## Q4: Source R code

```
# ---------> complete and run the following code for this assignment  <-------
#
#
# R code for STA302 or STA1001H1F assignment 2
# copyright by YourName
# date: Oct. 26, 2016
#

## Load in the data set
a2 = read.table("/Users/doganakad/desktop/uoft/first semester/sta302/Assignments/A2/a2data.txt",header=T)

## Q1: fit a linear model to FEV on age
age = a2$age
FEV = a2$fev
mod1 = lm(FEV~age)

## ==> Q1(a) produce the scatter plot (FEV vs Age) and the residual plot with fitted value

par(mfrow=c(1,2))
plot(a2$age,a2$fev, type="p",col="blue",pch=21, main="FEV vs age")
abline(mod1,col="red",lty=2)

## Plot residual vs fitted value
plot(mod1,which=1)

##==> Q1(b): boxcox transformation
library(MASS)
bc = boxcox(mod1, lambda = seq(-2,2,0.01))

## boxCox MLE
MLE = bc$x[which.max(bc$y)]
MLE


## Q2

##(a) Estimated Regression Model
mod2 = lm(log(FEV)~age)
par(mfrow=c(2,2))

## Plots
plot(age, log(FEV))
abline(mod2,col="red",lty=2)
plot(mod2,which=1,main="After transformation")

##(c)Value of slope
summary(mod2)

##(d) Confidence and Prediction Interval for the mean response
newdata = data.frame("age" = c(8,17,21))
exp(predict.lm(mod2, newdata, interval="confidence",level=0.95))
exp(predict.lm(mod2, newdata, interval="prediction",level=0.95))

## Q3:

##(a) Estimated regression model
```