```
library(MASS)
library(ISLR)

head(Boston)
dim(Boston)
pairs(Boston)

##simple regression

lm.fit<- lm(medv~lstat, data=Boston)
summary(lm.fit)
names(lm.fit)

confint(lm.fit)
coef(lm.fit)


predict(lm.fit, data.frame( lstat=c(5,10,15)),
    interval='confidence')


attach(Boston)
plot(lstat, medv)
abline(lm.fit, col=2)


par(mfrow=c(1,3))
plot(predict(lm.fit), residuals(lm.fit))
abline(h=0)
plot(predict(lm.fit), rstandard(lm.fit))
abline(h=0)


plot(hatvalues(lm.fit))
identify(hatvalues(lm.fit))
```

```
##multiple regression

lm.fit<- lm(medv~lstat+age, data=Boston)
summary(lm.fit)

lm.fit<- lm(medv~., data=Boston)
summary(lm.fit)
summary(lm.fit)$sigma

library(car)
vif(lm.fit)

lm.fit1 = update(lm.fit, ~.-age)
summary(lm.fit1)

summary(lm(medv~lstat*age))


lm.fit<- lm(medv~lstat)
lm.fit2=lm(medv~lstat+ I(lstat^2))
anova(lm.fit, lm.fit2)

lm.fit5=(lm(medv~poly(lstat, 5)))
summary(lm.fit5)



## quantative predictors

lm.fit= lm(Sales~.+Income* Advertising +
    Price:Age, data=Carseats)
summary(lm.fit)
contrasts(Carseats$ShelveLoc)
```