PS LAB SHEET 10

IT24103512

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1. A vending machine owner claims that customers choose the four snack types (A, B, C, D) with equal probability. To test this claim, a researcher records the number of purchases for each snack type during one week and results are given below.

Snack_Type	Count
A	120
B	95
C	85
D	100

   i. State the null and alternative hypotheses for the test.

   ii. Perform a suitable chi-squared test to test the null hypothesis.

   iii. Give your conclusions based on the results.

1)

```
> setwd("C:\\Users\\Chamath\\OneDrive\\Desktop\\IT24103512\\Lab 10")
>
> #Question (i)
> H0 <- "Customers choose the four snack types with equal probability"
> H1 <- "Customer do not choose the four snack types with equal probability"
>
```

```
> #Question (ii)
> snack_types <- c("A", "B", "C", "D")
> observed_counts <- c(120, 95, 85, 100)
> chi_test <- chisq.test(observed_counts)
> chi_test

        Chi-squared test for given probabilities

data:  observed_counts
X-squared = 6.5, df = 3, p-value = 0.08966
```

2)

3)

```
> #Question (iii)
> #There is no significant evidence that customers choose the four snack types with different probabilities.
> #The data supports the vending machine owner's claim that customers choose snacks equally.
>
```