HW2.R

xboxv

2020-02-16

```
myCars <- mtcars
myCars
##
                         mpg cyl disp hp drat
                                                    wt qsec vs am gear carb
                               6 160.0 110 3.90 2.620 16.46
## Mazda RX4
                        21.0
                                                                  1
                                                                            4
## Mazda RX4 Wag
                        21.0
                               6 160.0 110 3.90 2.875 17.02
                                                                  1
                                                                            4
                                                              0
## Datsun 710
                               4 108.0 93 3.85 2.320 18.61
                                                                            1
                        22.8
## Hornet 4 Drive
                               6 258.0 110 3.08 3.215 19.44
                                                                            1
                        21.4
                                                              1
## Hornet Sportabout
                        18.7
                               8 360.0 175 3.15 3.440 17.02
                                                                            2
                               6 225.0 105 2.76 3.460 20.22
## Valiant
                                                              1
                                                                            1
                        18.1
## Duster 360
                        14.3
                               8 360.0 245 3.21 3.570 15.84
                                                              0
                                                                 0
                                                                       3
                                                                            4
## Merc 240D
                        24.4
                               4 146.7
                                        62 3.69 3.190 20.00
                                                              1
                                                                 0
                                                                            2
## Merc 230
                        22.8
                               4 140.8 95 3.92 3.150 22.90
                                                                            2
## Merc 280
                        19.2
                               6 167.6 123 3.92 3.440 18.30
                                                                 0
                                                                       4
                                                                            4
                                                              1
                               6 167.6 123 3.92 3.440 18.90
## Merc 280C
                        17.8
                                                              1
                                                                            4
## Merc 450SE
                        16.4
                               8 275.8 180 3.07 4.070 17.40
                                                                       3
                                                                            3
                                                                            3
## Merc 450SL
                        17.3
                               8 275.8 180 3.07 3.730 17.60
## Merc 450SLC
                        15.2
                               8 275.8 180 3.07 3.780 18.00
                                                                 0
                                                                       3
                                                                            3
                               8 472.0 205 2.93 5.250 17.98
                                                                       3
                                                                            4
## Cadillac Fleetwood
                        10.4
## Lincoln Continental 10.4
                               8 460.0 215 3.00 5.424 17.82
                                                              0
                                                                  0
                                                                       3
                                                                            4
                               8 440.0 230 3.23 5.345 17.42
                                                                            4
## Chrysler Imperial
                        14.7
                                                                       3
## Fiat 128
                        32.4
                                 78.7
                                        66 4.08 2.200 19.47
                                                              1
                                                                 1
                                                                            1
## Honda Civic
                        30.4
                               4
                                  75.7
                                         52 4.93 1.615 18.52
                                                              1
                                                                 1
                                                                       4
                                                                            2
## Toyota Corolla
                        33.9
                               4 71.1
                                        65 4.22 1.835 19.90
                                                              1
                                                                            1
## Toyota Corona
                        21.5
                               4 120.1
                                        97 3.70 2.465 20.01
                                                                       3
                                                                            1
                                                                            2
## Dodge Challenger
                        15.5
                               8 318.0 150 2.76 3.520 16.87
                                                                            2
## AMC Javelin
                        15.2
                               8 304.0 150 3.15 3.435 17.30
                                                                 0
                                                                       3
                               8 350.0 245 3.73 3.840 15.41
                                                                       3
                                                                            4
## Camaro Z28
                        13.3
## Pontiac Firebird
                        19.2
                               8 400.0 175 3.08 3.845 17.05
                                                                            2
                                                              0
                                                                 0
                                                                       3
## Fiat X1-9
                        27.3
                                  79.0 66 4.08 1.935 18.90
                                                                 1
                                                                       4
                                                                            1
                                                              1
## Porsche 914-2
                        26.0
                               4 120.3 91 4.43 2.140 16.70
                                                                 1
                                                                       5
                                                                            2
                                  95.1 113 3.77 1.513 16.90
                                                                 1
                                                                       5
                                                                            2
## Lotus Europa
                        30.4
                                                              1
## Ford Pantera L
                        15.8
                               8 351.0 264 4.22 3.170 14.50
                                                                            4
## Ferrari Dino
                        19.7
                               6 145.0 175 3.62 2.770 15.50
                                                              0
                                                                 1
                                                                       5
                                                                            6
## Maserati Bora
                        15.0
                               8 301.0 335 3.54 3.570 14.60
                                                                 1
                                                                            8
                                                                            2
## Volvo 142E
                        21.4
                               4 121.0 109 4.11 2.780 18.60
"Steop 1"
## [1] "Steop 1"
"1- Lower Hp is best bercause you get more mielage"
```

```
## [1] "1- Lower Hp is best bercause you get more mielage"
"2= Ford Panters L"
## [1] "2= Ford Panters L"
"Step 2"
## [1] "Step 2"
max(myCars$mpg)
## [1] 33.9
myCars[which.max(myCars$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
NewMpg <- myCars[order(myCars$mpg, decreasing=T),]</pre>
NewMpg
##
                                  disp hp drat
                                                    wt qsec vs am gear carb
                        mpg cyl
## Toyota Corolla
                                  71.1
                                        65 4.22 1.835 19.90
                        33.9
                                                              1
                                                                 1
                                                                            1
## Fiat 128
                        32.4
                                  78.7
                                        66 4.08 2.200 19.47
                                                                       4
                                                                            1
                                 75.7
                                                                            2
## Honda Civic
                        30.4
                                        52 4.93 1.615 18.52
                               4 95.1 113 3.77 1.513 16.90
                                                                            2
## Lotus Europa
                        30.4
                                                              1
                                                                 1
                               4 79.0 66 4.08 1.935 18.90
                                                                            1
## Fiat X1-9
                        27.3
                                                              1
                                                                 1
                               4 120.3
                                        91 4.43 2.140 16.70
                                                                            2
## Porsche 914-2
                        26.0
                                                                 1
## Merc 240D
                        24.4
                               4 146.7
                                        62 3.69 3.190 20.00
                                                              1
                                                                 0
                                                                            2
## Datsun 710
                       22.8
                               4 108.0 93 3.85 2.320 18.61
                                                              1
                                                                 1
                                                                            1
## Merc 230
                        22.8
                               4 140.8 95 3.92 3.150 22.90
                                                              1
                                                                       4
                                                                            2
## Toyota Corona
                        21.5
                               4 120.1 97 3.70 2.465 20.01
                                                                            1
                               6 258.0 110 3.08 3.215 19.44
## Hornet 4 Drive
                        21.4
                                                                            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
                                                                 1
                                                                       4
                                                                            4
                        21.0
                               6 160.0 110 3.90 2.875 17.02
                                                                 1
                                                                            4
## Mazda RX4 Wag
## Ferrari Dino
                        19.7
                               6 145.0 175 3.62 2.770 15.50
                                                                            6
## Merc 280
                       19.2
                               6 167.6 123 3.92 3.440 18.30
                                                              1
                                                                 0
                                                                       4
                                                                            4
                       19.2
                               8 400.0 175 3.08 3.845 17.05
                                                                       3
                                                                            2
## Pontiac Firebird
## Hornet Sportabout
                        18.7
                               8 360.0 175 3.15 3.440 17.02
                                                                       3
                                                                            2
## Valiant
                        18.1
                               6 225.0 105 2.76 3.460 20.22
                                                                            1
                        17.8
                               6 167.6 123 3.92 3.440 18.90
## Merc 280C
                                                                       4
                                                                            4
## Merc 450SL
                        17.3
                               8 275.8 180 3.07 3.730 17.60
                                                              0
                                                                       3
                                                                            3
                                                                            3
## Merc 450SE
                       16.4
                               8 275.8 180 3.07 4.070 17.40
                                                              0
                                                                 0
                                                                       3
## Ford Pantera L
                       15.8
                               8 351.0 264 4.22 3.170 14.50
                                                                 1
                                                                       5
                                                                            4
## Dodge Challenger
                       15.5
                               8 318.0 150 2.76 3.520 16.87
                                                                       3
                                                                            2
## Merc 450SLC
                               8 275.8 180 3.07 3.780 18.00
                                                                 0
                                                                       3
                                                                            3
                       15.2
                                                              0
## AMC Javelin
                       15.2
                               8 304.0 150 3.15 3.435 17.30
                                                                       3
                                                                            2
## Maserati Bora
                        15.0
                               8 301.0 335 3.54 3.570 14.60
                                                                       5
                                                                            8
## Chrysler Imperial
                                                                       3
                        14.7
                               8 440.0 230 3.23 5.345 17.42
                                                                            4
                               8 360.0 245 3.21 3.570 15.84
## Duster 360
                        14.3
                                                                            4
```

```
## Camaro Z28
                        13.3
                               8 350.0 245 3.73 3.840 15.41
                                                                        3
## Cadillac Fleetwood
                                8 472.0 205 2.93 5.250 17.98
                                                                        3
                                                                              4
                        10.4
                                                                   0
                                                                              4
## Lincoln Continental 10.4
                               8 460.0 215 3.00 5.424 17.82
                                                                        3
"Step 3"
## [1] "Step 3"
myCars[which.max(myCars$mpg/myCars$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
"Comparing the highest ratio of Mpg to Hp"
## [1] "Comparing the highest ratio of Mpg to Hp"
MpgtoHp <- myCars$mpg/myCars$hp</pre>
myCars[order(MpgtoHp),]
##
                                   disp hp drat
                                                         qsec vs am gear carb
                         mpg cyl
                                                     wt
## Maserati Bora
                        15.0
                                8 301.0 335 3.54 3.570 14.60
                                                                   1
                                                                        5
## Lincoln Continental 10.4
                                8 460.0 215 3.00 5.424 17.82
                                                                   a
                                                                        3
                                                                              4
                                                                0
## Cadillac Fleetwood
                        10.4
                                8 472.0 205 2.93 5.250 17.98
                                                                0
                                                                   0
                                                                        3
                                                                              4
                                8 350.0 245 3.73 3.840 15.41
                                                                             4
## Camaro Z28
                        13.3
                                                                   0
                                                                        3
## Duster 360
                        14.3
                                8 360.0 245 3.21 3.570 15.84
                                                                        3
                                                                             4
                                                                        5
## Ford Pantera L
                        15.8
                                8 351.0 264 4.22 3.170 14.50
                                                                   1
                                                                             4
                                8 440.0 230 3.23 5.345 17.42
                                                                   0
                                                                        3
## Chrysler Imperial
                        14.7
                                                                0
                                                                              4
                        15.2
                                8 275.8 180 3.07 3.780 18.00
                                                                   0
                                                                              3
## Merc 450SLC
                                                                0
                                                                        3
                                                                              3
## Merc 450SE
                                8 275.8 180 3.07 4.070 17.40
                                                                   0
                                                                        3
                        16.4
## Merc 450SL
                        17.3
                                8 275.8 180 3.07 3.730 17.60
                                                                0
                                                                   0
                                                                        3
                                                                              3
                                                                             2
## 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
                                                                        3
## Hornet Sportabout
                                8 360.0 175 3.15 3.440 17.02
                                                                        3
                                                                              2
                        18.7
## Pontiac Firebird
                        19.2
                                8 400.0 175 3.08 3.845 17.05
                                                                              2
                                6 145.0 175 3.62 2.770 15.50
                                                                   1
                                                                        5
## Ferrari Dino
                        19.7
                                                                0
                                                                             6
## Merc 280C
                                6 167.6 123 3.92 3.440 18.90
                                                                1
                                                                   0
                                                                        4
                                                                             4
                        17.8
## Merc 280
                        19.2
                                6 167.6 123 3.92 3.440 18.30
                                                                1
                                                                   0
                                                                        4
                                                                             4
## Valiant
                        18.1
                                6 225.0 105 2.76 3.460 20.22
                                                                1
                                                                   0
                                                                        3
                                                                              1
## Mazda RX4
                        21.0
                                6 160.0 110 3.90 2.620 16.46
                                                                0
                                                                   1
                                                                             4
## Mazda RX4 Wag
                        21.0
                                6 160.0 110 3.90 2.875 17.02
                                                                0
                                                                   1
                                                                        4
                                                                             4
## Hornet 4 Drive
                                6 258.0 110 3.08 3.215 19.44
                                                                1
                                                                        3
                                                                             1
                        21.4
## Volvo 142E
                        21.4
                               4 121.0 109 4.11 2.780 18.60
                                                                   1
                                                                        4
                                                                              2
                                         97 3.70 2.465 20.01
                                                                        3
                                                                              1
## Toyota Corona
                        21.5
                                4 120.1
                                                                   0
## Merc 230
                               4 140.8
                                         95 3.92 3.150 22.90
                                                                              2
                        22.8
                                                                1
                                                                   0
                                                                        4
                                                                   1
                                                                             1
## Datsun 710
                        22.8
                                4 108.0
                                        93 3.85 2.320 18.61
                                                                1
                                                                        4
## Lotus Europa
                        30.4
                               4 95.1 113 3.77 1.513 16.90
                                                                1
                                                                   1
                                                                        5
                                                                              2
## Porsche 914-2
                               4 120.3
                                         91 4.43 2.140 16.70
                                                                0
                                                                   1
                                                                        5
                                                                              2
                        26.0
                                                                              2
## Merc 240D
                        24.4
                               4 146.7
                                         62 3.69 3.190 20.00
                                                                1
                                                                   0
                                                                        4
## Fiat X1-9
                        27.3
                                  79.0
                                         66 4.08 1.935 18.90
                                                                   1
                                                                             1
                               4
                                                                1
                                                                        4
## Fiat 128
                        32.4
                                4 78.7 66 4.08 2.200 19.47
                                                                   1
                                                                              1
```

```
33.9 4 71.1 65 4.22 1.835 19.90 1 1
## Toyota Corolla
                                                                       2
## Honda Civic
                      30.4
                             4 75.7 52 4.93 1.615 18.52 1 1
myCars[which.max(MpgtoHp),]
##
               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
"Step 4"
## [1] "Step 4"
NewMpg <- myCars$mpg/33.9</pre>
NewMpg <- myCars$mpg/max(myCars$mpg)</pre>
NewHp <- myCars$hp/max(myCars$hp)</pre>
NewMpgToHp <- NewMpg+NewHp
myCars[which.max(NewMpgToHp),]
                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
```