第八讲习题

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>
> GitHub 地址: MarkdownNotes/R at main · Bluuur/MarkdownNotes (github.com)

1.读入包含一组学生身高和体重数据的文件 `class.txt`
(1).检验不同性别学生身高是否显著不同
(2).构建线性回归模型, 用身高来预测体重
(3).在该线性模型中, 对你的身高, 预测体重及 95% 置信区间

```r
data <- read.table('/home/ubuntu/R_course/R_data/class.txt')

# (1) 检验不同性别学生身高是否显著不同
male <- data[data$V5 == 'M',]$V3
female <- data[data$V5 == 'F',]$V3
t.test(male, female)
# p < 0.05 不同性别学生身高显著不同

# (2) 构建线性回归模型, 用身高来预测体重
height <- data$V3
weight <- data$V4
lm.sol <- lm(weight ~ height)
plot(weight, height)
abline(lm.sol)
summary(lm.sol)

# (3) 在该线性模型中, 对你的身高, 预测体重及 95% 置信区间
myHeight <- data.frame(height = 174)
predict(lm.sol, myHeight, interval = 'prediction', level = 0.95)
```

```
    Welch Two Sample t-test

data:  male and female
t = 2.4377, df = 37.975, p-value = 0.01958
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
  1.275635 13.774870
sample estimates:
mean of x mean of y
 156.6364  149.1111
```

```
Call:
lm(formula = weight ~ height)

Residuals:
     Min       1Q   Median       3Q      Max
```

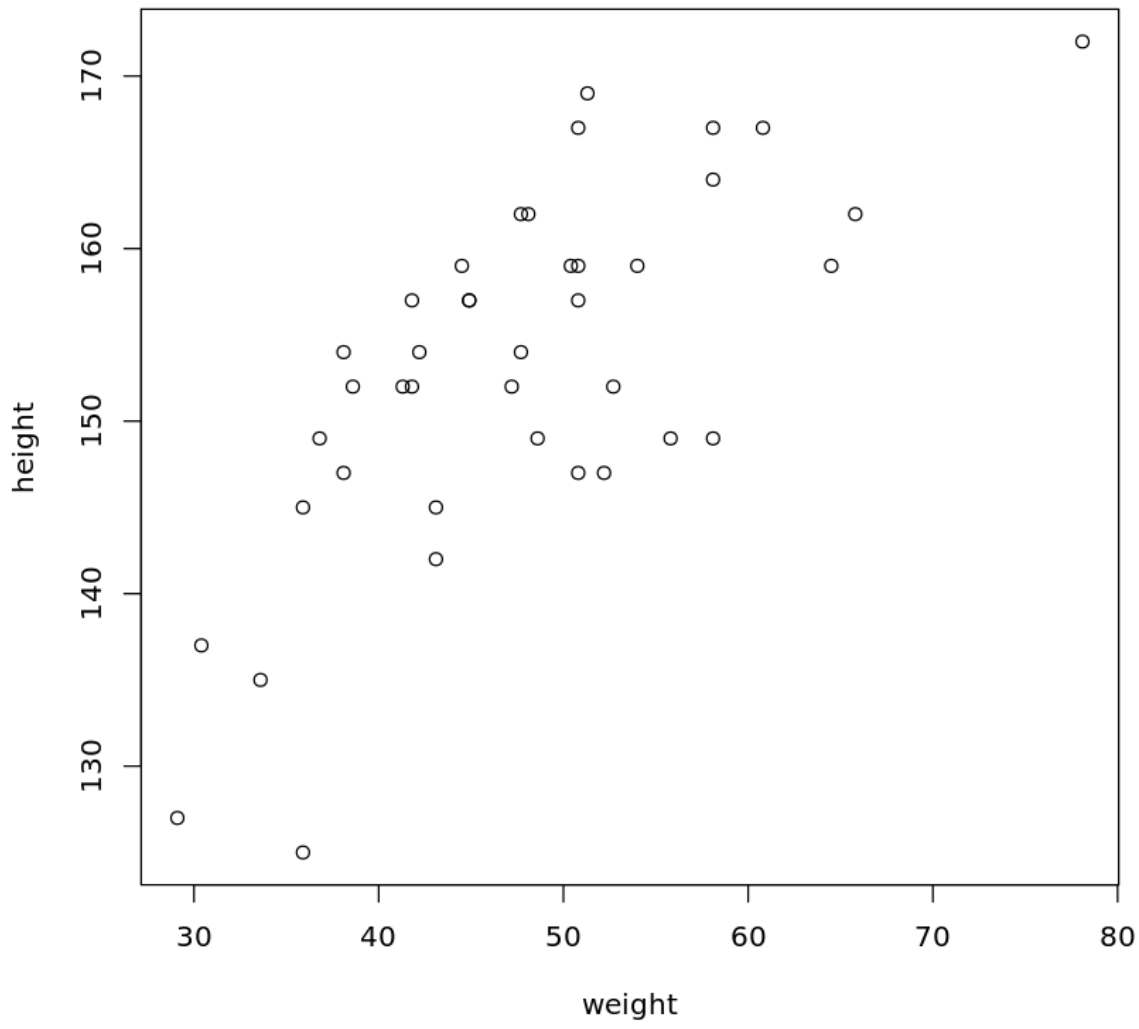
```
-10.0735  -5.9364  -0.7291   3.7854  17.6629

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -56.7486    16.9124  -3.355  0.00181 **
height        0.6813     0.1101   6.188 3.15e-07 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 7.203 on 38 degrees of freedom
Multiple R-squared:  0.5019,    Adjusted R-squared:  0.4888
F-statistic: 38.29 on 1 and 38 DF,  p-value: 3.147e-07
```

A matrix: 1 × 3 of type dbl

	fit	lwr	upr
1	61.79973	46.32926	77.27019



```
1
```