Testing of hypothesis Chi-square Tests

Chi square test for independence

```
chisq.test(mtcars)
chisq.test(data_frame$treatment, data_frame$improvement, correct=FALSE)



#Example 1)
datatable <- matrix(c(35,13,29,17,12,21),nrow=3,ncol=2)
datatable

chisq.test(datatable,correct=FALSE)

p_value=0.3875

alpha=0.05
if(p_value<alpha){
  print("Reject Null Hypothesis")
} else{
  print("Accept Null Hypothesis")
}




#Example 2)
```

```
# Load the library.
library("MASS")

# Create a data frame from the main data set.
car.data <- data.frame(Cars93$AirBags, Cars93$Type)

# Create a table with the needed variables.
car.data = table(Cars93$AirBags, Cars93$Type)
print(car.data)

# Perform the Chi-Square test.

print(chisq.test(car.data)) # or simply chisq.test(car.data)



#Example 3)

# load the MASS package
library(MASS)
print(str(survey))

# Create a data frame from the main data set.
stu_data = data.frame(survey$Smoke,survey$Exer)

# Create a contingency table with the needed variables.
stu_data = table(survey$Smoke,survey$Exer)

print(stu_data)
```

```
# applying chisq.test() function
print(chisq.test(stu_data))


p_value=0.4828


alpha=0.05
if(p_value<alpha){
  print("Reject Null Hypothesis")
} else{
  print("Accept Null Hypothesis")
}
```

Exercise:

1) Based on following data, can you say that there is no relation between literacy and smoking

	Smokers	Non-smokers
Literates	83	57
Illiterates	45	68

Write a R program for above problem .

2) A total of 3759 individuals were interviewed in a public opinion survey on a political proposal of them 1872 were men and the rest were women. A total of 2257 individuals were in favour of the proposal and 917 were opposed to it. A total of 243 men were undecided and 442 women were opposed to the proposal. Do you justify on the hypothesis that there is no association between sex and attitude, at 5% LoS.

Write a R program for above problem .

3) In a random sample of 220 students in a college, they were asked to give opinion in terms of yes or no about the winning of their college cricket team in a tournament. The following data is collected

	Class in the college		
	Ist year	IInd year	IIIrd year
Yes	43	20	37
No	23	57	40

Write a R program for above problem .

4) The manager of a chain of restaurants wants to know whether the customer satisfaction is related to the waiter. He takes a random sample of 100 customers, asking the name of the waiter and whether the service was excellent, good or poor. He then categorizes the salaries of the waiter as low, medium and high. His results are shown below. Test at 0.05 LoS whether the quality of service is independent of the waiter's salary

	Low	Medium	High
Excellent	9	10	7
Good	11	9	31
Poor	12	8	3

Write a R program for above problem .