CREDIT CARD FRAUD DETECTION

Feature Engineering For Fraud Detection :

Input :

```
import pandas as pd
import seaborn as sns
import numpy as np
import plotly
import vincent
import seaborn as sns
import matplotlib.pyplot as plt
```

Input :

```
drg_defination_name ='DRG Definition'
provider_name = 'Provider Name'
prodiver_id_name = 'Provider Id'
proder_address_name = 'Provider Street Address'
provider_city_name = 'Provider City'
provider_state_name = 'Provider State'
provider_zip_code_name = 'Provider Zip Code'
hospital_referal_name = 'Hospital Referral Region Description'
total_discharges_name = 'Total Discharges'
average_covered_charges_name = 'Average Covered Charges'
average_total_payment_name = 'Average Total Payments'
average_medicare_payment = 'Average Medicare Payments'
state_name = 'State'
state_code_name = 'State Code'
region_name = 'Region'
division_name = 'Division'
```

Input :

```
inpatient_charge_merged_data.head()
```

Output :

	DRG Definition	Provider Id	Provider Name	Provider Street Address	Provider City	Provider State	Provider Zip Code	Hospital Referral Region Description	Total Discharges	Average Covered Charges
0	039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10001	SOUTHEAST ALABAMA MEDICAL CENTER	1108 ROSS CLARK CIRCLE	DOTHAN	AL	36301	AL - Dothan	91	$32963.07
1	039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10005	MARSHALL MEDICAL CENTER SOUTH	2505 U S HIGHWAY 431 NORTH	BOAZ	AL	35957	AL - Birmingham	14	$15131.85
2	039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10006	ELIZA COFFEE MEMORIAL HOSPITAL	205 MARENGO STREET	FLORENCE	AL	35631	AL - Birmingham	24	$37560.37
3	039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10011	ST VINCENT'S EAST	50 MEDICAL PARK EAST DRIVE	BIRMINGHAM	AL	35235	AL - Birmingham	25	$13998.28
4	039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10016	SHELBY BAPTIST MEDICAL CENTER	1000 FIRST STREET NORTH	ALABASTER	AL	35007	AL - Birmingham	18	$31633.27

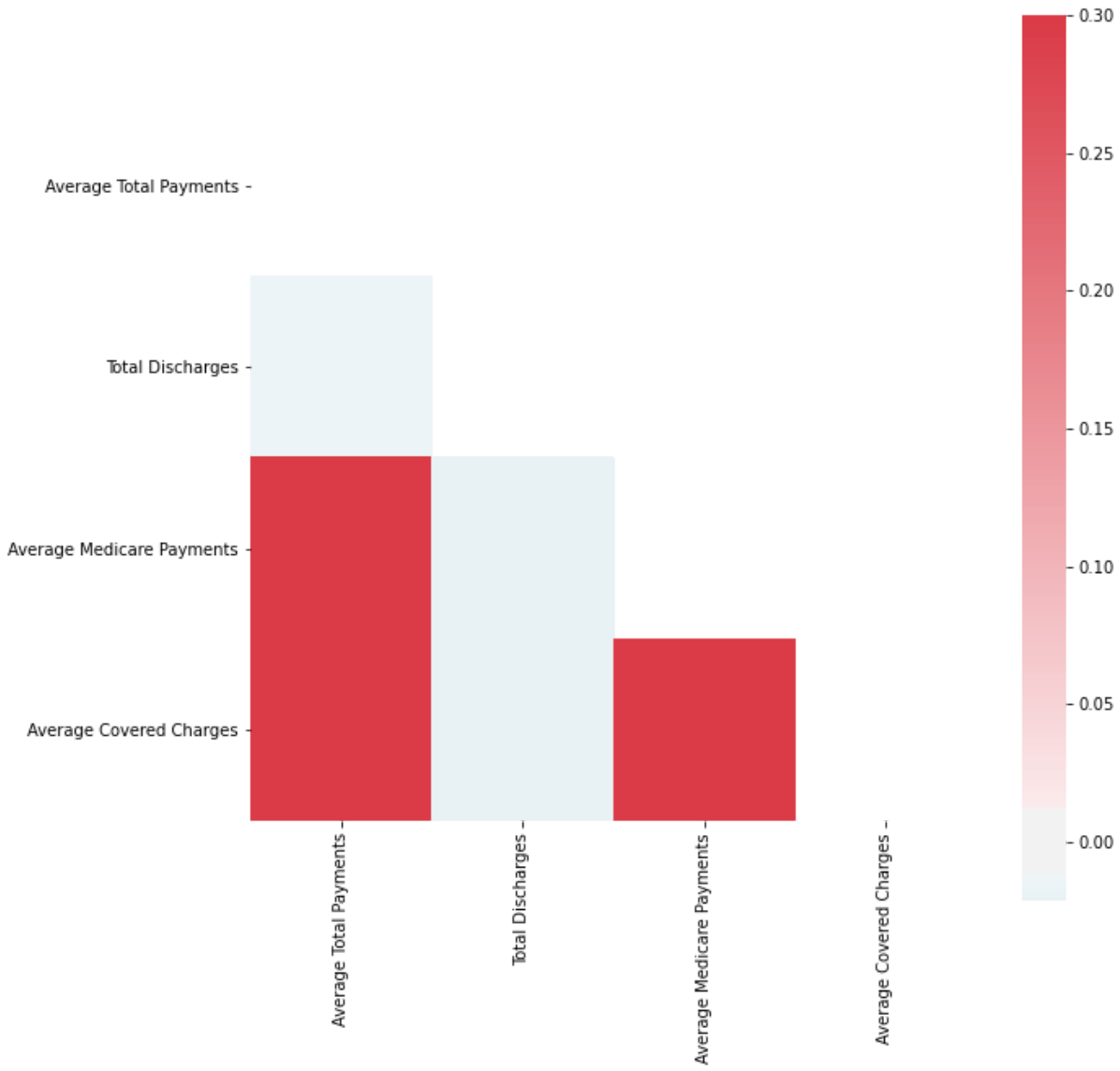
Exploratory Data Analysis

Input :

```
f, ax = plt.subplots(figsize=(10, 10))

corr = inpatient_charge_merged_data[['Average Total Payments','Total Discharges','Average Medicare Payments','Average Covered Charges']].corr()

mask = np.zeros_like(corr)
mask[np.triu_indices_from(mask)] = True

cmap = sns.diverging_palette(220, 10, as_cmap=True)

sns.heatmap(corr, mask=mask, cmap=cmap, vmax=.3, center=0,
            square=True)
```

Output :

<matplotlib.axes._subplots.AxesSubplot at 0x1919e146d30>



Input :

top_drg =
inpatient_charge_merged_data.groupby(drg_defination_name).count()[provider_city_name].
sort_values(ascending=False)

top_drg.head()

Output:

DRG Definition

194 - SIMPLE PNEUMONIA & PLEURISY W CC

690 - KIDNEY & URINARY TRACT INFECTIONS W/O MCC

292 - HEART FAILURE & SHOCK W GASTROENT & MISC DIGEST DISORDERS W/O MCC
641 - MISC DISORDERS OF NUTRITION,METABOLISM,FLUIDS/ELECTROLYTES W/O MCC 2899

“MODEL EVALUATION ‘

Input :

```
def confusion_mtrx()
 svm = SVC().fit(X_train, y_train)
 y_pred = svm.predict(X_test)
 confusion = confusion_matrix(y_test, y_pred
 return confusion
 print(confusion_mtrx())
```

Output :

```
  [[5342    2]
  [  24   56]]
```