Dataframe

Chia-Yu Wei

2023-11-23

Dataframe

```r
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
```

```r
mtcars[(mtcars$mpg > 20) & (mtcars$cyl == 6), ]
```

```
##                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
```

Output the raviables that I want.

```r
mtcars[(mtcars$mpg > 20) & (mtcars$cyl == 6), c('mpg', 'cyl', 'hp')]
```

```
##                mpg cyl  hp
## Mazda RX4     21.0   6 110
## Mazda RX4 Wag 21.0   6 110
## Hornet 4 Drive 21.4  6 110
```

```r
# There are same result
mtcars[, c(1, 2)]
```

```
##                    mpg cyl
## Mazda RX4         21.0   6
## Mazda RX4 Wag     21.0   6
## Datsun 710        22.8   4
## Hornet 4 Drive    21.4   6
## Hornet Sportabout 18.7   8
## Valiant           18.1   6
## Duster 360        14.3   8
## Merc 240D         24.4   4
## Merc 230          22.8   4
## Merc 280          19.2   6
## Merc 280C         17.8   6
## Merc 450SE        16.4   8
```

```
## Merc 450SL            17.3   8
## Merc 450SLC           15.2   8
## Cadillac Fleetwood    10.4   8
## Lincoln Continental   10.4   8
## Chrysler Imperial     14.7   8
## Fiat 128              32.4   4
## Honda Civic           30.4   4
## Toyota Corolla        33.9   4
## Toyota Corona         21.5   4
## Dodge Challenger      15.5   8
## AMC Javelin           15.2   8
## Camaro Z28            13.3   8
## Pontiac Firebird      19.2   8
## Fiat X1-9             27.3   4
## Porsche 914-2         26.0   4
## Lotus Europa          30.4   4
## Ford Pantera L        15.8   8
## Ferrari Dino          19.7   6
## Maserati Bora         15.0   8
## Volvo 142E            21.4   4
```

```r
mtcars[, c('mpg', 'cyl')]
```

```
##                       mpg cyl
## Mazda RX4            21.0   6
## Mazda RX4 Wag        21.0   6
## Datsun 710           22.8   4
## Hornet 4 Drive       21.4   6
## Hornet Sportabout    18.7   8
## Valiant              18.1   6
## Duster 360           14.3   8
## Merc 240D            24.4   4
## Merc 230             22.8   4
## Merc 280             19.2   6
## Merc 280C            17.8   6
## Merc 450SE           16.4   8
## Merc 450SL           17.3   8
## Merc 450SLC          15.2   8
## Cadillac Fleetwood   10.4   8
## Lincoln Continental  10.4   8
## Chrysler Imperial    14.7   8
## Fiat 128             32.4   4
## Honda Civic          30.4   4
## Toyota Corolla       33.9   4
## Toyota Corona        21.5   4
## Dodge Challenger     15.5   8
## AMC Javelin          15.2   8
## Camaro Z28           13.3   8
## Pontiac Firebird     19.2   8
## Fiat X1-9            27.3   4
## Porsche 914-2        26.0   4
## Lotus Europa         30.4   4
## Ford Pantera L       15.8   8
## Ferrari Dino         19.7   6
## Maserati Bora        15.0   8
```

```
## Volvo 142E          21.4   4
```

```r
mtcars[, 1:2]
```

```
##                     mpg cyl
## Mazda RX4           21.0   6
## Mazda RX4 Wag       21.0   6
## Datsun 710          22.8   4
## Hornet 4 Drive      21.4   6
## Hornet Sportabout   18.7   8
## Valiant             18.1   6
## Duster 360          14.3   8
## Merc 240D           24.4   4
## Merc 230            22.8   4
## Merc 280            19.2   6
## Merc 280C           17.8   6
## Merc 450SE          16.4   8
## Merc 450SL          17.3   8
## Merc 450SLC         15.2   8
## Cadillac Fleetwood  10.4   8
## Lincoln Continental 10.4   8
## Chrysler Imperial   14.7   8
## Fiat 128            32.4   4
## Honda Civic         30.4   4
## Toyota Corolla      33.9   4
## Toyota Corona       21.5   4
## Dodge Challenger    15.5   8
## AMC Javelin         15.2   8
## Camaro Z28          13.3   8
## Pontiac Firebird    19.2   8
## Fiat X1-9           27.3   4
## Porsche 914-2       26.0   4
## Lotus Europa        30.4   4
## Ford Pantera L      15.8   8
## Ferrari Dino        19.7   6
## Maserati Bora       15.0   8
## Volvo 142E          21.4   4
```

Subset(): subset(data, comdetion)

```r
subset(mtcars, mpg > 20 & cyl == 6)                    # 3x11
```

```
##                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
```

Dealing with missing data

```
##                      mpg   cyl  disp    hp  drat    wt  qsec    vs    am  gear
## Mazda RX4           FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Mazda RX4 Wag       FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Datsun 710          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Hornet 4 Drive      FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Hornet Sportabout   FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Valiant             FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Duster 360          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 240D           FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 230            FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 280            FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 280C           FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 450SE          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 450SL          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 450SLC         FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Cadillac Fleetwood  FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Lincoln Continental FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Chrysler Imperial   FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Fiat 128            FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Honda Civic         FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Toyota Corolla      FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Toyota Corona       FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Dodge Challenger    FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## AMC Javelin         FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Camaro Z28          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Pontiac Firebird    FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Fiat X1-9           FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Porsche 914-2       FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Lotus Europa        FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Ford Pantera L      FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Ferrari Dino        FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Maserati Bora       FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Volvo 142E          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##                      carb
## Mazda RX4           FALSE
## Mazda RX4 Wag       FALSE
## Datsun 710          FALSE
## Hornet 4 Drive      FALSE
## Hornet Sportabout   FALSE
## Valiant             FALSE
## Duster 360          FALSE
## Merc 240D           FALSE
## Merc 230            FALSE
## Merc 280            FALSE
## Merc 280C           FALSE
## Merc 450SE          FALSE
## Merc 450SL          FALSE
## Merc 450SLC         FALSE
## Cadillac Fleetwood  FALSE
## Lincoln Continental FALSE
## Chrysler Imperial   FALSE
## Fiat 128            FALSE
```

```
## Honda Civic          FALSE
## Toyota Corolla        FALSE
## Toyota Corona         FALSE
## Dodge Challenger      FALSE
## AMC Javelin           FALSE
## Camaro Z28            FALSE
## Pontiac Firebird      FALSE
## Fiat X1-9             FALSE
## Porsche 914-2         FALSE
## Lotus Europa          FALSE
## Ford Pantera L        FALSE
## Ferrari Dino          FALSE
## Maserati Bora         FALSE
## Volvo 142E            FALSE
```

```r
# We add any() to get shorter answer.
any(is.na(mtcars))
```

```
## [1] FALSE
```