dplyr\_questions

2024-04-17

# 1. Return rows of cars that have an mpg value greater than 20 and 6 cylinders.  
library(dplyr)

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

data(mtcars)  
head(mtcars,10)

## 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

result\_1 <- mtcars %>% filter(mpg > 20 & cyl ==6)  
result\_1

## mpg cyl disp hp drat wt qsec vs am gear carb  
## Mazda RX4 21.0 6 160 110 3.90 2.620 16.46 0 1 4 4  
## Mazda RX4 Wag 21.0 6 160 110 3.90 2.875 17.02 0 1 4 4  
## Hornet 4 Drive 21.4 6 258 110 3.08 3.215 19.44 1 0 3 1

# 2. Reorder the Data Frame by cyl first, then by descending wt.  
result\_2 <- mtcars %>%   
 arrange(cyl, desc(wt))  
result\_2

## mpg cyl disp hp drat wt qsec vs am gear carb  
## 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  
## 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  
## 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  
## Fiat X1-9 27.3 4 79.0 66 4.08 1.935 18.90 1 1 4 1  
## Toyota Corolla 33.9 4 71.1 65 4.22 1.835 19.90 1 1 4 1  
## Honda Civic 30.4 4 75.7 52 4.93 1.615 18.52 1 1 4 2  
## Lotus Europa 30.4 4 95.1 113 3.77 1.513 16.90 1 1 5 2  
## Valiant 18.1 6 225.0 105 2.76 3.460 20.22 1 0 3 1  
## 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  
## Hornet 4 Drive 21.4 6 258.0 110 3.08 3.215 19.44 1 0 3 1  
## Mazda RX4 Wag 21.0 6 160.0 110 3.90 2.875 17.02 0 1 4 4  
## Ferrari Dino 19.7 6 145.0 175 3.62 2.770 15.50 0 1 5 6  
## Mazda RX4 21.0 6 160.0 110 3.90 2.620 16.46 0 1 4 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  
## Cadillac Fleetwood 10.4 8 472.0 205 2.93 5.250 17.98 0 0 3 4  
## Merc 450SE 16.4 8 275.8 180 3.07 4.070 17.40 0 0 3 3  
## Pontiac Firebird 19.2 8 400.0 175 3.08 3.845 17.05 0 0 3 2  
## Camaro Z28 13.3 8 350.0 245 3.73 3.840 15.41 0 0 3 4  
## Merc 450SLC 15.2 8 275.8 180 3.07 3.780 18.00 0 0 3 3  
## Merc 450SL 17.3 8 275.8 180 3.07 3.730 17.60 0 0 3 3  
## Duster 360 14.3 8 360.0 245 3.21 3.570 15.84 0 0 3 4  
## Maserati Bora 15.0 8 301.0 335 3.54 3.570 14.60 0 1 5 8  
## 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  
## AMC Javelin 15.2 8 304.0 150 3.15 3.435 17.30 0 0 3 2  
## Ford Pantera L 15.8 8 351.0 264 4.22 3.170 14.50 0 1 5 4

# 3. Select only the columns mpg and hp.  
result\_3 <- mtcars %>%   
 select(mpg, hp)  
result\_3

## mpg hp  
## Mazda RX4 21.0 110  
## Mazda RX4 Wag 21.0 110  
## Datsun 710 22.8 93  
## Hornet 4 Drive 21.4 110  
## Hornet Sportabout 18.7 175  
## Valiant 18.1 105  
## Duster 360 14.3 245  
## Merc 240D 24.4 62  
## Merc 230 22.8 95  
## Merc 280 19.2 123  
## Merc 280C 17.8 123  
## Merc 450SE 16.4 180  
## Merc 450SL 17.3 180  
## Merc 450SLC 15.2 180  
## Cadillac Fleetwood 10.4 205  
## Lincoln Continental 10.4 215  
## Chrysler Imperial 14.7 230  
## Fiat 128 32.4 66  
## Honda Civic 30.4 52  
## Toyota Corolla 33.9 65  
## Toyota Corona 21.5 97  
## Dodge Challenger 15.5 150  
## AMC Javelin 15.2 150  
## Camaro Z28 13.3 245  
## Pontiac Firebird 19.2 175  
## Fiat X1-9 27.3 66  
## Porsche 914-2 26.0 91  
## Lotus Europa 30.4 113  
## Ford Pantera L 15.8 264  
## Ferrari Dino 19.7 175  
## Maserati Bora 15.0 335  
## Volvo 142E 21.4 109

# 4. Select the distinct values of the gear column.  
result\_4 <- mtcars %>% distinct(gear)  
result\_4

## gear  
## Mazda RX4 4  
## Hornet 4 Drive 3  
## Porsche 914-2 5

# 5. Create a new column called “Performance” which is calculated by hp divided by wt.  
result\_5 <- mtcars %>% mutate(Performance = hp / wt)  
result\_5

## 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  
## Performance  
## Mazda RX4 41.98473  
## Mazda RX4 Wag 38.26087  
## Datsun 710 40.08621  
## Hornet 4 Drive 34.21462  
## Hornet Sportabout 50.87209  
## Valiant 30.34682  
## Duster 360 68.62745  
## Merc 240D 19.43574  
## Merc 230 30.15873  
## Merc 280 35.75581  
## Merc 280C 35.75581  
## Merc 450SE 44.22604  
## Merc 450SL 48.25737  
## Merc 450SLC 47.61905  
## Cadillac Fleetwood 39.04762  
## Lincoln Continental 39.63864  
## Chrysler Imperial 43.03087  
## Fiat 128 30.00000  
## Honda Civic 32.19814  
## Toyota Corolla 35.42234  
## Toyota Corona 39.35091  
## Dodge Challenger 42.61364  
## AMC Javelin 43.66812  
## Camaro Z28 63.80208  
## Pontiac Firebird 45.51365  
## Fiat X1-9 34.10853  
## Porsche 914-2 42.52336  
## Lotus Europa 74.68605  
## Ford Pantera L 83.28076  
## Ferrari Dino 63.17690  
## Maserati Bora 93.83754  
## Volvo 142E 39.20863

# 6. Find the mean mpg value using dplyr.  
result\_6 <- mtcars %>% summarise(mean\_mpg = mean(mpg))  
result\_6

## mean\_mpg  
## 1 20.09062

# 7. Use pipe operators to get the mean hp value for cars with 6 cylinders.  
result\_7 <- mtcars %>% filter(cyl == 6) %>% summarise(mean\_hp = mean(hp))  
result\_7

## mean\_hp  
## 1 122.2857