**Naan Mudhalvan**

**Data Analytics using IBM Cognos**

Phase – 3 (Development Part 1)

**PROGRAM :**

**#Import necessary libraries**

import numpy as np

import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

import plotly.offline as po

import plotly.graph\_objs as go

**#Import Customer Churn Dataset**

churn\_dataset = pd.read\_csv("Telco-Customer-Churn.csv")

print(churn\_dataset.shape)

**#Convert String values (Yes and No) of Churn column to 1 and 0**

churn\_dataset.loc[churn\_dataset.Churn == 'No','Churn'] = 0

churn\_dataset.loc[churn\_dataset.Churn == 'Yes','Churn'] = 1

**#Convert 'No Internet Service' to 'No' for the below mentioned columns**

cols = ['OnlineBackup','StreamingMovies','DeviceProtection','TechSupport','OnlineSecurity','StreamingTV']

for i in cols :

churn\_dataset[i] = churn\_dataset[i].replace({'No internet service' : 'No'})

**#Replace all the spaces with null values**

churn\_dataset['TotalCharges'] = churn\_dataset['TotalCharges'].replace(" ",np.nan)

**#Drop null values of 'Total Charges' feature**

churn\_dataset = churn\_dataset[churn\_dataset['TotalCharges'].notnull()]

churn\_dataset = churn\_dataset.reset\_index()[churn\_dataset.columns]

**#Convert 'Total Charges' column values to float data type**

churn\_dataset['TotalCharges'] = churn\_dataset['TotalCharges'].astype(float)

print(churn\_dataset['Churn'].value\_counts().values)

**#Visualize Total Customer Churn**

plot\_by\_churn\_labels = churn\_dataset["Churn"].value\_counts().keys().tolist()

plot\_by\_churn\_values = churn\_dataset["Churn"].value\_counts().values.tolist()

plot\_data = [

go.Pie(labels = plot\_by\_churn\_labels,

values = plot\_by\_churn\_values,

marker = dict(colors=['Teal','Grey'],

line=dict(color="white",

width=1.5)),

rotation=90,

hoverinfo="label+value+text",

hole= .6)

]

plot\_layout = go.Layout(dict(title = "Customer Churn",

plot\_bgcolor="rgb(243,243,243)",

paper\_bgcolor="rgb(243,243,243)",))

fig=go.Figure(data=plot\_data,layout=plot\_layout)

po.iplot(fig)

**# Visualize churn rate by Tech Support**

plot\_by\_techsupport = churn\_dataset.groupby('TechSupport').Churn.mean().reset\_index()

plot\_data = [

go.Bar(

x = plot\_by\_techsupport['TechSupport'],

y = plot\_by\_techsupport['Churn'],

width = [0.3, 0.3, 0.3],

marker = dict(

color = ['orange','green', 'teal'])

)

]

plot\_layout = go.Layout(

xaxis = {"type": "category"},

yaxis = {"title" : "Churn Rate"},

title = 'Churn Rate by Tech Support',

plot\_bgcolor = "rgb(243,243,243)",

paper\_bgcolor = 'rgb(243,243,243)'

)

fig = go.Figure(data = plot\_data, layout = plot\_layout)

po.iplot(fig)

NOTE : In this phase of development, We have imported the necessary libraries, processed the data as per our requirements, and visualize the Total Customer Churn. And then, we have visualized Customer Churn on the basis of Tech Support.

**PHASE 3 SUBMISSION DONE BY :**

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