#Question 1

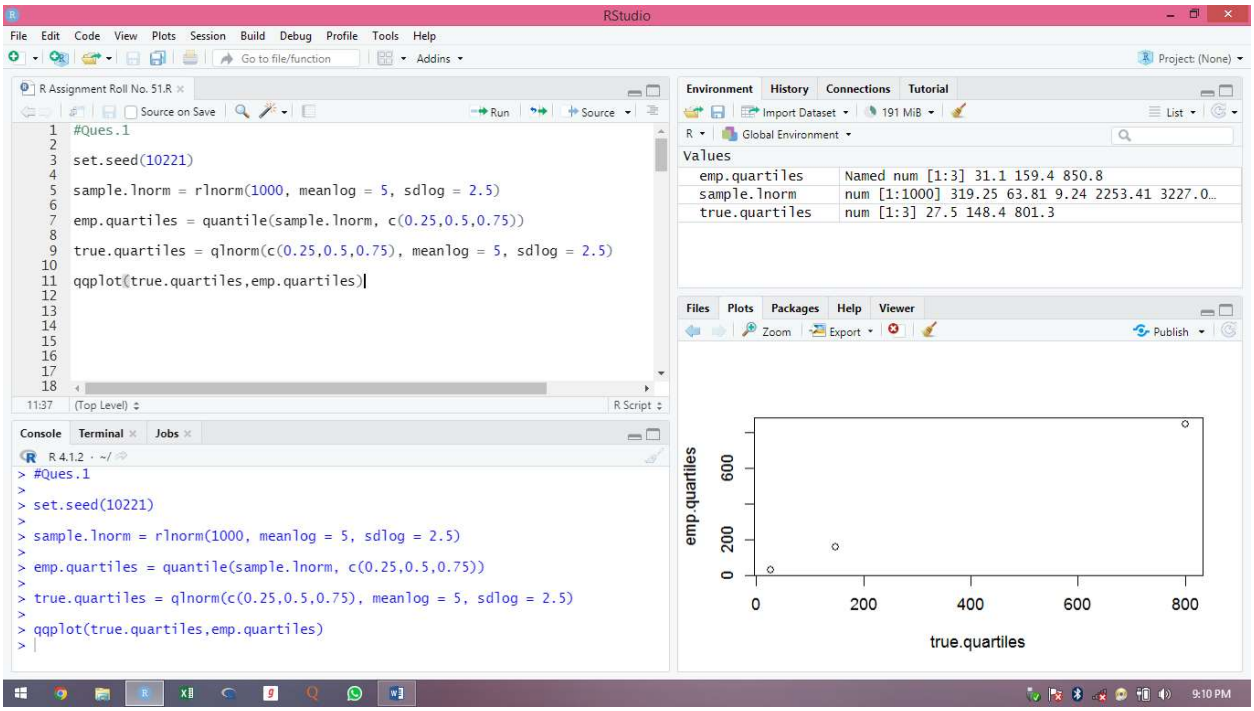
set.seed(10221)

sample.lnorm = rlnorm(1000, meanlog = 5, sdlog = 2.5)

emp.quartiles = quantile(sample.lnorm, c(0.25,0.5,0.75))

true.quartiles = qlnorm(c(0.25,0.5,0.75), meanlog = 5, sdlog = 2.5)

qqplot(true.quartiles,emp.quartiles)



#Question 2

cars = mtcars

#a)

model.a = lm(mpg ~1, data = cars)

#b)

model.b = lm(mpg ~ wt, data = cars)

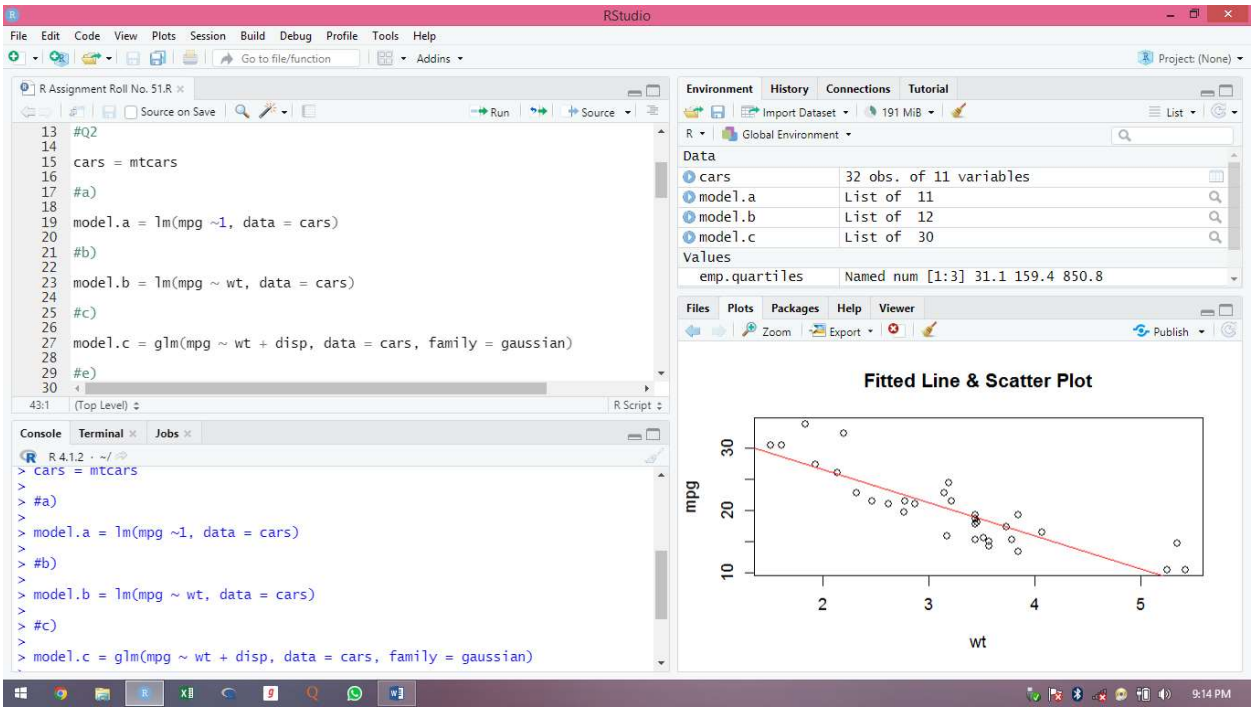
#c)

model.c = glm(mpg ~ wt + disp, data = cars, family = gaussian)

#e)

plot(cars$wt,cars$mpg, xlab = "wt", ylab = "mpg", main = "Fitted Line & Scatter Plot")

abline(model.b, col = "red", pch = 3)

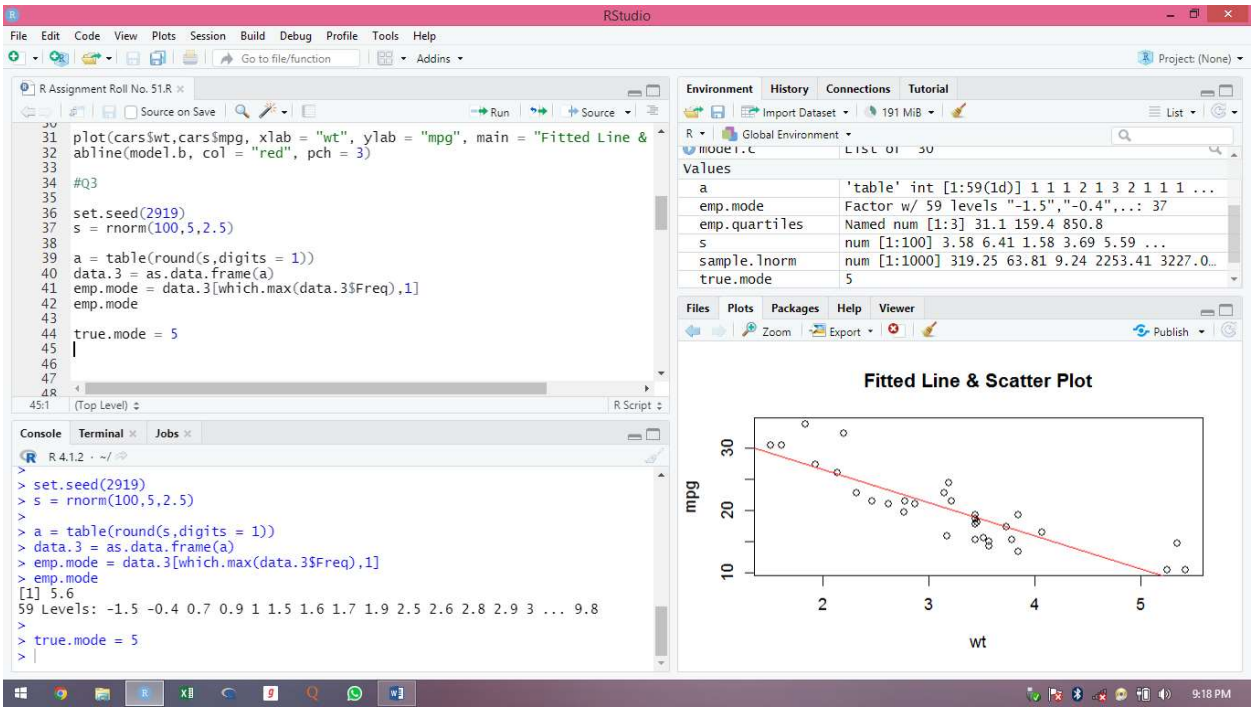


#Question 3

```
set.seed(2919)
s = rnorm(100,5,2.5)

a = table(round(s,digits = 1))
data.3 = as.data.frame(a)
emp.mode = data.3[which.max(data.3$Freq),1]
emp.mode

true.mode = 5
```



#Question 4

X = c(0:6)

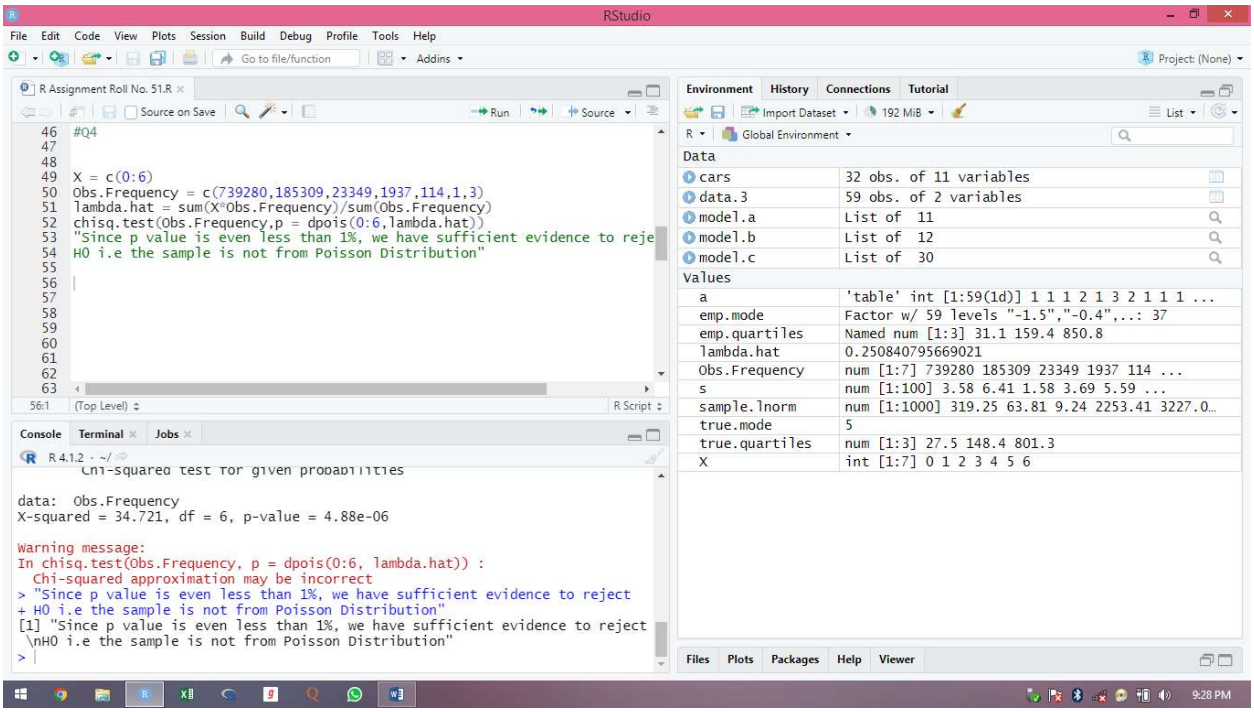
Obs.Frequency = c(739280,185309,23349,1937,114,1,3)

lambda.hat = sum(X*Obs.Frequency)/sum(Obs.Frequency)

chisq.test(Obs.Frequency,p = dpois(0:6,lambda.hat))

"Since p value is even less than 1%, we have sufficient evidence to reject

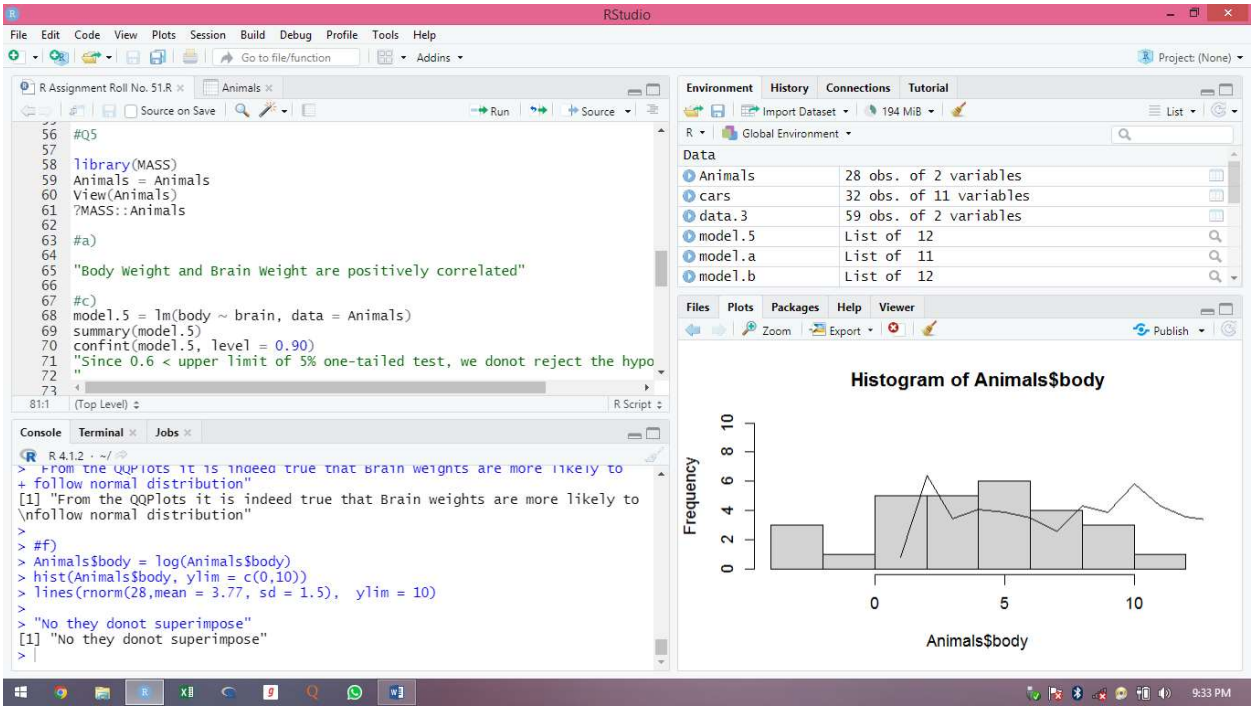
H0 i.e the sample is not from Poisson Distribution"



```
#Question 5
library(MASS)
Animals = Animals
View(Animals)
?MASS::Animals
#a)
"Body Weight and Brain Weight are positively correlated"
#c)
model.5 = lm(body ~ brain, data = Animals)
summary(model.5)
confint(model.5, level = 0.90)
"Since 0.6 < upper limit of 5% one-tailed test, we donot reject the hypothesis.
"
#d)
Animals$brain = Animals$brain/1000
t.test(Animals$body,Animals$brain, alternative = "greater",var.equal = T,
       conf.level = 0.99)
"Since 0 is included in C.I, mean body weight is not always greater than mean
brain weight
"
#e)
qqnorm(Animals$body)
qqline(Animals$body)
qqnorm(Animals$brain)
qqline(Animals$brain)
"From the QQPlots it is indeed true that Brain weights are more likely to
follow normal distribution"
#f)
Animals$body = log(Animals$body)
hist(Animals$body, ylim = c(0,10))
```

lines(rnorm(28,mean = 3.77, sd = 1.5), ylim = 10)

"No they donot superimpose"



#Question 6

data = matrix(c(40, 20, 10,

30, 35, 15,

30, 45, 25), 3,3,byrow = T)

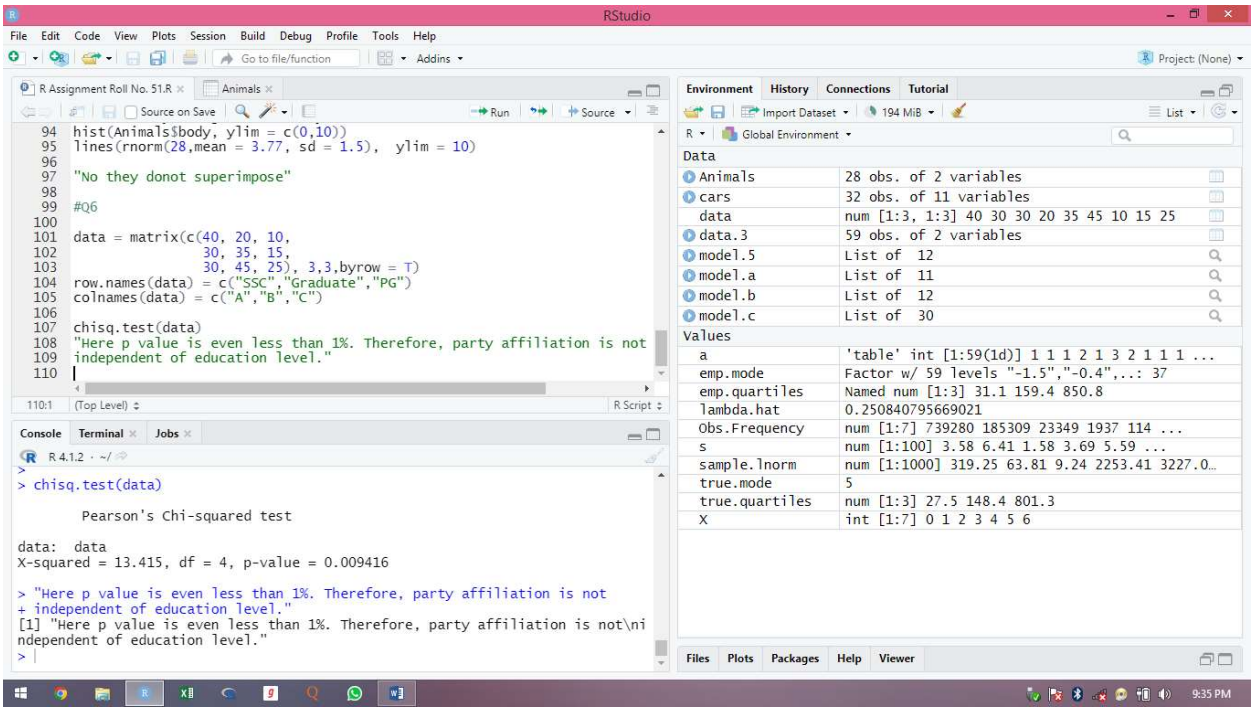
row.names(data) = c("SSC","Graduate","PG")

colnames(data) = c("A","B","C")

chisq.test(data)

"Here p value is even less than 1%. Therefore, party affiliation is not

independent of education level."


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
R Assignment Roll No. 51.R
Animals
Source on Save
Run
Source
hist(Animals$body, ylim = c(0,10))
lines(rnorm(28,mean = 3.77, sd = 1.5), ylim = 10)
"No they donot superimpose"
#Q6
data = matrix(c(40, 20, 10,
30, 35, 15,
30, 45, 25), 3,3,byrow = T)
row.names(data) = c("SSC","Graduate","PG")
colnames(data) = c("A","B","C")
chisq.test(data)
"Here p value is even less than 1%. Therefore, party affiliation is not independent of education level."
110:1 (Top Level) R Script
Console Terminal Jobs
R 4.1.2 · ~/
> chisq.test(data)
Pearson's Chi-squared test
data: data
X-squared = 13.415, df = 4, p-value = 0.009416
> "Here p value is even less than 1%. Therefore, party affiliation is not
+ independent of education level."
[1] "Here p value is even less than 1%. Therefore, party affiliation is not\ni
ndependent of education level."
Environment History Connections Tutorial
Import Dataset
194 MiB
List
R
Global Environment
Data
Animals 28 obs. of 2 variables
cars 32 obs. of 11 variables
data num [1:3, 1:3] 40 30 30 20 35 45 10 15 25
data.3 59 obs. of 2 variables
model.5 List of 12
model.a List of 11
model.b List of 12
model.c List of 30
Values
a 'table' int [1:59(1d)] 1 1 1 2 1 3 2 1 1 1 ...
emp.mode Factor w/ 59 levels "-1.5","-0.4",..: 37
emp.quartiles Named num [1:3] 31.1 159.4 850.8
lambda.hat 0.250840795669021
Obs.Frequency num [1:7] 739280 185309 23349 1937 114 ...
s num [1:100] 3.58 6.41 1.58 3.69 5.59 ...
sample.lnorm num [1:1000] 319.25 63.81 9.24 2253.41 3227.0...
true.mode 5
true.quartiles num [1:3] 27.5 148.4 801.3
X int [1:7] 0 1 2 3 4 5 6
Files Plots Packages Help Viewer
9:35 PM