Homework #2

Nathaniel Haulk

9/30/2021

Question 1

mtcars[mtcars$cyl < 6]

> Missing a comma, should be:
> **mtcars[mtcars$cyl < 6,]**

mtcars[-1:3,]

> The -1 row doesn't exist, instead you would need to remove the negative:
> **mtcars[1:3,]**

mtcars[mtcars$cyl = 8,]

> Needs a second equals sign:
> **mtcars[mtcars$cyl == 8,]**

mtcars[mtcars$cyl == 4 | 6,]

> Needs a list of numbers to run through rather than using '|':
> **mtcars[mtcars$cyl == c(4,6),]**

Question 2

```
x = 1:5
x[NA]
```

Question 3

mtcars[1:15] vs mtcars[1:15,]

Question 4

```
x = matrix(c(1:3, NA, 5:7, NA, NA), nrow = 3)
x[is.na(x)] = 0
```

Question 5

```
## Creates empty row mpg_2 to record what gas efficiency category the car falls under
mtcars['mpg_2'] = NA

## For loop to run through every row of mtcars
for(i in 1:nrow(mtcars)){

  ## Tests for low category (mpg < 16)
  if(mtcars[i,1] < 16){
    mtcars[i,12] = "Low"
  } # Closes if loop

  ## Tests for Low_intermediate category (16 <= mpg <21)
  else if(mtcars[i,1] < 21){
    mtcars[i,12] = "Low_intermediate"
  } # Closes first else if loop

  ## Tests for Intermediate_high category (21 <= mpg <26)
  else if(mtcars[i,1] < 26){
    mtcars[i,12] = "Intermediate_high"
  } # Closes second else if loop

  ## Sets all other values at high (26 <= mpg)
  else{
    mtcars[i,12] = "High"
  }# Closes else loop
}# Closes for loop

print(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
##                                 mpg_2
## Mazda RX4              Intermediate_high
## Mazda RX4 Wag          Intermediate_high
## Datsun 710             Intermediate_high
## Hornet 4 Drive         Intermediate_high
## Hornet Sportabout       Low_intermediate
## Valiant                 Low_intermediate
## Duster 360                            Low
## Merc 240D              Intermediate_high
## Merc 230               Intermediate_high
## Merc 280                Low_intermediate
## Merc 280C               Low_intermediate
## Merc 450SE              Low_intermediate
## Merc 450SL              Low_intermediate
## Merc 450SLC                          Low
## Cadillac Fleetwood                   Low
## Lincoln Continental                  Low
## Chrysler Imperial                    Low
## Fiat 128                            High
## Honda Civic                         High
## Toyota Corolla                      High
## Toyota Corona          Intermediate_high
## Dodge Challenger                     Low
## AMC Javelin                          Low
## Camaro Z28                           Low
## Pontiac Firebird        Low_intermediate
## Fiat X1-9                           High
## Porsche 914-2                       High
## Lotus Europa                        High
## Ford Pantera L                       Low
## Ferrari Dino            Low_intermediate
## Maserati Bora                        Low
## Volvo 142E             Intermediate_high
```