hw_02

Question 1

```
mtcars[mtcars$cyl < 6,]
```

```
##                 mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Datsun 710     22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
## 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
## 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
## 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
## Volvo 142E     21.4   4 121.0 109 4.11 2.780 18.60  1  1    4    2
```

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

```
##                      mpg cyl  disp
## Mazda RX4 Wag       21.0   6 160.0
## Datsun 710          22.8   4 108.0
## Hornet 4 Drive      21.4   6 258.0
## Hornet Sportabout   18.7   8 360.0
## Valiant             18.1   6 225.0
## Duster 360          14.3   8 360.0
## Merc 240D           24.4   4 146.7
## Merc 230            22.8   4 140.8
## Merc 280            19.2   6 167.6
## Merc 280C           17.8   6 167.6
## Merc 450SE          16.4   8 275.8
## Merc 450SL          17.3   8 275.8
## Merc 450SLC         15.2   8 275.8
## Cadillac Fleetwood  10.4   8 472.0
## Lincoln Continental 10.4   8 460.0
## Chrysler Imperial   14.7   8 440.0
## Fiat 128            32.4   4  78.7
## Honda Civic         30.4   4  75.7
## Toyota Corolla      33.9   4  71.1
## Toyota Corona       21.5   4 120.1
## Dodge Challenger    15.5   8 318.0
## AMC Javelin         15.2   8 304.0
## Camaro Z28          13.3   8 350.0
## Pontiac Firebird    19.2   8 400.0
```

```
## Fiat X1-9           27.3   4  79.0
## Porsche 914-2       26.0   4 120.3
## Lotus Europa        30.4   4  95.1
## Ford Pantera L      15.8   8 351.0
## Ferrari Dino        19.7   6 145.0
## Maserati Bora       15.0   8 301.0
## Volvo 142E          21.4   4 121.0
```

```
mtcars[mtcars$cyl == 8, ]
```

```
##                     mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Hornet Sportabout   18.7   8 360.0 175 3.15 3.440 17.02  0  0    3    2
## Duster 360          14.3   8 360.0 245 3.21 3.570 15.84  0  0    3    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
## 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
## Ford Pantera L      15.8   8 351.0 264 4.22 3.170 14.50  0  1    5    4
## Maserati Bora       15.0   8 301.0 335 3.54 3.570 14.60  0  1    5    8
```

```
mtcars[mtcars$cyl ==  c(4,6), ]
```

```
##                 mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## 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
## Valiant        18.1   6 225.0 105 2.76 3.460 20.22  1  0    3    1
## 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
## Honda Civic    30.4   4  75.7  52 4.93 1.615 18.52  1  1    4    2
## Toyota Corona  21.5   4 120.1  97 3.70 2.465 20.01  1  0    3    1
## Porsche 914-2  26.0   4 120.3  91 4.43 2.140 16.70  0  1    5    2
## Ferrari Dino   19.7   6 145.0 175 3.62 2.770 15.50  0  1    5    6
```

Question 2

```
x = (1:5)
print(x)
```

```
## [1] 1 2 3 4 5
```

There should be parentheses around the (1:5) so NA isn't generated

Question 3 The R syntax is (row, columns), so you need to include the columns in the function mtcars(1:15,)

Question 4

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

```
##      [,1] [,2] [,3]
## [1,]    1    0    7
## [2,]    2    5    0
## [3,]    3    6    0
```

The first line of the code creates a matrix where 3 of the values are NA. The second line of code sets each of the NA values to 0, so when the matrix is printed each spot where an NA was returns a 0 instead.

```
data("mtcars") ##get data
?mtcars
```

```
## starting httpd help server ... done
```

```
mpg2 <-
ifelse(mtcars$mpg < 16, "low",
ifelse(mtcars$mpg < 21, "low_intermediate",
ifelse(mtcars$mpg < 26, "intermediate_high", "high")))
##if less than 16, make mpg2 "low", if less than 21 but greater than 16, "low intermediate," if between
mtcars <- data.frame(mtcars, mpg2) ### merge the mpg2 data with the mtcars data set
head(mtcars)
```

```
##                   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
## Datsun 710        22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive    21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
## Valiant           18.1   6  225 105 2.76 3.460 20.22  1  0    3    1
##                             mpg2
## 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
```