

Worksheet 4c

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1. Use the dataset mpg

1a. Show your solutions on how to import a csv file into the environmen

```
mpg <- read.csv("mpg.csv")
```

1b. Which variables from mpg dataset are categorical?

```
# all the colums exept colum "X"
```

1c. Which are continuous variables?

```
mpg$model
```

##	[1]	"a4"	"a4"	"a4"
##	[4]	"a4"	"a4"	"a4"
##	[7]	"a4"	"a4 quattro"	"a4 quattro"
##	[10]	"a4 quattro"	"a4 quattro"	"a4 quattro"
##	[13]	"a4 quattro"	"a4 quattro"	"a4 quattro"
##	[16]	"a6 quattro"	"a6 quattro"	"a6 quattro"
##	[19]	"c1500 suburban 2wd"	"c1500 suburban 2wd"	"c1500 suburban 2wd"
##	[22]	"c1500 suburban 2wd"	"c1500 suburban 2wd"	"corvette"
##	[25]	"corvette"	"corvette"	"corvette"
##	[28]	"corvette"	"k1500 tahoe 4wd"	"k1500 tahoe 4wd"
##	[31]	"k1500 tahoe 4wd"	"k1500 tahoe 4wd"	"malibu"
##	[34]	"malibu"	"malibu"	"malibu"
##	[37]	"malibu"	"caravan 2wd"	"caravan 2wd"
##	[40]	"caravan 2wd"	"caravan 2wd"	"caravan 2wd"
##	[43]	"caravan 2wd"	"caravan 2wd"	"caravan 2wd"
##	[46]	"caravan 2wd"	"caravan 2wd"	"caravan 2wd"
##	[49]	"dakota pickup 4wd"	"dakota pickup 4wd"	"dakota pickup 4wd"
##	[52]	"dakota pickup 4wd"	"dakota pickup 4wd"	"dakota pickup 4wd"
##	[55]	"dakota pickup 4wd"	"dakota pickup 4wd"	"dakota pickup 4wd"
##	[58]	"durango 4wd"	"durango 4wd"	"durango 4wd"
##	[61]	"durango 4wd"	"durango 4wd"	"durango 4wd"
##	[64]	"durango 4wd"	"ram 1500 pickup 4wd"	"ram 1500 pickup 4wd"
##	[67]	"ram 1500 pickup 4wd"	"ram 1500 pickup 4wd"	"ram 1500 pickup 4wd"
##	[70]	"ram 1500 pickup 4wd"	"ram 1500 pickup 4wd"	"ram 1500 pickup 4wd"
##	[73]	"ram 1500 pickup 4wd"	"ram 1500 pickup 4wd"	"expedition 2wd"
##	[76]	"expedition 2wd"	"expedition 2wd"	"explorer 4wd"
##	[79]	"explorer 4wd"	"explorer 4wd"	"explorer 4wd"
##	[82]	"explorer 4wd"	"explorer 4wd"	"f150 pickup 4wd"
##	[85]	"f150 pickup 4wd"	"f150 pickup 4wd"	"f150 pickup 4wd"
##	[88]	"f150 pickup 4wd"	"f150 pickup 4wd"	"f150 pickup 4wd"
##	[91]	"mustang"	"mustang"	"mustang"
##	[94]	"mustang"	"mustang"	"mustang"

## [97]	"mustang"	"mustang"	"mustang"
## [100]	"civic"	"civic"	"civic"
## [103]	"civic"	"civic"	"civic"
## [106]	"civic"	"civic"	"civic"
## [109]	"sonata"	"sonata"	"sonata"
## [112]	"sonata"	"sonata"	"sonata"
## [115]	"sonata"	"tiburon"	"tiburon"
## [118]	"tiburon"	"tiburon"	"tiburon"
## [121]	"tiburon"	"tiburon"	"grand cherokee 4wd"
## [124]	"grand cherokee 4wd"	"grand cherokee 4wd"	"grand cherokee 4wd"
## [127]	"grand cherokee 4wd"	"grand cherokee 4wd"	"grand cherokee 4wd"
## [130]	"grand cherokee 4wd"	"range rover"	"range rover"
## [133]	"range rover"	"range rover"	"navigator 2wd"
## [136]	"navigator 2wd"	"navigator 2wd"	"mountaineer 4wd"
## [139]	"mountaineer 4wd"	"mountaineer 4wd"	"mountaineer 4wd"
## [142]	"altima"	"altima"	"altima"
## [145]	"altima"	"altima"	"altima"
## [148]	"maxima"	"maxima"	"maxima"
## [151]	"pathfinder 4wd"	"pathfinder 4wd"	"pathfinder 4wd"
## [154]	"pathfinder 4wd"	"grand prix"	"grand prix"
## [157]	"grand prix"	"grand prix"	"grand prix"
## [160]	"forester awd"	"forester awd"	"forester awd"
## [163]	"forester awd"	"forester awd"	"forester awd"
## [166]	"impreza awd"	"impreza awd"	"impreza awd"
## [169]	"impreza awd"	"impreza awd"	"impreza awd"
## [172]	"impreza awd"	"impreza awd"	"4runner 4wd"
## [175]	"4runner 4wd"	"4runner 4wd"	"4runner 4wd"
## [178]	"4runner 4wd"	"4runner 4wd"	"camry"
## [181]	"camry"	"camry"	"camry"
## [184]	"camry"	"camry"	"camry"
## [187]	"camry solara"	"camry solara"	"camry solara"
## [190]	"camry solara"	"camry solara"	"camry solara"
## [193]	"camry solara"	"corolla"	"corolla"
## [196]	"corolla"	"corolla"	"corolla"
## [199]	"land cruiser wagon 4wd"	"land cruiser wagon 4wd"	"toyota tacoma 4wd"
## [202]	"toyota tacoma 4wd"	"toyota tacoma 4wd"	"toyota tacoma 4wd"
## [205]	"toyota tacoma 4wd"	"toyota tacoma 4wd"	"toyota tacoma 4wd"
## [208]	"gti"	"gti"	"gti"
## [211]	"gti"	"gti"	"jetta"
## [214]	"jetta"	"jetta"	"jetta"
## [217]	"jetta"	"jetta"	"jetta"
## [220]	"jetta"	"jetta"	"new beetle"
## [223]	"new beetle"	"new beetle"	"new beetle"
## [226]	"new beetle"	"new beetle"	"passat"
## [229]	"passat"	"passat"	"passat"
## [232]	"passat"	"passat"	"passat"

```
mpg$displ
```

## [1]	1.8 1.8 2.0 2.0 2.8 2.8 3.1 1.8 1.8 2.0 2.0 2.8 2.8 3.1 3.1 2.8 3.1 4.2
## [19]	5.3 5.3 5.3 5.7 6.0 5.7 5.7 6.2 6.2 7.0 5.3 5.3 5.7 6.5 2.4 2.4 3.1 3.5
## [37]	3.6 2.4 3.0 3.3 3.3 3.3 3.3 3.3 3.8 3.8 3.8 4.0 3.7 3.7 3.9 3.9 4.7 4.7
## [55]	4.7 5.2 5.2 3.9 4.7 4.7 4.7 5.2 5.7 5.9 4.7 4.7 4.7 4.7 4.7 4.7 5.2 5.2
## [73]	5.7 5.9 4.6 5.4 5.4 4.0 4.0 4.0 4.0 4.6 5.0 4.2 4.2 4.6 4.6 4.6 5.4 5.4
## [91]	3.8 3.8 4.0 4.0 4.6 4.6 4.6 4.6 5.4 1.6 1.6 1.6 1.6 1.6 1.8 1.8 1.8 2.0


```
ddofun <- data.frame(unofmm[,0],unofmm[,1])
```

2b. Graph the result by using `plot()` and `ggplot()`. Write the codes and its result.