# hw_2

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library(dplyr) library(tidyverse)

data("mtcars")

## Question 1

**This code appears to be attempting a subset, the proper code for a subset is as follows**

mtcars[mtcars$cyl < 6, ]

**Avoid the -x:y situation, theres a few options for fixing this depending on what you're trying to accomplish but this is one of them**

mtcars[-1:0 & 0:3, ]

**This command just needed a second "=" sign**

mtcars[mtcars$cyl == 8, ]

**This command needed more specificity because it was basically saying "either 4 cylinders or a 6 anywhere in the data" so if you're looking for either 4 or 6 cylinders this is the code for it**

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

## Question 2

**When you set x=1:5 you're setting x as a vector so when you then put the command x[NA] you're telling R to find the subset of x that is NA (NA represents missing values). But there is no NA value in x=1:5. Since NA is a logical vector by itself, R just keeps repeating NA for the number of values in x as the output.**

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

```
## [1] NA NA NA NA NA
```

## Question 3

**This returns an error because without the comma the command doesn't let you keep all rows or columns in the matrix/array. The comma tells R that youre looking for just rows 1-15, if you were to plug in a value after the comma like 7, R would return rows 1-15 and only column 7. In a multi dimensional array/matrix, the commas specify the values for specific dimensions that youre looking for.**

mtcars[1:15, ]

## Question 4

**The first line of this code sets up a matrix comprised of 1, 2, 3, 5, 6, 7, and 3 missing values, and tells R that the values should be split into 3 rows in the order in which each of the values appear in the code.**

**The second line is checking if the there are any missing values in the provided matrix. Normally, without the "= 0" this would return 3 NA values, and the command "is.na(x)" would return a 3 row 3 column table with 6 "False" and 3 "True" values. With "= 0", you're telling R that even though theres a few missing values in the set it should not consider them missing values. So now if you put the command is.na(x) it will return a table with 3 rows and 3 columns and all of them will say "False".**

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

## Question 5

```r
data("mtcars")
mtcars$mpg
```

```
##  [1] 21.0 21.0 22.8 21.4 18.7 18.1 14.3 24.4 22.8 19.2 17.8 16.4 17.3 15.2 10.4
## [16] 10.4 14.7 32.4 30.4 33.9 21.5 15.5 15.2 13.3 19.2 27.3 26.0 30.4 15.8 19.7
## [31] 15.0 21.4
```

```r
cbind(mpg_2 = mpg_2 <-
       ifelse(mtcars$mpg < 16, "Low",
         ifelse(mtcars$mpg >= 16 | mtcars$mpg < 21, "Low_intermediate",
                ifelse(mtcars$mpg >= 21 | mtcars$mpg < 26, "Intermediate_high",
                       ifelse(mtcars$mpg >= 26, "High")))), mtcars)
```

```
##                                mpg_2  mpg cyl  disp  hp drat    wt  qsec vs am
## Mazda RX4           Low_intermediate 21.0   6 160.0 110 3.90 2.620 16.46  0  1
## Mazda RX4 Wag       Low_intermediate 21.0   6 160.0 110 3.90 2.875 17.02  0  1
## Datsun 710          Low_intermediate 22.8   4 108.0  93 3.85 2.320 18.61  1  1
## Hornet 4 Drive      Low_intermediate 21.4   6 258.0 110 3.08 3.215 19.44  1  0
## Hornet Sportabout   Low_intermediate 18.7   8 360.0 175 3.15 3.440 17.02  0  0
## Valiant             Low_intermediate 18.1   6 225.0 105 2.76 3.460 20.22  1  0
## Duster 360                     Low 14.3   8 360.0 245 3.21 3.570 15.84  0  0
## Merc 240D           Low_intermediate 24.4   4 146.7  62 3.69 3.190 20.00  1  0
## Merc 230            Low_intermediate 22.8   4 140.8  95 3.92 3.150 22.90  1  0
## Merc 280            Low_intermediate 19.2   6 167.6 123 3.92 3.440 18.30  1  0
## Merc 280C           Low_intermediate 17.8   6 167.6 123 3.92 3.440 18.90  1  0
## Merc 450SE          Low_intermediate 16.4   8 275.8 180 3.07 4.070 17.40  0  0
## Merc 450SL          Low_intermediate 17.3   8 275.8 180 3.07 3.730 17.60  0  0
## Merc 450SLC                    Low 15.2   8 275.8 180 3.07 3.780 18.00  0  0
## Cadillac Fleetwood             Low 10.4   8 472.0 205 2.93 5.250 17.98  0  0
## Lincoln Continental            Low 10.4   8 460.0 215 3.00 5.424 17.82  0  0
## Chrysler Imperial              Low 14.7   8 440.0 230 3.23 5.345 17.42  0  0
## Fiat 128            Low_intermediate 32.4   4  78.7  66 4.08 2.200 19.47  1  1
## Honda Civic         Low_intermediate 30.4   4  75.7  52 4.93 1.615 18.52  1  1
## Toyota Corolla      Low_intermediate 33.9   4  71.1  65 4.22 1.835 19.90  1  1
## Toyota Corona       Low_intermediate 21.5   4 120.1  97 3.70 2.465 20.01  1  0
## Dodge Challenger               Low 15.5   8 318.0 150 2.76 3.520 16.87  0  0
## AMC Javelin                    Low 15.2   8 304.0 150 3.15 3.435 17.30  0  0
## Camaro Z28                     Low 13.3   8 350.0 245 3.73 3.840 15.41  0  0
## Pontiac Firebird    Low_intermediate 19.2   8 400.0 175 3.08 3.845 17.05  0  0
## Fiat X1-9           Low_intermediate 27.3   4  79.0  66 4.08 1.935 18.90  1  1
## Porsche 914-2       Low_intermediate 26.0   4 120.3  91 4.43 2.140 16.70  0  1
## Lotus Europa        Low_intermediate 30.4   4  95.1 113 3.77 1.513 16.90  1  1
## Ford Pantera L                 Low 15.8   8 351.0 264 4.22 3.170 14.50  0  1
## Ferrari Dino        Low_intermediate 19.7   6 145.0 175 3.62 2.770 15.50  0  1
## Maserati Bora                  Low 15.0   8 301.0 335 3.54 3.570 14.60  0  1
## Volvo 142E          Low_intermediate 21.4   4 121.0 109 4.11 2.780 18.60  1  1
##                    gear carb
## Mazda RX4             4    4
## Mazda RX4 Wag         4    4
## Datsun 710            4    1
## Hornet 4 Drive        3    1
## Hornet Sportabout     3    2
## Valiant               3    1
## Duster 360            3    4
## Merc 240D             4    2
## Merc 230              4    2
## Merc 280              4    4
## Merc 280C             4    4
## Merc 450SE            3    3
## Merc 450SL            3    3
## Merc 450SLC           3    3
## Cadillac Fleetwood    3    4
## Lincoln Continental   3    4
## Chrysler Imperial     3    4
## Fiat 128              4    1
## Honda Civic           4    2
## Toyota Corolla        4    1
```

```
## Toyota Corona          3    1
## Dodge Challenger       3    2
## AMC Javelin            3    2
## Camaro Z28             3    4
## Pontiac Firebird       3    2
## Fiat X1-9              4    1
## Porsche 914-2          5    2
## Lotus Europa           5    2
## Ford Pantera L         5    4
## Ferrari Dino           5    6
## Maserati Bora          5    8
## Volvo 142E             4    2
```

```
mpg_2
```

```
##  [1] "Low_intermediate" "Low_intermediate" "Low_intermediate" "Low_intermediate"
##  [5] "Low_intermediate" "Low_intermediate" "Low"              "Low_intermediate"
##  [9] "Low_intermediate" "Low_intermediate" "Low_intermediate" "Low_intermediate"
## [13] "Low_intermediate" "Low"              "Low"              "Low"
## [17] "Low"              "Low_intermediate" "Low_intermediate" "Low_intermediate"
## [21] "Low_intermediate" "Low"              "Low"              "Low"
## [25] "Low_intermediate" "Low_intermediate" "Low_intermediate" "Low_intermediate"
## [29] "Low"              "Low_intermediate" "Low"              "Low_intermediate"
```