```
R version 3.1.1 (2014-07-10) -- "Sock it to Me"
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Platform: x86_64-w64-mingw32/x64 (64-bit)

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> setwd("C:\\Users\\Kelvin\\Documents\\Homework\\Coursework\\yr3sem1\\STAT 331")
> workdat <- read.table("Copier.txt", header=T)
> fix(workdat)
> x <- workdat$Serviced
> y <- workdat$Minutes
> plot(x,y, main="", ylab="Total number of minutes spent", xlab="Number of copiers serviced")
> n <- length(x)
> b1 <- (sum(x*y)-n*mean(x)*mean(y))/(sum(x^2)-n*(mean(x))^2)
> b0 <- mean(y)-b1*mean(x)
> abline(a=b0, b=b1)
> b0
[1] -0.5801567
> b1
[1] 15.03525
> fm <- lm(formula = Minutes ~ Serviced, data = workdat)
> fm

Call:
lm(formula = Minutes ~ Serviced, data = workdat)

Coefficients:
(Intercept)      Serviced
    -0.5802       15.0352

> b1+b0
[1] 14.45509
> yhat <- b0+b1*x
> points(x,yhat,cex=1,col=2,pch=19)
> s2 <- sum((y-yhat)^2)/(n-2)
> s2
[1] 79.45063
> s <- sqrt(s2)
> s
[1] 8.913508
> sxx <- sum(x^2) - n*(mean(x))^2
> mean(y)+qt(0.025,n-2)*s
[1] 58.29086
> mean(y)-qt(0.025,n-2)*s
[1] 94.24247
> seb1hat <- sqrt(s^2/sxx)
> b1+qt(0.025,n-2)*seb1hat
[1] 14.06101
> b1-qt(0.025,n-2)*seb1hat
[1] 16.00949
> seb0hat <- sqrt(s^2*(1/n+mean(x)^2/sxx))
> b0+qt(0.025,n-2)*seb0hat
[1] -6.234843
> b0-qt(0.025,n-2)*seb0hat
[1] 5.074529
> summary(fm)

Call:
lm(formula = Minutes ~ Serviced, data = workdat)

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

```
-22.7723  -3.7371   0.3334   6.3334  15.4039

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  -0.5802     2.8039  -0.207    0.837
Serviced     15.0352     0.4831  31.123   <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 8.914 on 43 degrees of freedom
Multiple R-squared:  0.9575,    Adjusted R-squared:  0.9565
F-statistic: 968.7 on 1 and 43 DF,  p-value: < 2.2e-16

> s2
[1] 79.45063
> mean(x)
[1] 5.111111
> sxx
[1] 340.4444
> b0
[1] -0.5801567
> b1
[1] 15.03525
> qt(0.025,43)
[1] -2.016692
> b0+b1*5+qt(0.025,43)*sqrt(s^2*(1+1/43+(5-mean(x))^2/sxx))
[1] 56.41214
> b0+b1*5-qt(0.025,43)*sqrt(s^2*(1+1/43+(5-mean(x))^2/sxx))
[1] 92.78003
>
```