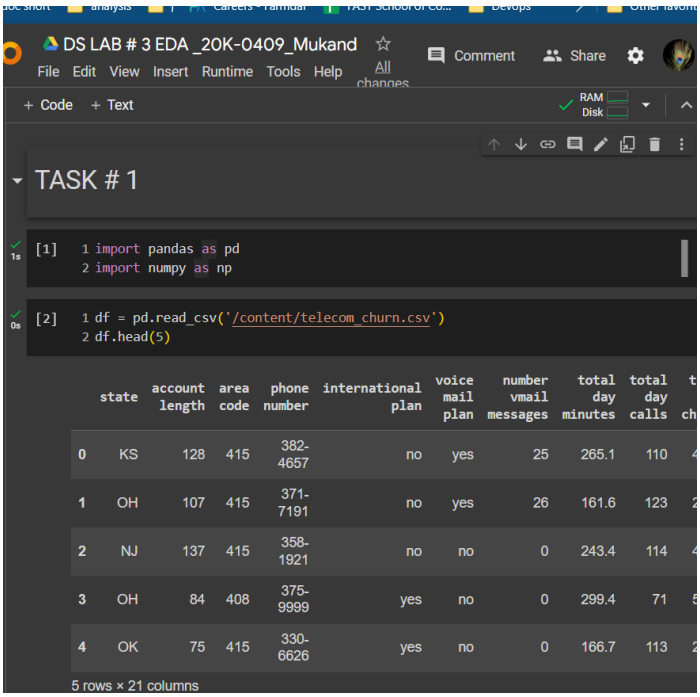
DATA SCIENCE LAB 3

Roll no: 20K-0409

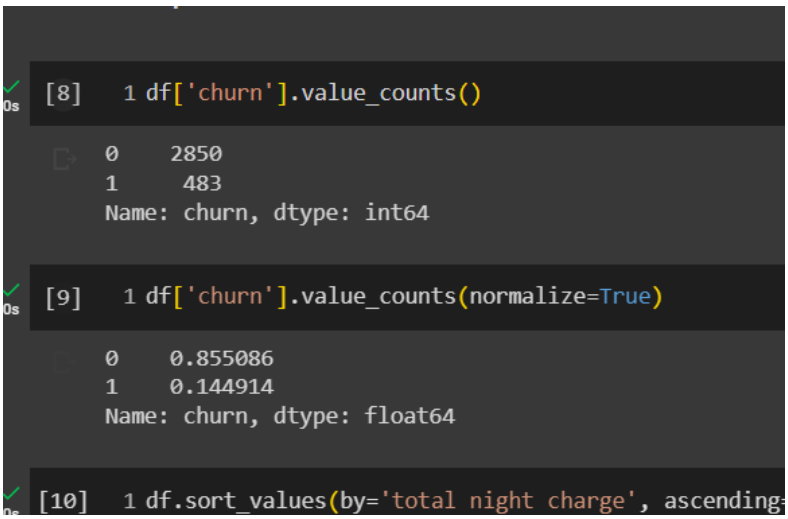
Screen Shots

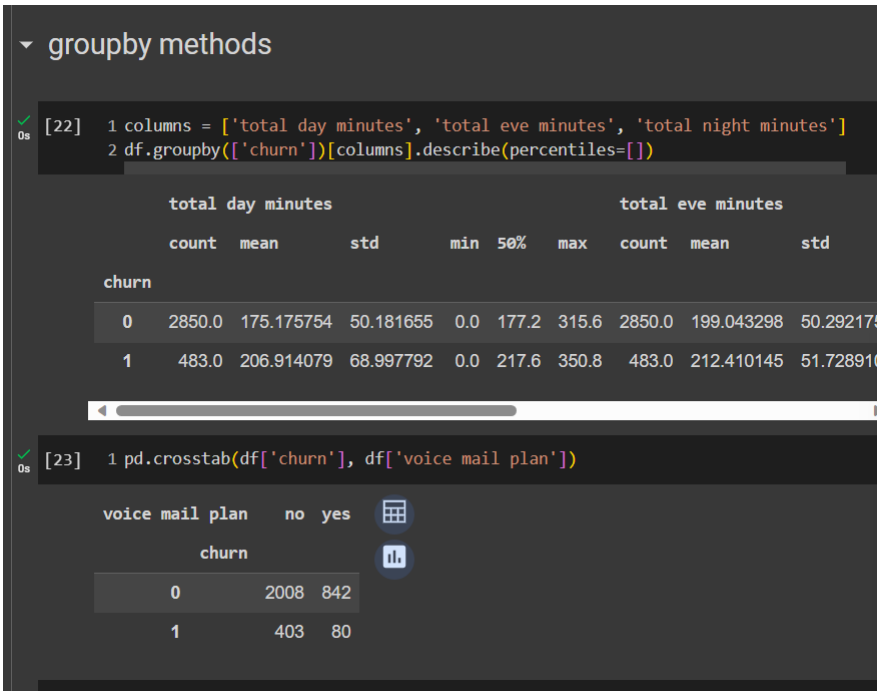
Task # 1



	state	account length	area code	phone number	international plan	voice mail plan	number vmail messages	total day minutes	total day calls	t ch
0	KS	128	415	382-4657	no	yes	25	265.1	110	4
1	OH	107	415	371-7191	no	yes	26	161.6	123	2
2	NJ	137	415	358-1921	no	no	0	243.4	114	4
3	OH	84	408	375-9999	yes	no	0	299.4	71	5
4	OK	75	415	330-6626	yes	no	0	166.7	113	2

5 rows × 21 columns





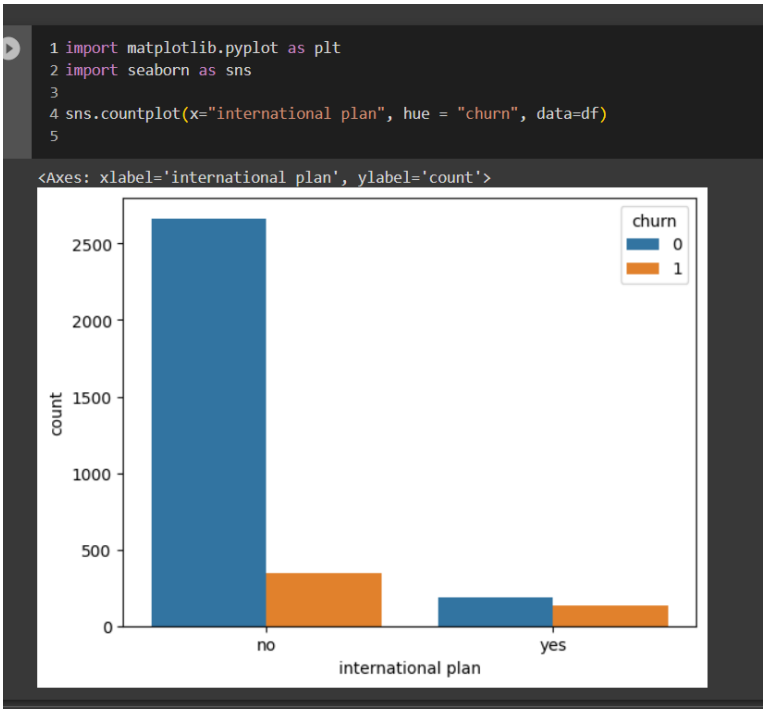
	total day minutes						total eve minutes		
	count	mean	std	min	50%	max	count	mean	std
churn									
0	2850.0	175.175754	50.181655	0.0	177.2	315.6	2850.0	199.043298	50.29217
1	483.0	206.914079	68.997792	0.0	217.6	350.8	483.0	212.410145	51.72891

voice mail plan	no	yes
churn		
0	2008	842
1	403	80

```
[14] 1 ## use any one column : e.g.,
     2 df[df['churn']==1]['total day calls'].mean()

     101.33540372670808

[15] 1 df[(df['churn']==0) & (df['international plan']=="No")]['total intl minutes'].m

     nan

[16] 1 ##  loc : indexing by name
     2 ## iloc : indexing by number

     + Code  + Text

     1 df.loc[0:5, "state":"area code"]
```

	state	account length	area code
0	KS	128	415
1	OH	107	415
2	NJ	137	415

```
1 import matplotlib.pyplot as plt
2 import seaborn as sns
3
4 sns.countplot(x="international plan", hue = "churn", data=df)
5
```



TASK # 2

TASK # 2

```
[36] 1
     2 data1 = {'cities': ['lahore', 'karachi'], 'provinces': ['punjab', 'sindh']}
     3 frame1 = pd.DataFrame(data1)
     4
     5 data2 = {'cities': ['islamabad', 'karachi', 'peshawar', 'quetta'], 'provinces': ['capital', 'sindh', 'KPK', 'Balochistan']}
     6 frame2 = pd.DataFrame(data2)
     7
     8 frame3 = pd.concat([frame1, frame2], ignore_index=True)
     9
    10 frame3 = frame3.drop_duplicates()
    11
    12 frame3 = frame3.sort_values(by='provinces')
    13
    14 frame3 = frame3.reset_index(drop=True)
    15
    16 print(frame3)
    17
```

```
       cities    provinces
0      quetta  Balochistan
1    peshawar          KPK
2   islamabad      capital
3      lahore       punjab
4     karachi        sindh
```

TASK#3 and 4

Task 3

```
[37]  1
      2 data = {'Name': ['C', 'Ali', 'Ahmed', 'Nida', np.nan],
      3         'Field': ['C', 'E', 'E', 'C', 'C'],
      4         'Age': [np.nan, np.nan, np.nan, np.nan, np.nan],
      5         'Marks': [-90, 60, -10, 70, 75]}
      6 df = pd.DataFrame(data)
      7
      8 # Drop the 'Age' column
      9 df = df.drop(columns=['Age'])
     10
     11 # Replace empty strings in the 'Name' column with '---'
     12 df['Name'].replace('', '---', inplace=True)
     13
     14 #  Replace 'C' with 0 and 'E' with 1 in the 'Field' column
     15 df['Field'].replace({'C': 0, 'E': 1}, inplace=True)
     16
     17 #  Replace negative values in the 'Marks' column
     18 Avgmarks = df.loc[df['Marks'] >= 0, 'Marks'].mean()
     19 df['Marks'] = df['Marks'].apply(lambda x: Avgmarks if x < 0 else x)
     20
     21 print(df)
     22
```

```
    Name  Field      Marks
0      C      0  68.333333
1    Ali      1  60.000000
2  Ahmed      1  68.333333
3   Nida      0  70.000000
4    NaN      0  75.000000
```

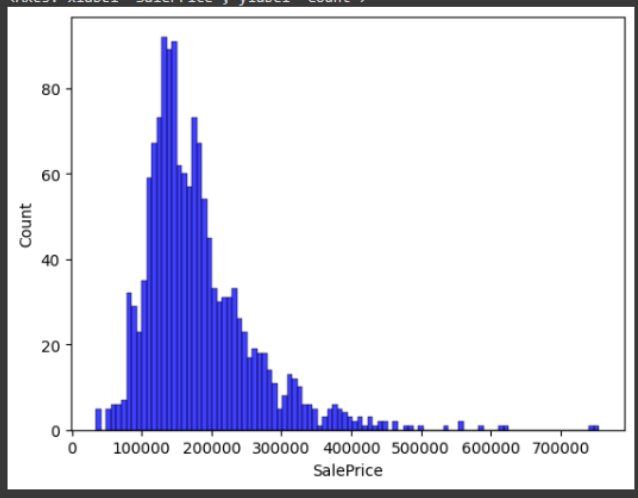
sale price

```
[40]  1 print(train['SalePrice'].describe())
```

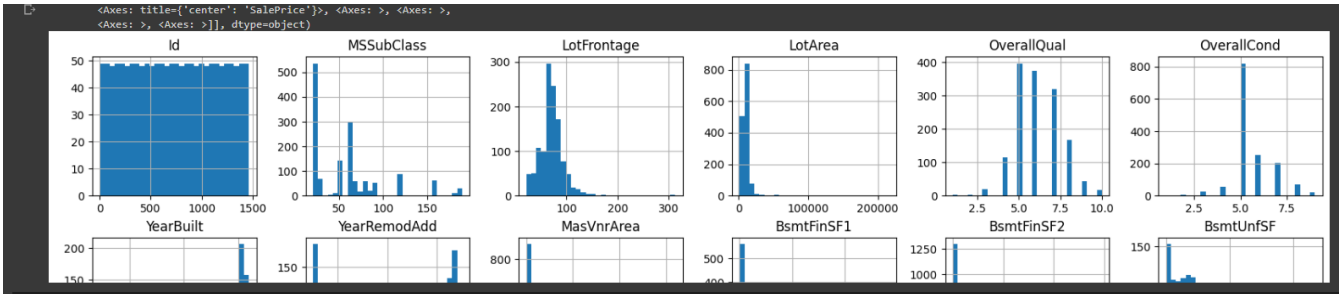
```
count      1460.000000
mean     180921.195890
std       79442.502883
min       34900.000000
25%      129975.000000
50%      163000.000000
75%      214000.000000
max      755000.000000
Name: SalePrice, dtype: float64
```

```
[42]  1 sns.histplot(train['SalePrice'], color = 'blue', bins = 100)
```

```
<Axes: xlabel='SalePrice', ylabel='Count'>
```




```
[44]  1 train_num = train.select_dtypes(include = ['float64', 'int64'])
      2 train_num.head()
```




```
[50]  1 corr = train_num.drop('SalePrice', axis=1).corr()
      2
      3 plt.figure(figsize=(16,14))
      4
      5 sns.heatmap(corr[(corr >= 0.5) | (corr <= -0.4)],
      6             cmap='viridis', vmax=1.0, vmin=-1.0, linewidths=0.1,
      7             annot=True, annot_kws={"size": 8}, square=True);
```