OLS

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Ordinary Least Squares

your turn 1 page 4

```
#use lm regress mpg on disp

reg1 <- lm(mpg ~ disp, data = mtcars)

#mean center the data

mean_cent_mtcar <- as.data.frame(scale(mtcars, scale = FALSE))

# rerun lm on mean centered data

reg2 <- lm(mpg ~ disp, data = mean_cent_mtcar)

# recover intercept term of reg2 should be zero

reg2$coefficients
```

```
##   (Intercept)          disp
##  2.727615e-16 -4.121512e-02
```

```
# now standardize

standard_mtcars <- as.data.frame(scale(mtcars, center = TRUE, scale = TRUE))

# run lm on the standardized data

reg3 <- lm(mpg ~ disp, data = standard_mtcars)

# from reg3 how would you recover unstandardized estimates



# exclude the intercept term

lm(mpg ~ disp - 1, data =  mtcars)
```

```
##
## Call:
## lm(formula = mpg ~ disp - 1, data = mtcars)
##
## Coefficients:
##    disp
## 0.05905
```

```r
# find out how to use subset

lm(mpg~disp, am == 0, data = mtcars)
```

```
##
## Call:
## lm(formula = mpg ~ disp, data = mtcars, subset = am == 0)
##
## Coefficients:
## (Intercept)         disp
##    25.15706     -0.02758
```

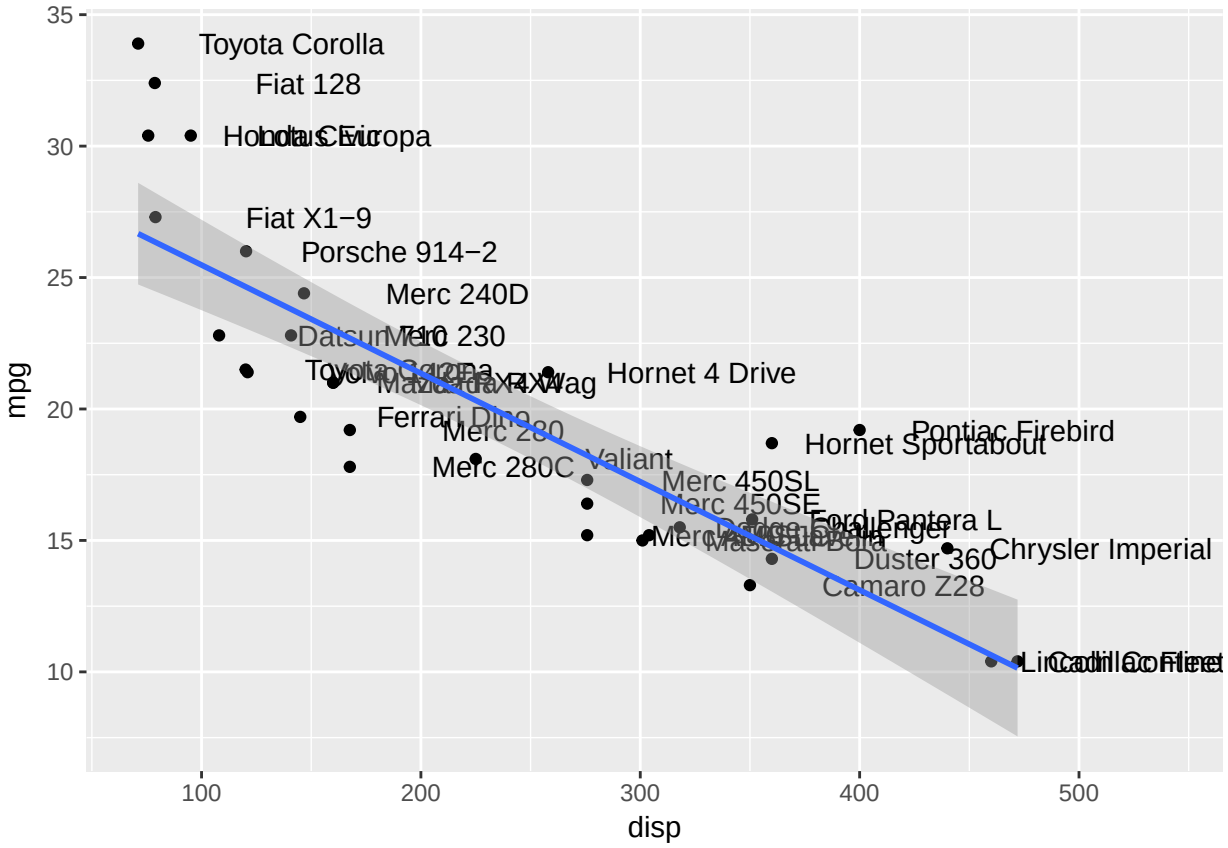
```r
# what object class is regsum

regsum <- summary(reg1)

class(regsum)
```

```
## [1] "summary.lm"
```

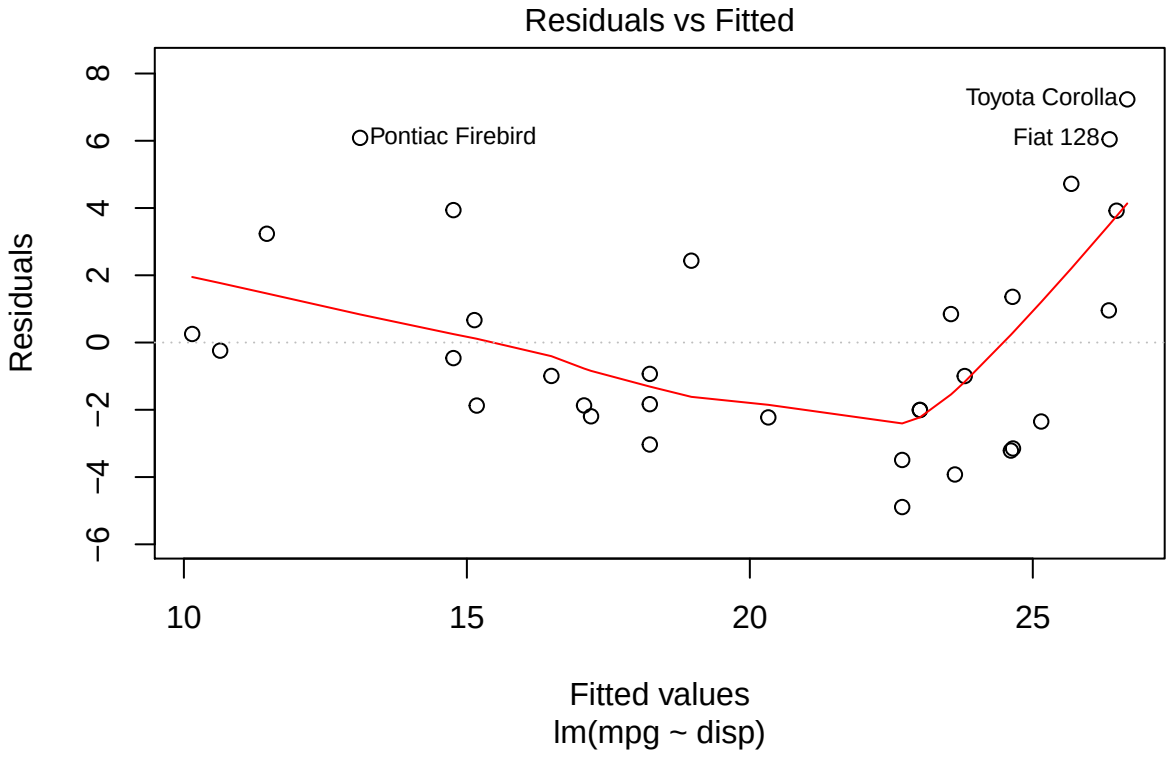
```r
# what does reg sum contain

#residuals, coefficient estimates, std error, t value, p value for estimates

# plot ggplot2

library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.3.2
```

```r
ggplot(data = mtcars, aes(disp, mpg)) + geom_point() + geom_text(label = row.names(mtcars), nudge_x = 7
```




```
# auxilliary plots

plot(reg1, which = 1)
```



```r
plot(reg2, which = 2)
```