**R code – Unexecuted**

#--------HW2:Intro----------

#Introduction - Creating myCars

mtcars

myCars <- mtcars

myCars

#--------------

#--------------Step 1: HP-----------

#Step 1: What is hp?

max(myCars$hp)

row.names (myCars[which.max(myCars$hp),])

#----------------

#----------------Step 2: Explore mpg

#Step 2:Explore mpg

max(myCars$mpg)

row.names (myCars[which.max(myCars$mpg),])

myCars[order(myCars$mpg),]

#--------------------

#--------------------Step 3: Best Combo-------------------

#Step 3: Which car has the best combo?

# logic: best combo = max hp & max mpg

row.names (myCars[which.max(myCars$mpg & myCars$hp),])

#--------------------

#--------------------Step 4: Best Combo (pt2)------------------

#Step 4: Which car has "best" car combination of mpg and hp, mpg & hp given equal weight

myCars2 <- scale(myCars$mpg)+scale(myCars$hp)

myCars2

row.names (myCars[which.max(myCars2),])

#--------------------

**R Code – Executed**

> #Introduction - Creating myCars

> mtcars

mpg cyl disp hp drat wt qsec vs am gear carb

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

Datsun 710 22.8 4 108.0 93 3.85 2.320 18.61 1 1 4 1

Hornet 4 Drive 21.4 6 258.0 110 3.08 3.215 19.44 1 0 3 1

Hornet Sportabout 18.7 8 360.0 175 3.15 3.440 17.02 0 0 3 2

Valiant 18.1 6 225.0 105 2.76 3.460 20.22 1 0 3 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 4 2

Merc 230 22.8 4 140.8 95 3.92 3.150 22.90 1 0 4 2

Merc 280 19.2 6 167.6 123 3.92 3.440 18.30 1 0 4 4

Merc 280C 17.8 6 167.6 123 3.92 3.440 18.90 1 0 4 4

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

Merc 450SLC 15.2 8 275.8 180 3.07 3.780 18.00 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

Fiat 128 32.4 4 78.7 66 4.08 2.200 19.47 1 1 4 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 4 1

Toyota Corona 21.5 4 120.1 97 3.70 2.465 20.01 1 0 3 1

Dodge Challenger 15.5 8 318.0 150 2.76 3.520 16.87 0 0 3 2

AMC Javelin 15.2 8 304.0 150 3.15 3.435 17.30 0 0 3 2

Camaro Z28 13.3 8 350.0 245 3.73 3.840 15.41 0 0 3 4

Pontiac Firebird 19.2 8 400.0 175 3.08 3.845 17.05 0 0 3 2

Fiat X1-9 27.3 4 79.0 66 4.08 1.935 18.90 1 1 4 1

Porsche 914-2 26.0 4 120.3 91 4.43 2.140 16.70 0 1 5 2

Lotus Europa 30.4 4 95.1 113 3.77 1.513 16.90 1 1 5 2

Ford Pantera L 15.8 8 351.0 264 4.22 3.170 14.50 0 1 5 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 0 1 5 8

Volvo 142E 21.4 4 121.0 109 4.11 2.780 18.60 1 1 4 2

> myCars <- mtcars

> myCars

mpg cyl disp hp drat wt qsec vs am gear carb

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

Datsun 710 22.8 4 108.0 93 3.85 2.320 18.61 1 1 4 1

Hornet 4 Drive 21.4 6 258.0 110 3.08 3.215 19.44 1 0 3 1

Hornet Sportabout 18.7 8 360.0 175 3.15 3.440 17.02 0 0 3 2

Valiant 18.1 6 225.0 105 2.76 3.460 20.22 1 0 3 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 4 2

Merc 230 22.8 4 140.8 95 3.92 3.150 22.90 1 0 4 2

Merc 280 19.2 6 167.6 123 3.92 3.440 18.30 1 0 4 4

Merc 280C 17.8 6 167.6 123 3.92 3.440 18.90 1 0 4 4

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

Merc 450SLC 15.2 8 275.8 180 3.07 3.780 18.00 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

Fiat 128 32.4 4 78.7 66 4.08 2.200 19.47 1 1 4 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 4 1

Toyota Corona 21.5 4 120.1 97 3.70 2.465 20.01 1 0 3 1

Dodge Challenger 15.5 8 318.0 150 2.76 3.520 16.87 0 0 3 2

AMC Javelin 15.2 8 304.0 150 3.15 3.435 17.30 0 0 3 2

Camaro Z28 13.3 8 350.0 245 3.73 3.840 15.41 0 0 3 4

Pontiac Firebird 19.2 8 400.0 175 3.08 3.845 17.05 0 0 3 2

Fiat X1-9 27.3 4 79.0 66 4.08 1.935 18.90 1 1 4 1

Porsche 914-2 26.0 4 120.3 91 4.43 2.140 16.70 0 1 5 2

Lotus Europa 30.4 4 95.1 113 3.77 1.513 16.90 1 1 5 2

Ford Pantera L 15.8 8 351.0 264 4.22 3.170 14.50 0 1 5 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 0 1 5 8

Volvo 142E 21.4 4 121.0 109 4.11 2.780 18.60 1 1 4 2

> #Step 1: What is hp?

> max(myCars$hp)

[1] 335

> row.names (myCars[which.max(myCars$hp),])

[1] "Maserati Bora"

> #Step 2:Explore mpg

> max(myCars$mpg)

[1] 33.9

> row.names (myCars[which.max(myCars$mpg),])

[1] "Toyota Corolla"

> myCars[order(myCars$mpg),]

mpg cyl disp hp drat wt qsec vs am gear carb

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Lincoln Continental 10.4 8 460.0 215 3.00 5.424 17.82 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

Chrysler Imperial 14.7 8 440.0 230 3.23 5.345 17.42 0 0 3 4

Maserati Bora 15.0 8 301.0 335 3.54 3.570 14.60 0 1 5 8

Merc 450SLC 15.2 8 275.8 180 3.07 3.780 18.00 0 0 3 3

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

Ford Pantera L 15.8 8 351.0 264 4.22 3.170 14.50 0 1 5 4

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Merc 280C 17.8 6 167.6 123 3.92 3.440 18.90 1 0 4 4

Valiant 18.1 6 225.0 105 2.76 3.460 20.22 1 0 3 1

Hornet Sportabout 18.7 8 360.0 175 3.15 3.440 17.02 0 0 3 2

Merc 280 19.2 6 167.6 123 3.92 3.440 18.30 1 0 4 4

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

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Hornet 4 Drive 21.4 6 258.0 110 3.08 3.215 19.44 1 0 3 1

Volvo 142E 21.4 4 121.0 109 4.11 2.780 18.60 1 1 4 2

Toyota Corona 21.5 4 120.1 97 3.70 2.465 20.01 1 0 3 1

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

Merc 240D 24.4 4 146.7 62 3.69 3.190 20.00 1 0 4 2

Porsche 914-2 26.0 4 120.3 91 4.43 2.140 16.70 0 1 5 2

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Fiat 128 32.4 4 78.7 66 4.08 2.200 19.47 1 1 4 1

Toyota Corolla 33.9 4 71.1 65 4.22 1.835 19.90 1 1 4 1

> #Step 3: Which car has the best combo?

> # logic: best combo = max hp & max mpg

> row.names (myCars[which.max(myCars$mpg & myCars$hp),])

[1] "Mazda RX4"

> #Step 4: Which car has "best" car combination of mpg and hp, mpg & hp given equal weight

> myCars2 <- scale(myCars$mpg)+scale(myCars$hp)

> myCars2

[,1]

[1,] -0.38420802

[2,] -0.38420802

[3,] -0.33349701

[4,] -0.31783943

[5,] 0.18220765

[6,] -0.93830601

[7,] 0.47311402

[8,] -0.52016246

[9,] -0.30432670

[10,] -0.49325963

[11,] -0.72554967

[12,] -0.12648593

[13,] 0.02284338

[14,] -0.32559168

[15,] -0.75738582

[16,] -0.61153428

[17,] 0.32070530

[18,] 0.86554981

[19,] 0.32951474

[20,] 1.09984684

[21,] -0.49085429

[22,] -0.71336986

[23,] -0.76314630

[24,] 0.30719257

[25,] 0.26516838

[26,] 0.01935038

[27,] 0.16828134

[28,] 1.21920914

[29,] 0.99911414

[30,] 0.34812911

[31,] 1.90192291

[32,] -0.33242459

attr(,"scaled:center")

[1] 20.09062

attr(,"scaled:scale")

[1] 6.026948

> row.names (myCars[which.max(myCars2),])

[1] "Maserati Bora"