PHASE-5

71772117301 – DEEPIKAA V

COLLEGE CODE : 7177

**CUSTOMER CHURN PREDICTION USING
DATA ANALYTICS WITH COGNOS**

PROJECT OVERVIEW :

The project at hand revolves around harnessing the capabilities of IBM Cognos to address a critical business challenge – predicting customer churn and enhancing customer retention strategies. The overarching goal is to empower businesses with the means to reduce customer attrition by gaining deep insights into the underlying patterns and drivers of customer departures.

PROJECT OBJECTIVES :

- ➢ Churn Prediction
- ➢ Comprehensive Understanding
- ➢ Visual Insights
- ➢ Data-Driven Decisions

DESIGN THINKING:

DATA COLLECTION :

- ➢ Gather historical customer data, including customer profiles, transactional data, usage logs, and ensure data quality and uniformity by cleaning and preprocessing the data.

VISUALIZATION STRATEGY :

- ➢ Create visually appealing dashboards and reports using IBM Cognos. Present insights, including identified churn patterns, key factors.

ANALYSIS OBJECTIVES :

- ➢ Identify, quantify churn drivers, segment customers by churn likelihood and behavior, and customize retention strategies for each segment.

PREDICTION OBJECTIVES :

FEATURE ENGINEERING:

In customer churn prediction, the quality and relevance of features (e.g., creating customer tenure, calculating customer

lifetime value) are vital. Effective feature engineering can uncover hidden insights in the data, improve model accuracy, and help in understanding the root causes of churn.

Data Cleaning & Preparation:

Handle missing values, if any, in the data fields.

Convert categorical data fields like 'gender', 'Partner', etc., into a format

suitable for analytical modeling (e.g., one-hot encoding).

```
df['TotalCharges'] = pd.to_numeric(df.TotalCharges, errors='coerce')
```
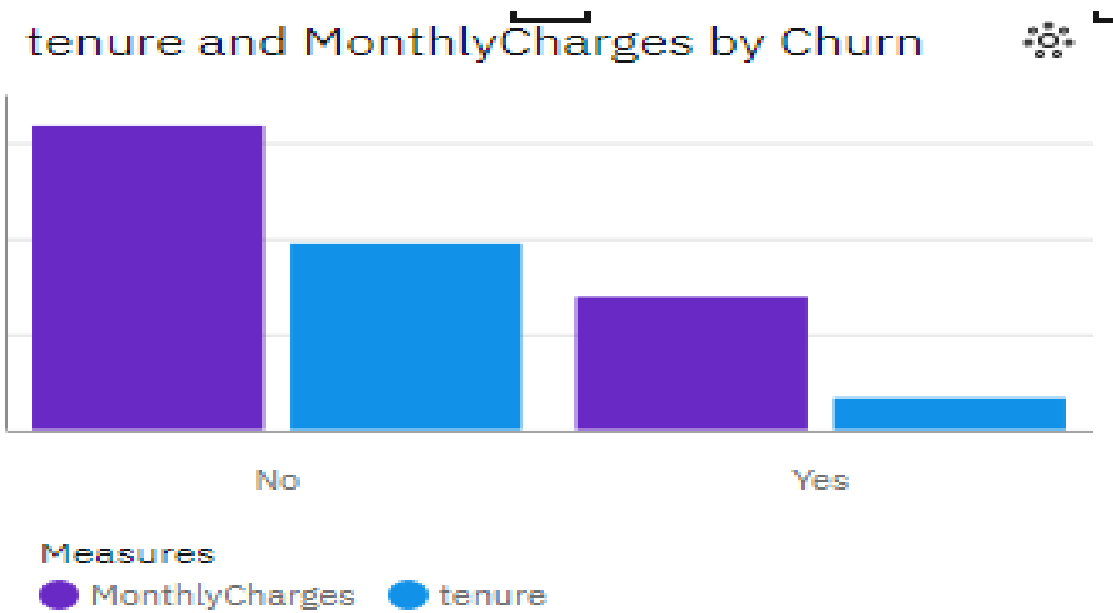
```
df.isnull().sum()
```

```
df[df['tenure'] == 0].index
```

Out[13]:

```
Int64Index([488, 753, 936, 1082, 1340, 3331, 3826, 4380, 5218, 6670, 6754], dtype='int64'
```

DATA VISUALISATION:

CHURN PATTERNS

tenure and MonthlyCharges by Churn

Measures
- ● MonthlyCharges   ● tenure

	Churn	Values	Measures group (2)
	No	316985.75	MonthlyCharges
	No	194387	tenure
	Yes	139130.85	MonthlyCharges
	Yes	33603	tenure

Visualization data   WA_Fn-UseC_-Telco...stomer-Churn.csv

TotalCharges by OnlineSecurity and Churn

No	Yes
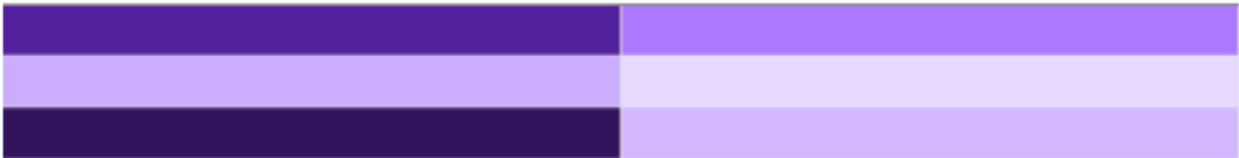
Visualization data   WA_Fn-UseC_-Telco...stomer-Churn.csv

OnlineSecurity	Churn	TotalCharges
No	No	5391958.8
No	Yes	2078605.15
No internet service	No	991481.95
No internet service	Yes	19652.95
Yes	No	6809801.05
Yes	Yes	764668.8

Dependents, Partner

Measures
● Dependents   ● Partner
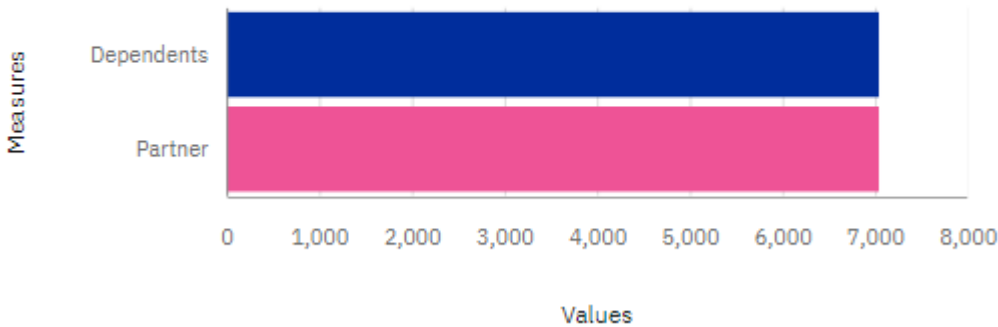
	Values	customerID	Measures group (2)
Visualization data		WA_Fn-UseC_-Telco...stomer-Churn.csv	
	2	7043	Dependents
	2	7043	Partner

customerID by Churn
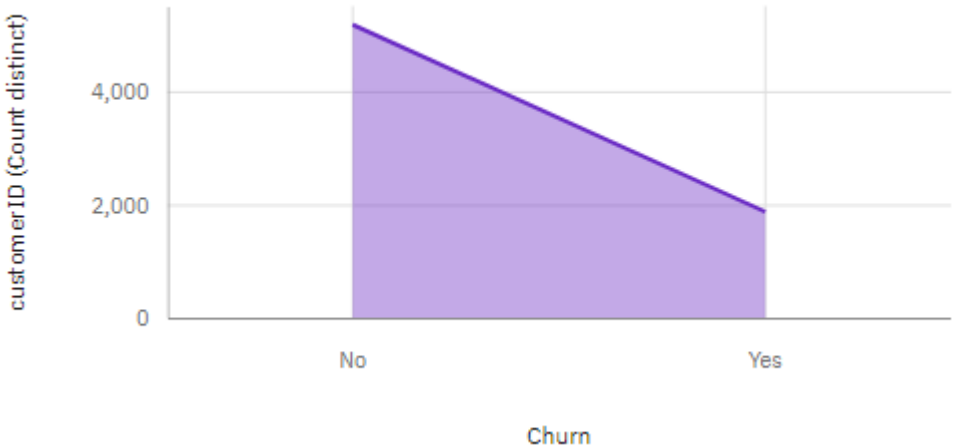
Visualization data   WA_Fn-UseC_-Telco...stomer-Churn.csv

Churn	customerID
No	5174
Yes	1869

FEATURE ANALYSIS:

Feature Importances