpg
bestComboCar = bestCars[bestCars$hp == max(bestCars$hp), ] # Now i want the best hp in that slice

#And the best combo is...
bestComboCar
```

```
##               mpg cyl disp  hp drat    wt qsec vs am gear carb
## Lotus Europa 30.4   4 95.1 113 3.77 1.513 16.9  1  1    5    2
```

```
# step 4
# This is just me exploring for this step.
library(survey)
```

```
## Warning: package 'survey' was built under R version 3.5.2
## Loading required package: grid
## Loading required package: Matrix
## Loading required package: survival
##
## Attaching package: 'survey'
## The following object is masked from 'package:graphics':
##
##     dotchart
```

```
myCars.weighted = svydesign(ids = ~1, data = myCars, weights = myCars$mpg)
summary(myCars.weighted)
```

```
## Independent Sampling design (with replacement)
## svydesign(ids = ~1, data = myCars, weights = myCars$mpg)
## Probabilities:
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.02950 0.04386 0.05208 0.05423 0.06483 0.09615
## Data variables:
##  [1] "mpg"  "cyl"  "disp" "hp"   "drat" "wt"   "qsec" "vs"   "am"   "gear"
## [11] "carb"
```

```
myCars.weighted
```

```
## Independent Sampling design (with replacement)
## svydesign(ids = ~1, data = myCars, weights = myCars$mpg)
```

```
prop.table(table(myCars$mpg))
```

```
##
##    10.4    13.3    14.3    14.7      15    15.2    15.5    15.8    16.4
## 0.06250 0.03125 0.03125 0.03125 0.03125 0.06250 0.03125 0.03125 0.03125
##    17.3    17.8    18.1    18.7    19.2    19.7      21    21.4    21.5
## 0.03125 0.03125 0.03125 0.03125 0.06250 0.03125 0.06250 0.06250 0.03125
##    22.8    24.4      26    27.3    30.4    32.4    33.9
## 0.06250 0.03125 0.03125 0.03125 0.06250 0.03125 0.03125
```