
Data Science
:: Bank
Marketing(Ca
mpaign)

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GitHub Repository : https://github.com/vasuvs45/Project

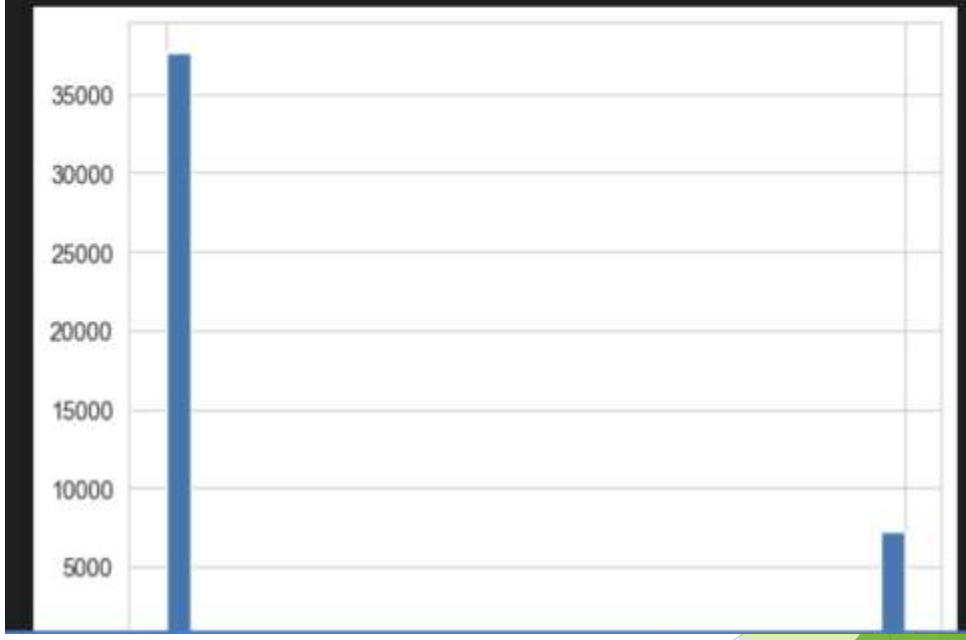
The EDA that’s performed on the provided data sets are as follows:

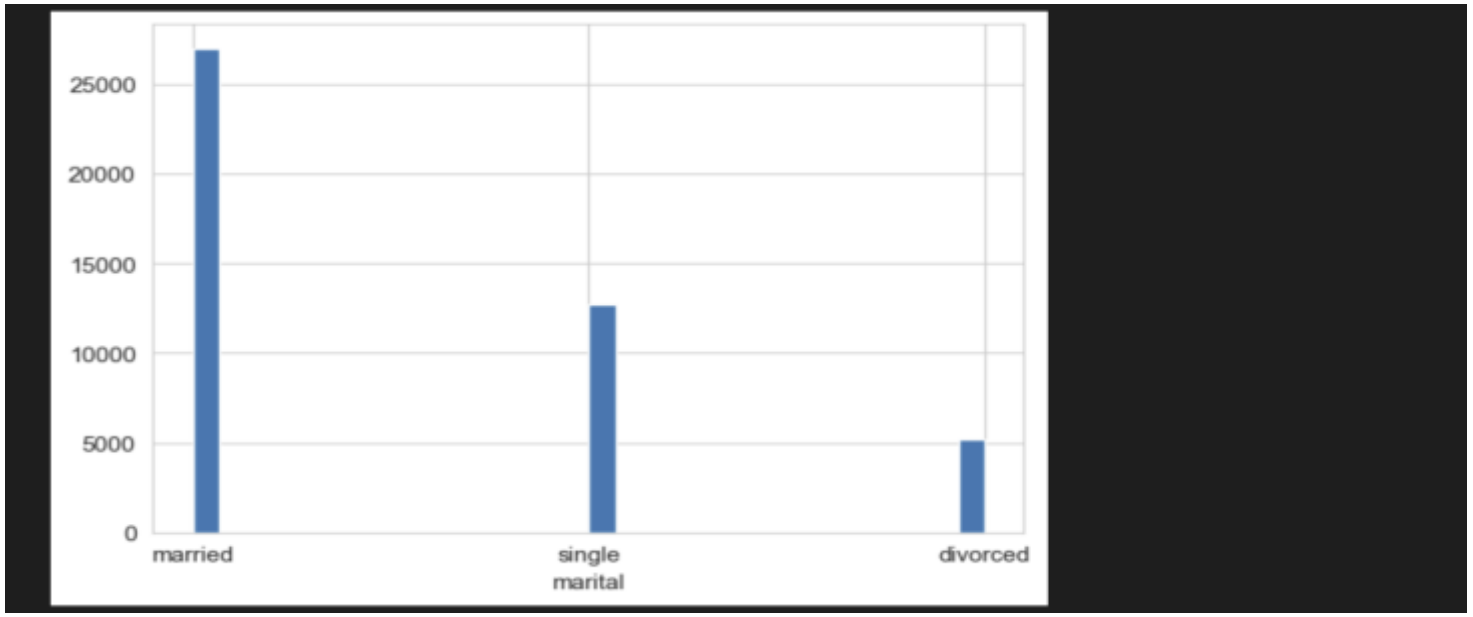
```
sns.set_style('whitegrid')
bank_df_filtered['y'].hist(bins=30)
plt.xlabel('y')
```

```
Text(0.5, 0, 'y')
```


```
sns.set_style('whitegrid')
bank_df_filtered['loan'].hist(bins=30)
plt.xlabel('loan')
```

```
Text(0.5, 0, 'loan')
```

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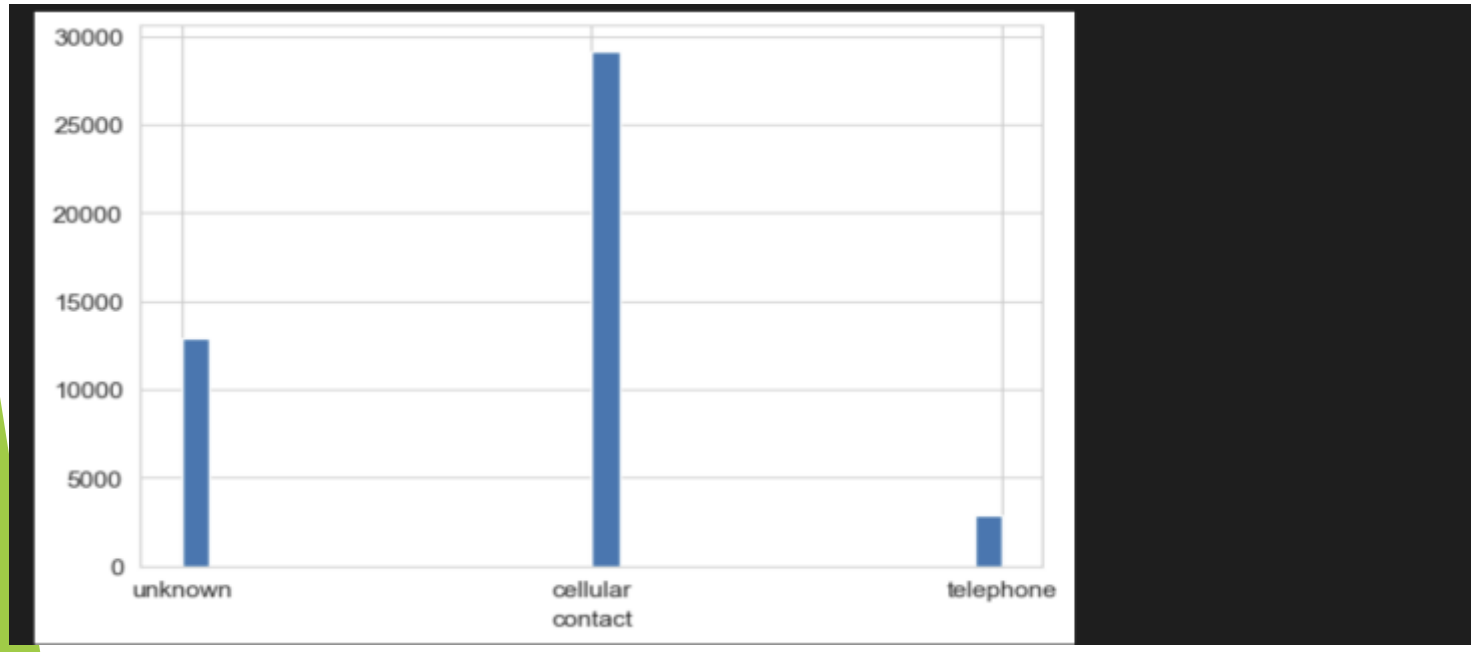
15000
10000
5000
0
married
single
divorced
marital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25000
20000
15000
10000
5000
0
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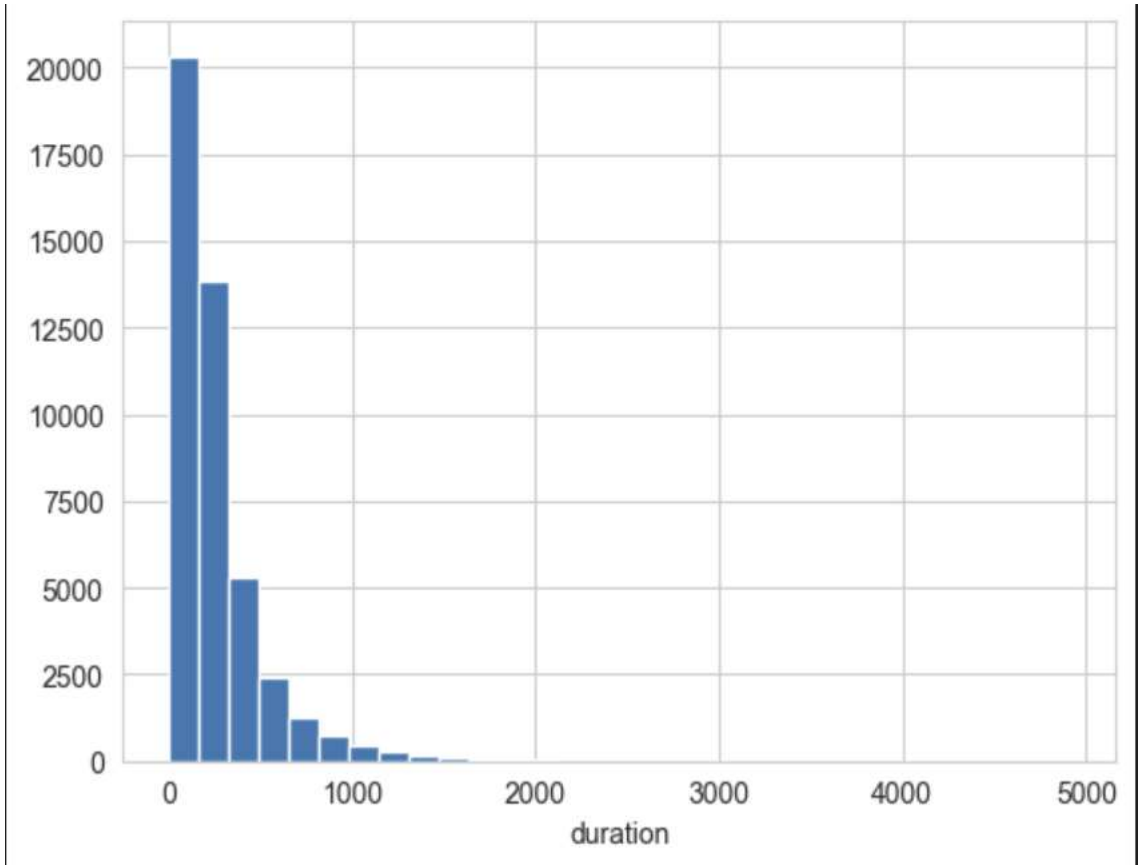
cellular
telephone
contact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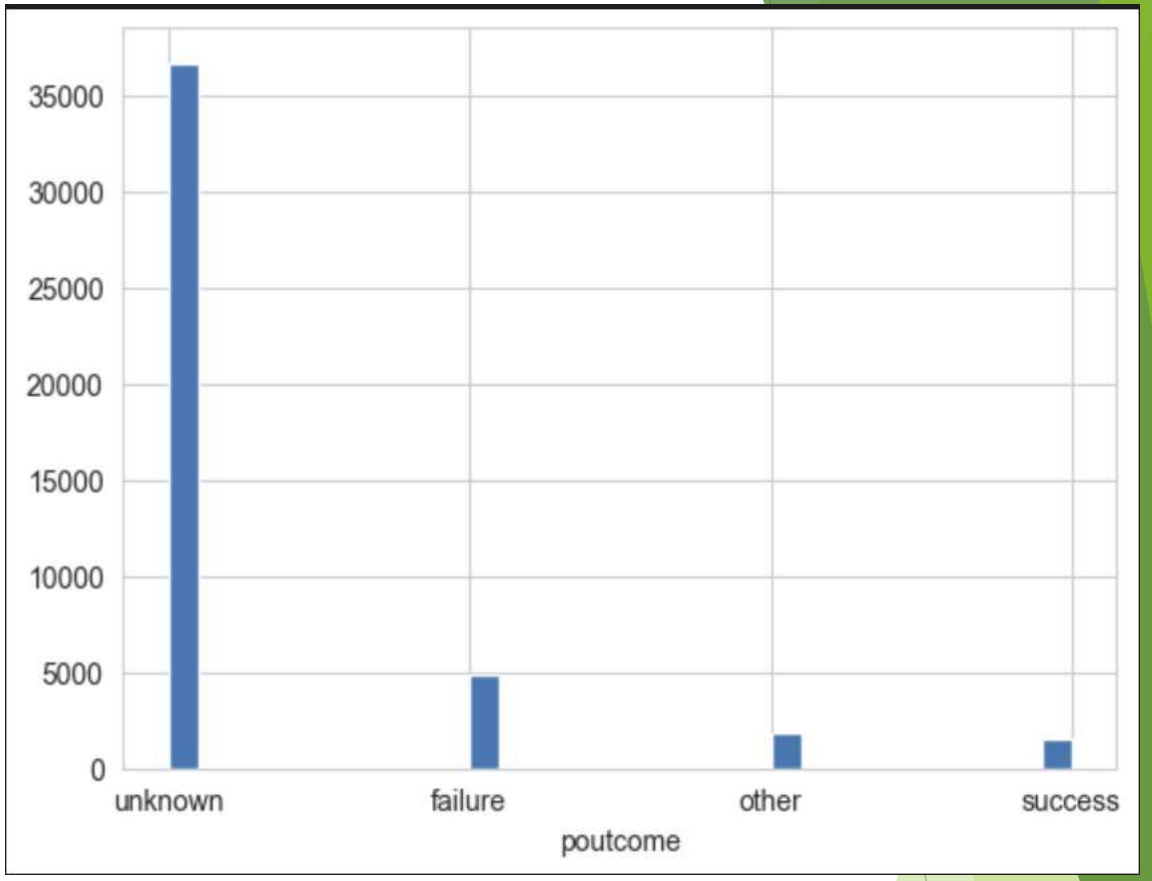
17500
15000
12500
10000
7500
5000
2500
0
0
1000
2000
3000
4000
5000
duration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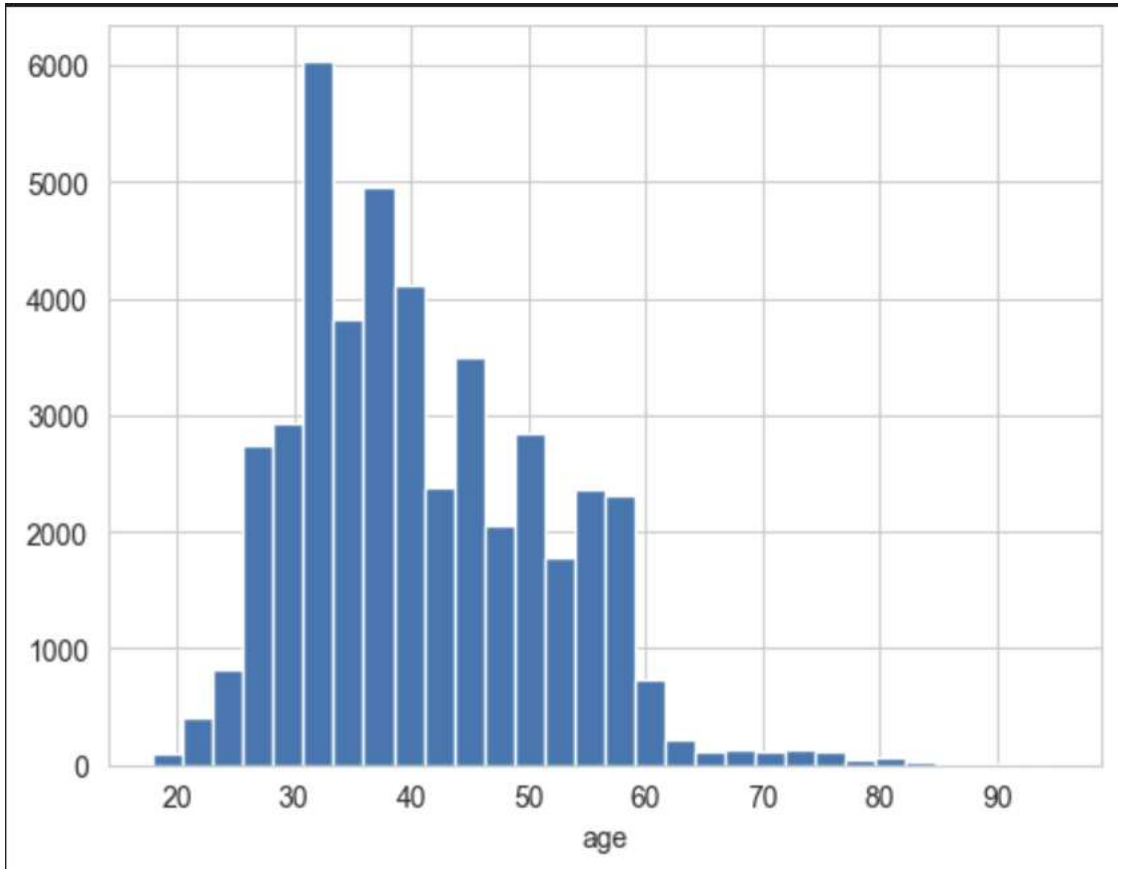
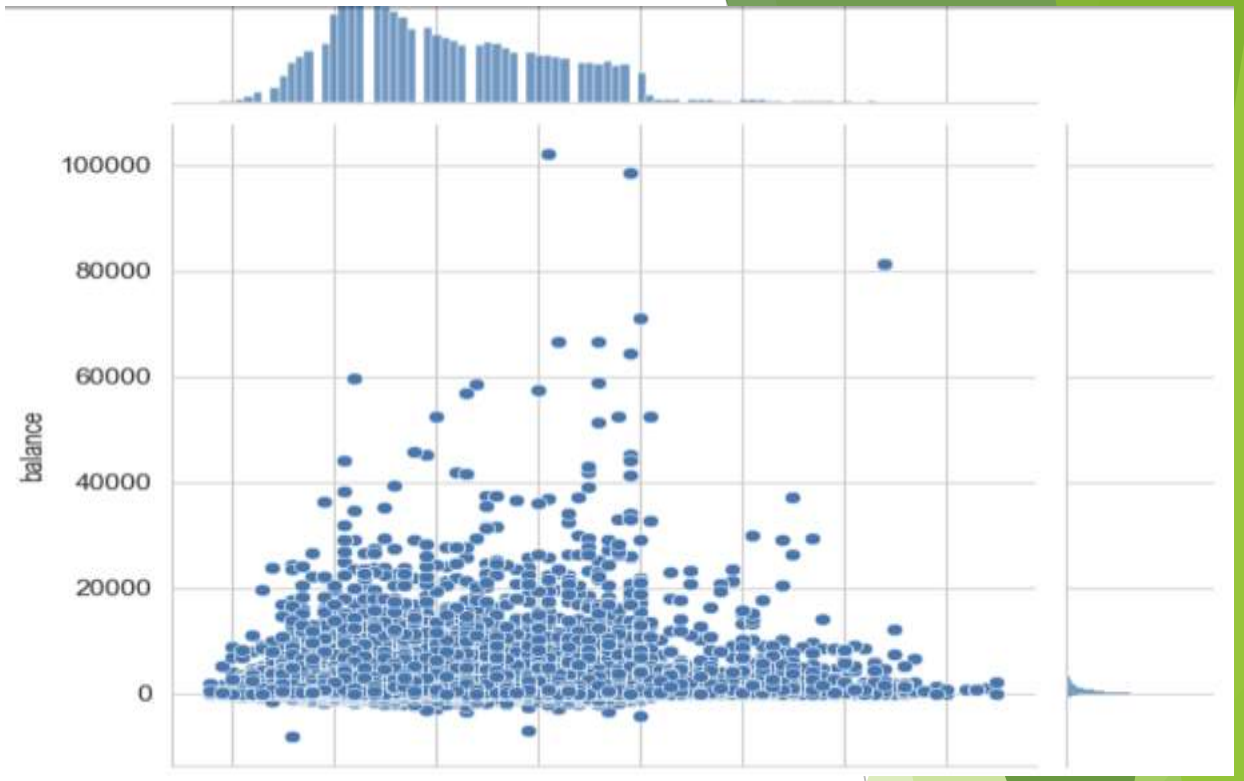
30000
25000
20000
15000
10000
5000
0
unknown
failure
other
success
poutcome


6000
5000
4000
3000
2000
1000
0
20
30
40
50
60
70
80
90
age

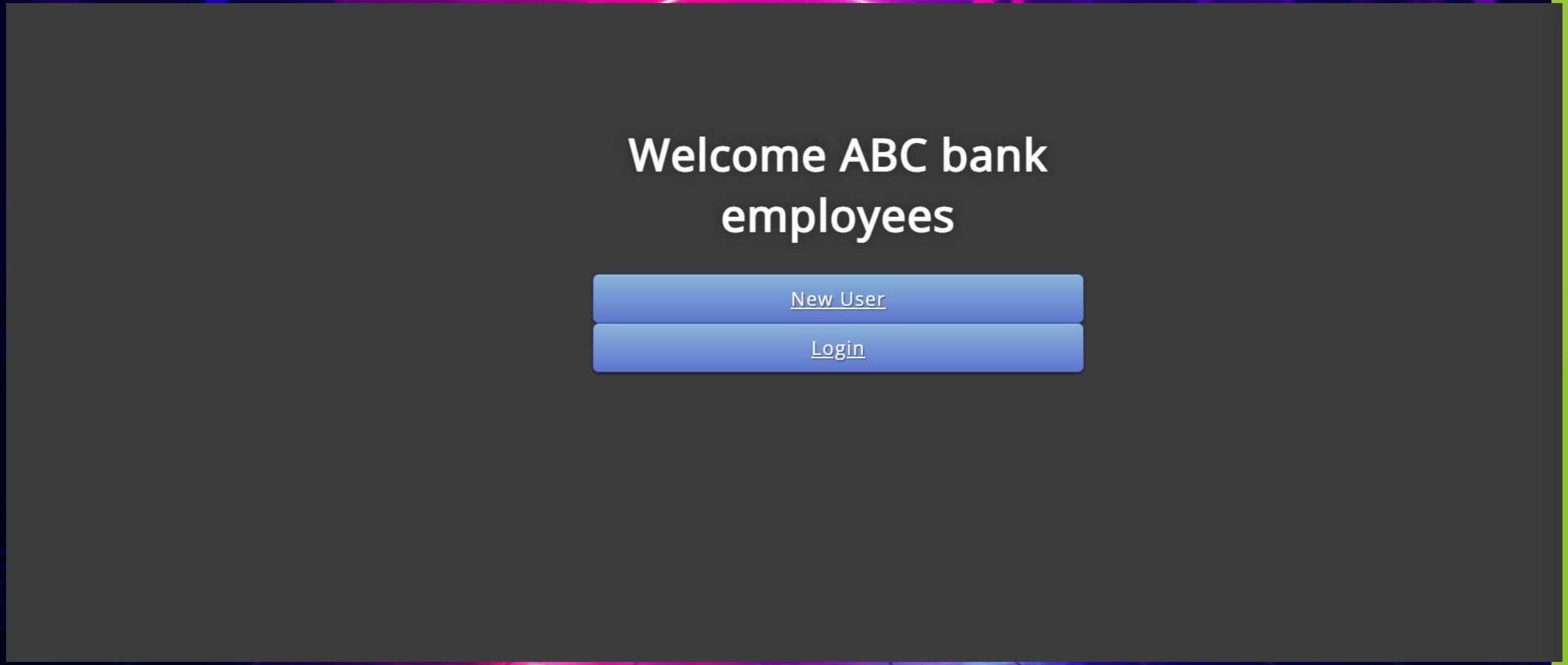

100000
80000
60000
40000
20000
0
balance

Technique to remove imbalance

Oversampling

```
#pip install imbalanced-learn
from imblearn.over_sampling import SMOTE
from imblearn.combine import SMOTETomek
final_dataset = pd.read_csv('final_dataset.csv')
final_dataset.head(1)
X=final_dataset[['age','job','marital','education','default','balance','housing','loan','contact','day','duration','cam
y = final_dataset['y']
smote = SMOTE(sampling_strategy='minority',random_state=7)
X_resampled, y_resampled = smote.fit_resample(X, y)
fig, ax = plt.subplots(figsize=(20,10))
# Imbalanced DataFrame Correlation
corr = final_dataset.corr()
sns.heatmap(corr, cmap='YlGnBu', annot_kws={'size':30}, ax=ax)
ax.set_title("Imbalanced Correlation Matrix", fontsize=14)
plt.show()
oversampled_train = pd.concat([pd.DataFrame(X_resampled), pd.DataFrame(y_resampled)], axis=1)
oversampled_train.head(1)
oversampled_train.to_csv('oversampled_train.csv')
```

Tthe Website that has been creted and ML algorithms that are created are as follows:



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vasu369

Email

admin@blog.com

Password

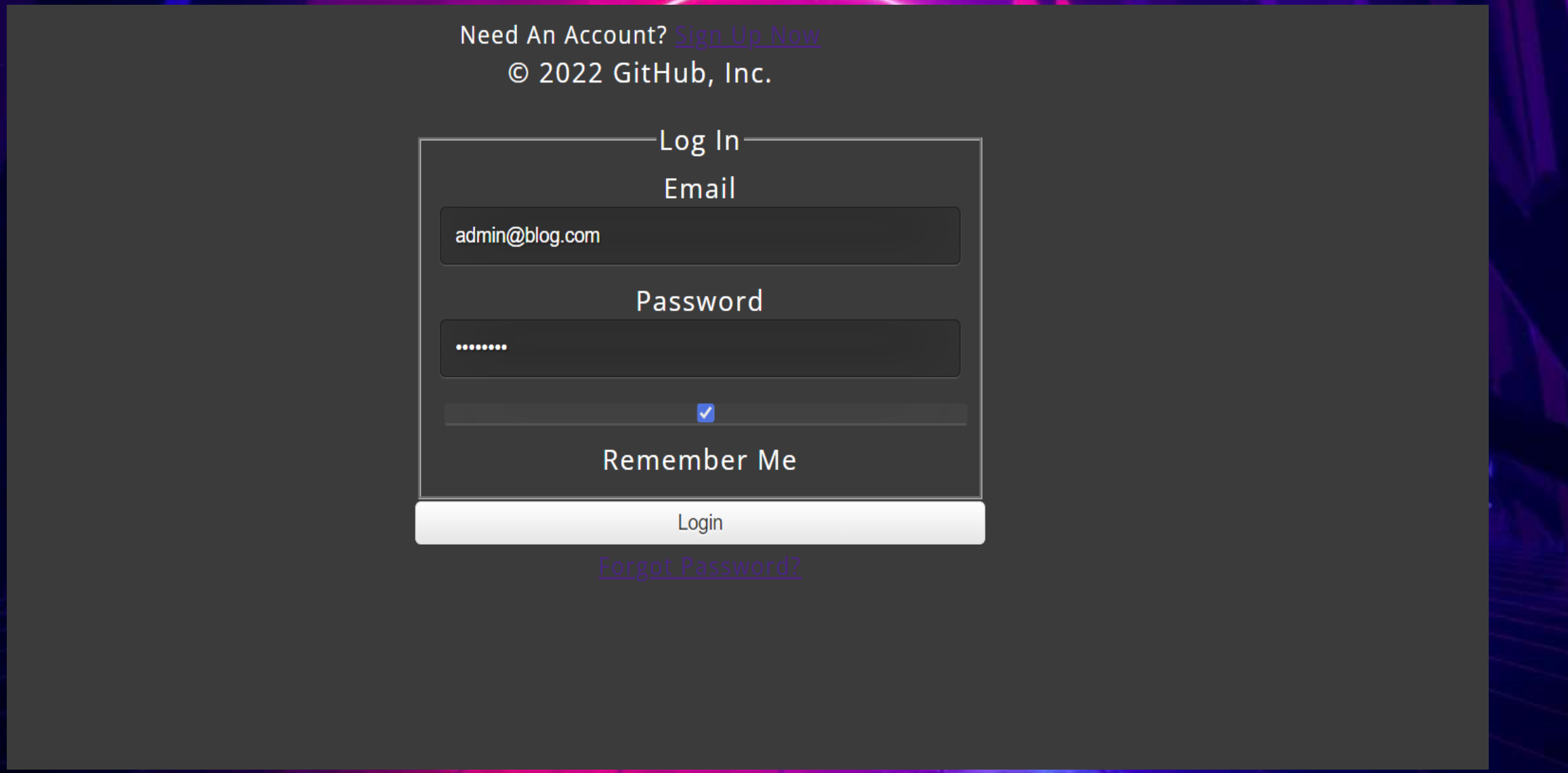
••••••••

Confirm Password

••••••••

Field must be equal to password.

Sign Up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admin@blog.com
Password
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Remember Me
Login
Forgot Password?

Select the algorithm to predict

- Logistic Regression
- K-Means
- Random Forest
- Support Vector Machine

Logistic Regression

127.0.0.1:5000/generate_logistic_bar_chart

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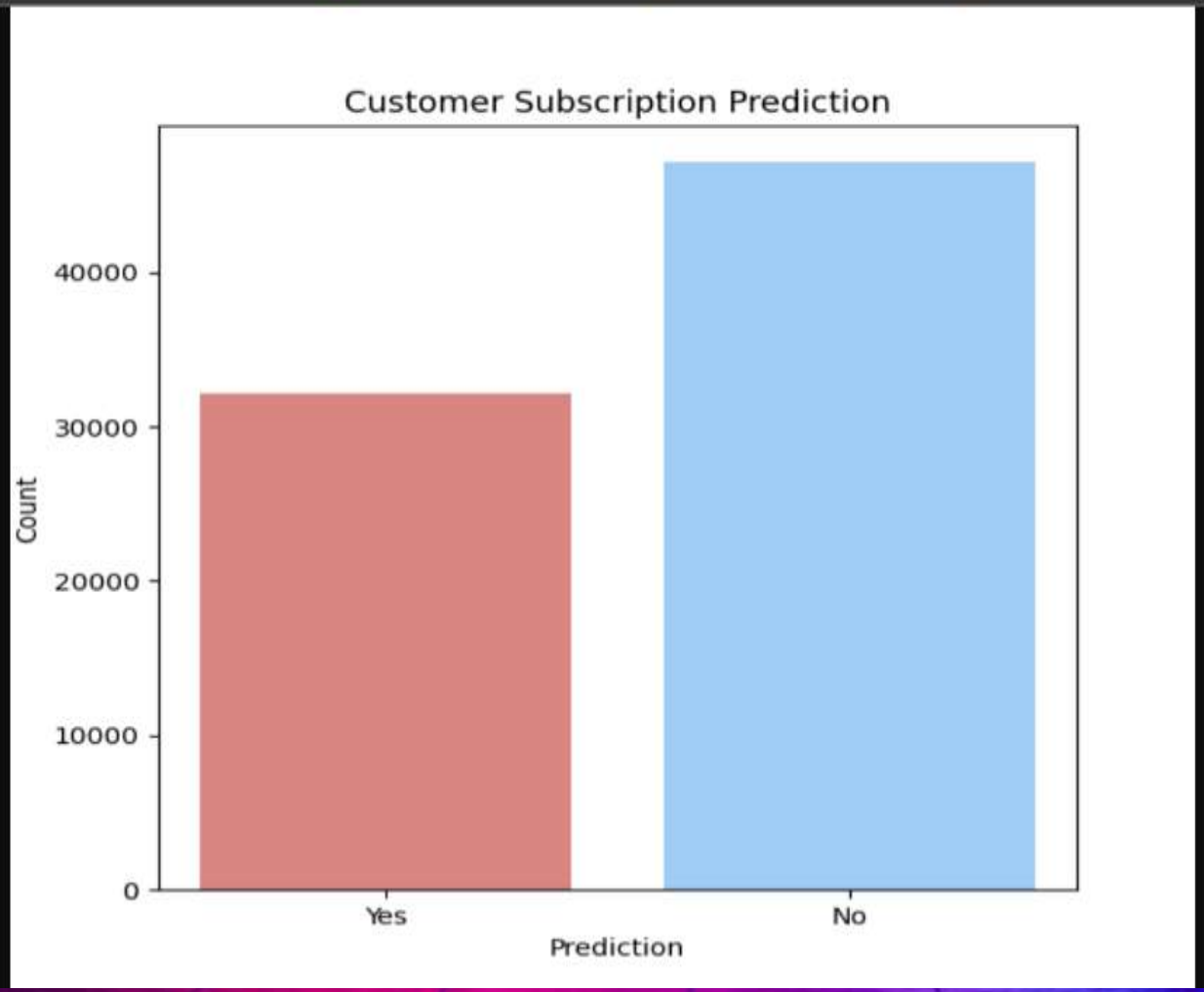
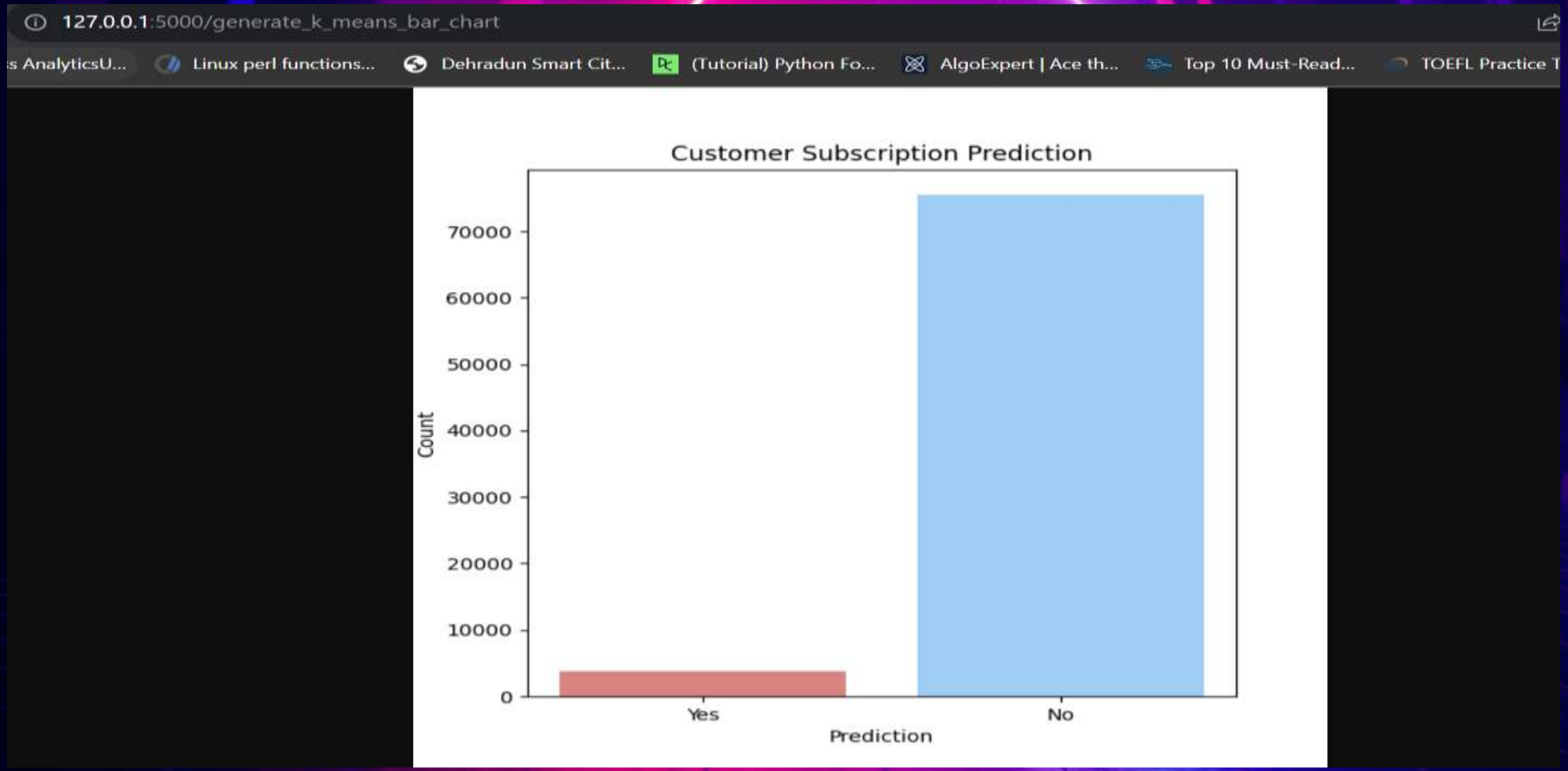


K-Means Algorithm



Random Forest

127.0.0.1:5000/generate_random_forest_chart

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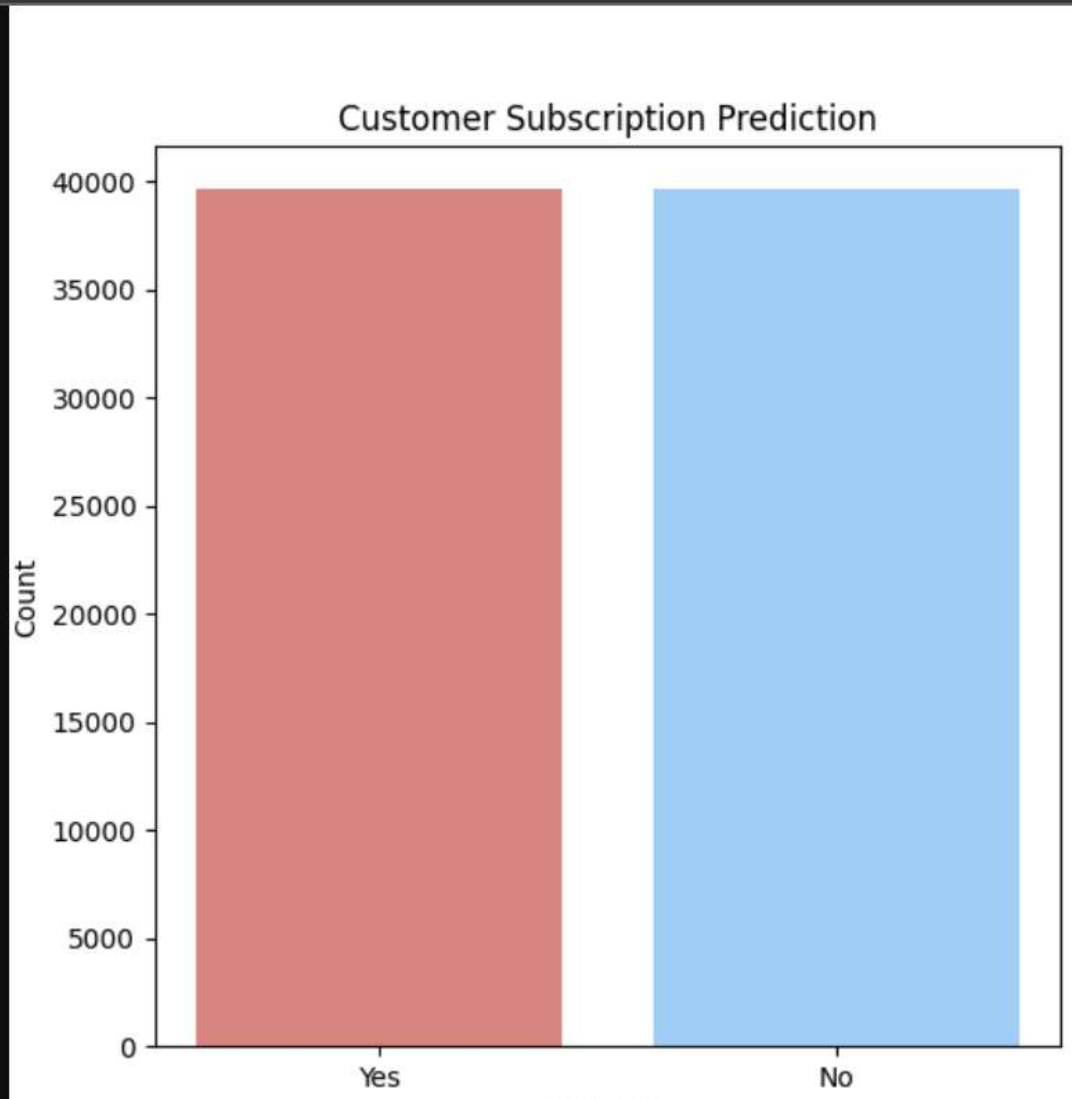

Support Vector Machine

In the end, I would suggest using either Logistic Regression or K-Means would be the best choice as the visualization and decisions made based on these algorithms seems more logical. Also Logistic Regression provides more accurate results as compared to other ML algorithms. Hence I would suggest using either Logistic Regression or K-Means ML algorithms.