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**K J Somaiya Institute of Technology**

**An Autonomous Institute Permanently Affiliated to the University of Mumbai**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**Course: Data Mining & Business Intelligence Lab (ITL601)**

**B.Tech. (Information Technology) – Semester VI**

**Academic Year: 2023-24 (Even Semester)**

**PRACTICAL 4B**

**Aim:**

**Lab Objective:**

**Theory:**

**<Code with Output>:**

import numpy as np

import pandas as pd

np.random.seed(10)

product\_type = np.random.choice(a= ["iPhone","iPad","iPod","AVP","AirPods"], p = [0.05, 0.15 ,0.25, 0.05, 0.5],

size=1000)

month = np.random.choice(a= ["January","February","March"], p = [0.4, 0.2, 0.4],

size=1000)

product = pd.DataFrame({"types":product\_type,

"months":month})

product\_tab = pd.crosstab(product.types, product.months, margins = True) product\_tab.columns = ["January","February","March","row\_totals"] product\_tab.index = ["iPhone","iPad","iPod","AVP","AirPods","col\_totals"]

observed = product\_tab.iloc[0:5,0:3]

print(product\_tab)

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expected = np.outer(product\_tab["row\_totals"][0:5],

product\_tab.loc["col\_totals"][0:3]) / 1000

expected = pd.DataFrame(expected)

expected.columns = ["Janurary","Feburary","March"]

expected.index = ["iPhone","iPad","iPod","AVP","AirPods"]

print(expected)

chi\_squared\_stat = (((observed-expected)\*\*2)/expected).sum().sum() print(chi\_squared\_stat)

critical\_value= 15.50731

print("Critical value:",critical\_value)

if (chi\_squared\_stat < critical\_value):

print("Values are corelated ")

else:

print("Values are not corelated")



**Conclusion:**

**Lab Outcome:** Ability to identify sources of data for mining and design a Data Warehouse schema. Page **2** of **3**

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**Submitted Details -**

**Name of Student: Parth Malviya**

**Roll No.: 22**

**Date of Performance: 7 Feb 2024**

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