

# Nevyn Neal - hw\_02

## Question 1

```
#Correct sub-setting followed by original question:  
mtcars[mtcars$cyl < 6,] #mtcars[mtcars$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[2:3,] #mtcars[-1:3,]
```

```
##           mpg cyl disp  hp drat   wt  qsec vs am gear carb  
## 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
```

```
mtcars[mtcars$cyl == 8, ] #mtcars[mtcars$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$cyl == 4 | mtcars$cyl == 6, ] # mtcars[mtcars$cyl == 4 | 6, ]
```

	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
## Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	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
## 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
## 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
## Ferrari Dino	19.7	6	145.0	175	3.62	2.770	15.50	0	1	5	6
## Volvo 142E	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2

## Question 2

Since NA is a logical type variable, `x[NA]` coerces the integers of `x` to their `NA_integer` value, NA.

## Question 3

R subsetting defaults to indexing columns when row or columns are not specified (using commas). Because `mtcars` does not have 15 columns, the index is out of bounds. `'mtcars[1:15,]'` indexes rows instead of columns, and since there are at least 15 rows in the `mtcars` dataframe, those are returned successfully.

## Question 4

The first line creates a 3 row matrix with 9 values (implicitly defines 3 columns). Some of the values in the initial matrix are NA. The next line returns the indices of `x` in which `is.na(x) == true`, then replaces the values at those locations with 0.

## Question 5

```
data("mtcars")
mtcars$mpg2 = 'null'
mtcars$mpg2[mtcars$mpg < 16] = 'Low'
mtcars$mpg2[mtcars$mpg >= 16 & mtcars$mpg < 21 ] = 'Low_intermediate'
mtcars$mpg2[mtcars$mpg >= 21 & mtcars$mpg < 26 ] = 'Intermediate_high'
mtcars$mpg2[mtcars$mpg >= 26] = 'High'
```