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HubPay Assignment

About assignment

This is a short report or slide deck showing my findings on retention versus churn (departure) of HubPay customer dataset

The objectives of the assignment was to:

- Descriptive analytics
- Data Prep and cleansing
- Build classification models to predict churn
- Evaluate the performance of the models a
- Build logistic regression model(s) explaining churn in terms of the explanatory variables

Created Data Visualisation using Power BI

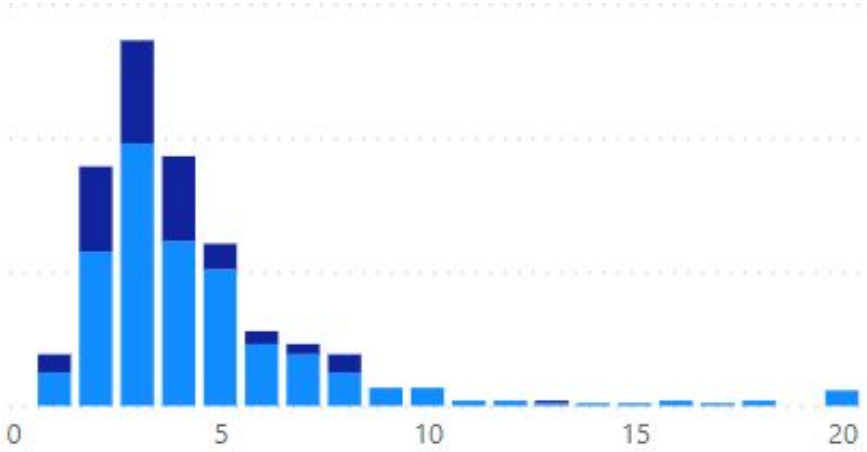
Descriptive analytics

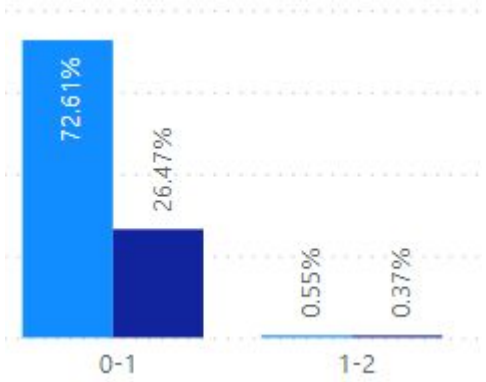
To perform descriptive analysis, I employed the use of Power BI to help me filter and disaggregate the data for reasonable insight.

Here is a quick link to the visualization dashboard.

[Link]

Findings





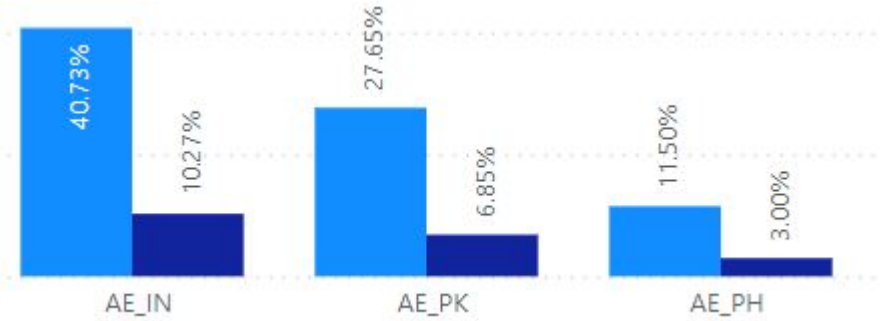
Churning verses Credit Score

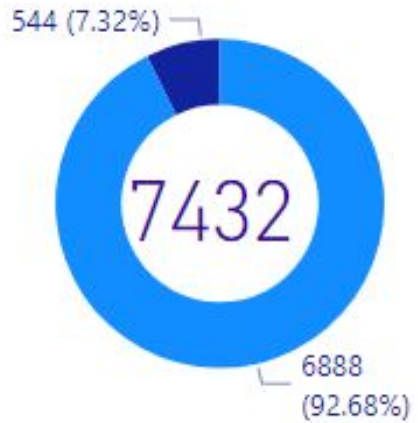
Customers who churned have low credit score. NB: The higher the credit score, the lower the risk of churning

Churning and Tenure

Most of the customers who churned are customers who are one year or less.

Findings





Country Pair Distribution

The Countries pair between which funds are mostly remitted are Arab Emirate and India.

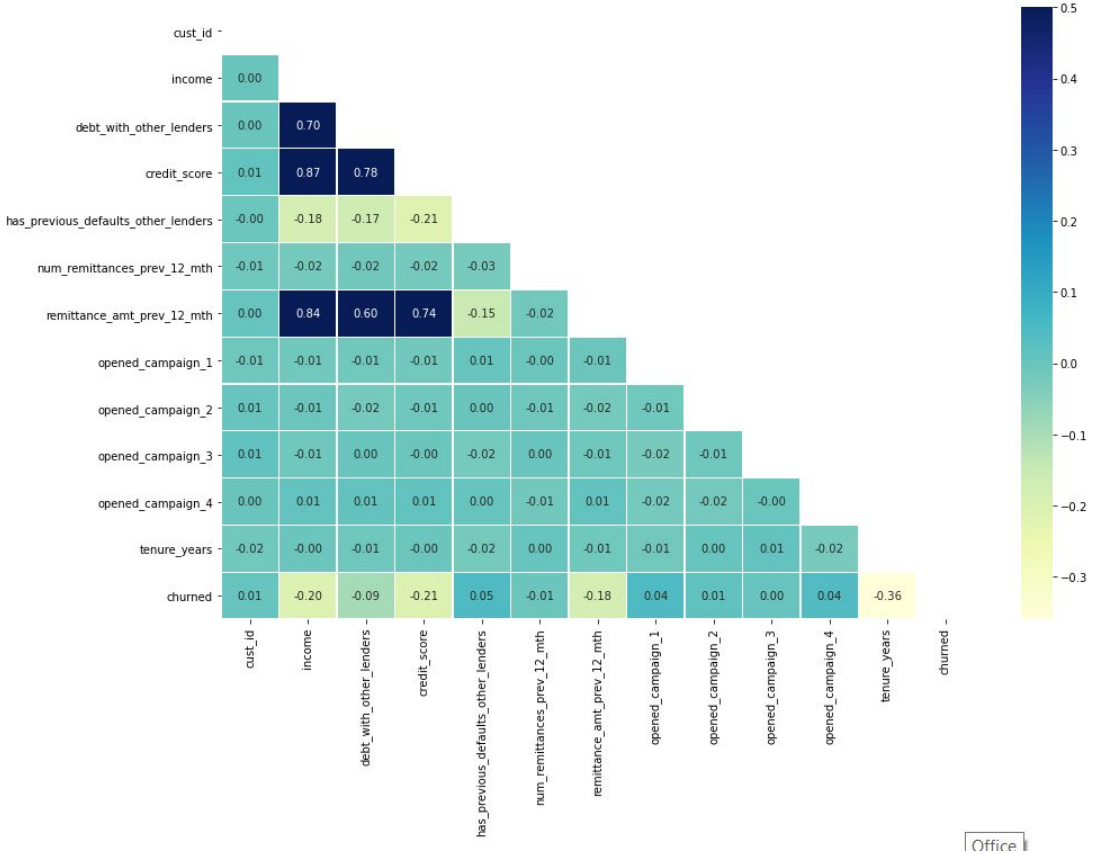
Customer Distribution

We happen to have majority of our customer still sticking around

Findings

Relationship between customer churn and other variables

From the result of the correlation heatmap, we see that churned is either negatively correlated or has very poor correlation with all other features.So when Income is increasing, its is less likely for customers to churn, when credit score or debt is high, there is less likelihood for customer to churn



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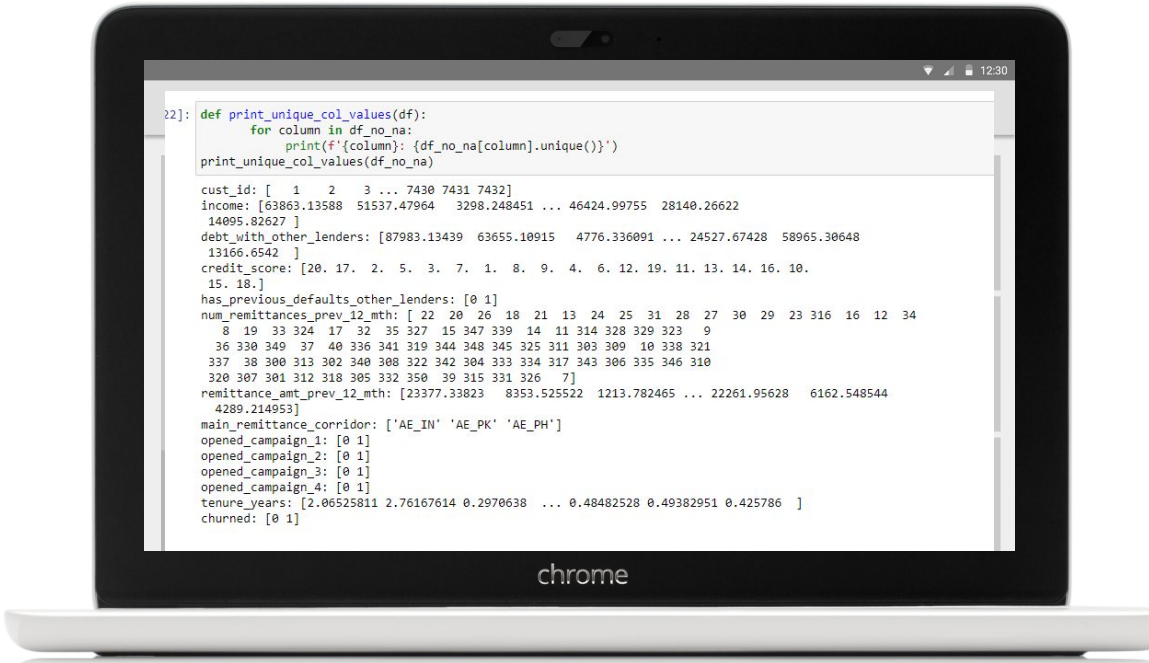
Prepare and cleansed my data using pandas, numpy, sklearn, and other libraries

Data Prep & Cleansing

To get data ready for modeling, I employed the following steps;

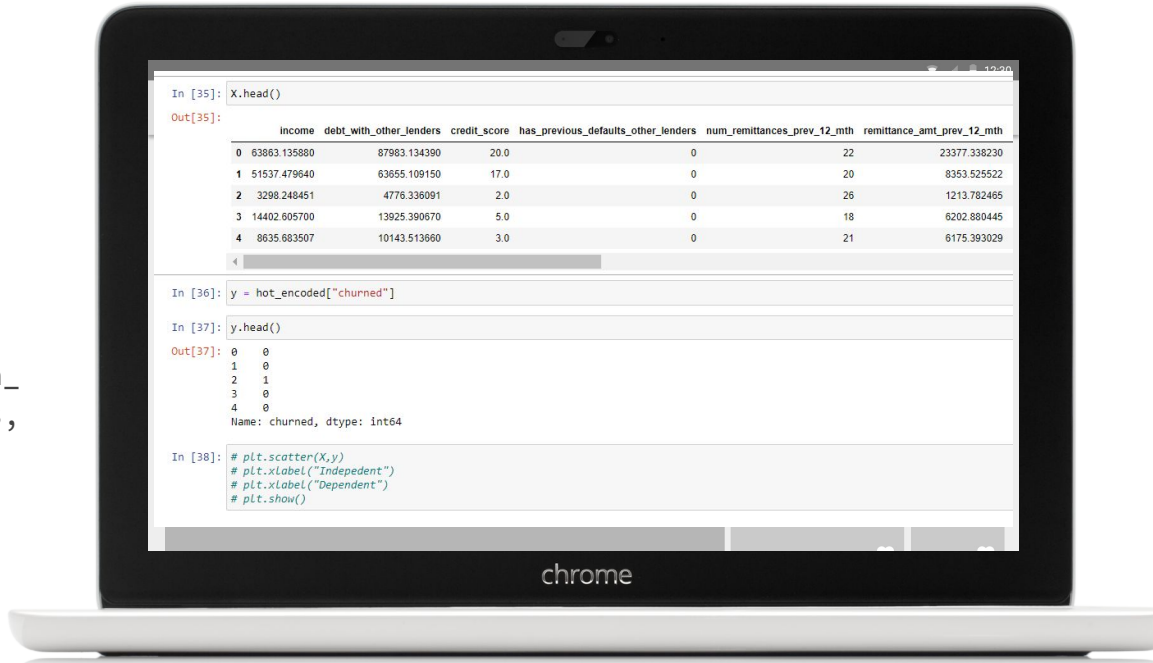
- Imported libraries
- Read the dataset
- I converted all dataset to numerical value, including hot encoding the categorical variable, (main_remittance_corridor).
- I dropped rows containing null value (a total of 794 rows)



Data Modeling

Declaring Dependent & Independent Variables

The independent variables includes;
Income, debt_with_other_lenders, credit_score, has_previous_defaults_other_lenders, num_remittances_prev_12_mth, remittance_amt_prev_12_mth, Main_remittance_corridor,pened_campaign_1, opened_campaign_2, opened_campaign_3, opened_campaign_4, Tenure_years.
While churned column became the dependent variables.



Splitting Dataset

Spliting Test and Train dataset

```
In [39]: X_train, X_test, y_train, y_test = train_test_split(X,y, test_size=0.2)

In [40]: X_test.shape
Out[40]: (1328, 14)

In [41]: y_train.shape, y_test.shape
Out[41]: ((5310,), (1328,))
```

Splitting Data

I splitting dataset to test and train dataset in the ratio of 8:2.

Data shape for **((5310,), (1328,))** test and train respectively

Building Prediction Models using RandomForest, XGBoost, and Logistics Regression

RandomForest

Our model has an accuracy of 97%, This simply means that if we make prediction 100 time, our model is likely to make the right prediction 97 time. this is pretty good. Other model evaluation metrics are shown below

```
print(classification_report(y_test,pred))
```

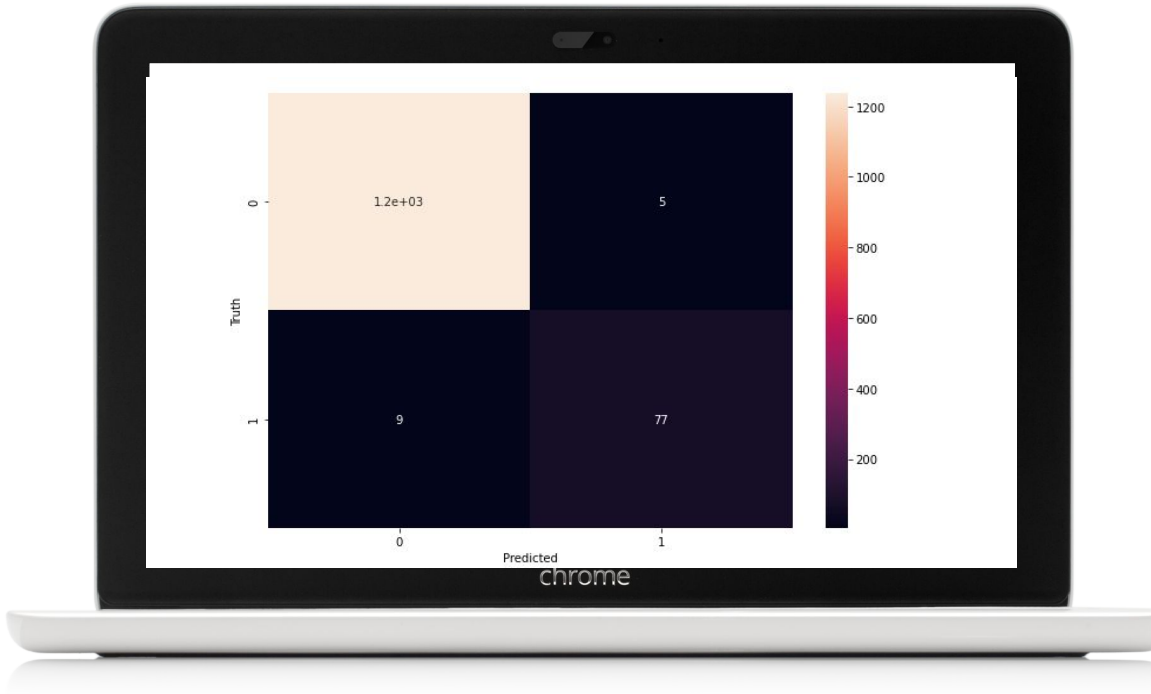
	precision	recall	f1-score	support
0	0.98	1.00	0.99	1242
1	0.98	0.73	0.84	86
accuracy			0.98	1328
macro avg	0.98	0.87	0.92	1328
weighted avg	0.98	0.98	0.98	1328

XGBoost

Our model has an accuracy of approximately 98%, This simply means that if we make prediction 100 time, our model is likely to make the right prediction 98 time. this is pretty good.Other model evaluation metrics are shown below

```
print(classification_report(y_test,xg_pred))
```

	precision	recall	f1-score	support
0	0.99	1.00	0.99	1242
1	0.94	0.90	0.92	86
accuracy			0.99	1328
macro avg	0.97	0.95	0.96	1328
weighted avg	0.99	0.99	0.99	1328

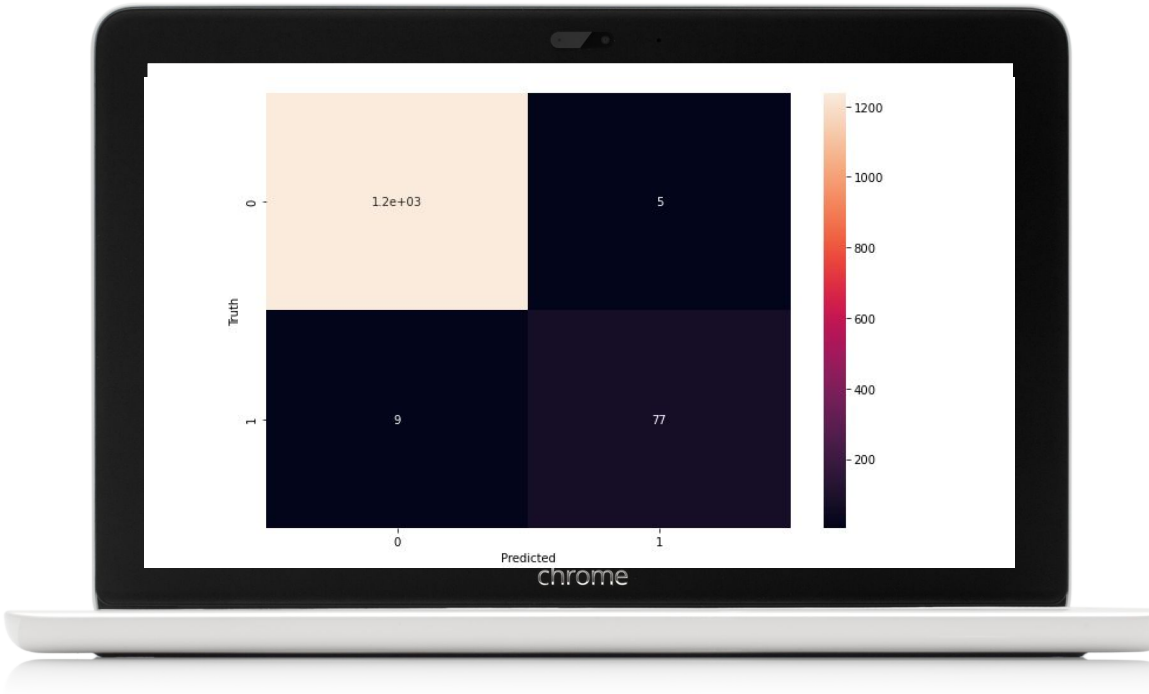


LogisticsRegression

Our model has an acuracy of approximately 94%, This simply means that if we make prediction 100 time, our model is likely to make the right prediction 94 time.Other model evaluation metrics are shown below

```
: print(classification_report(y_test,log_pred))
```

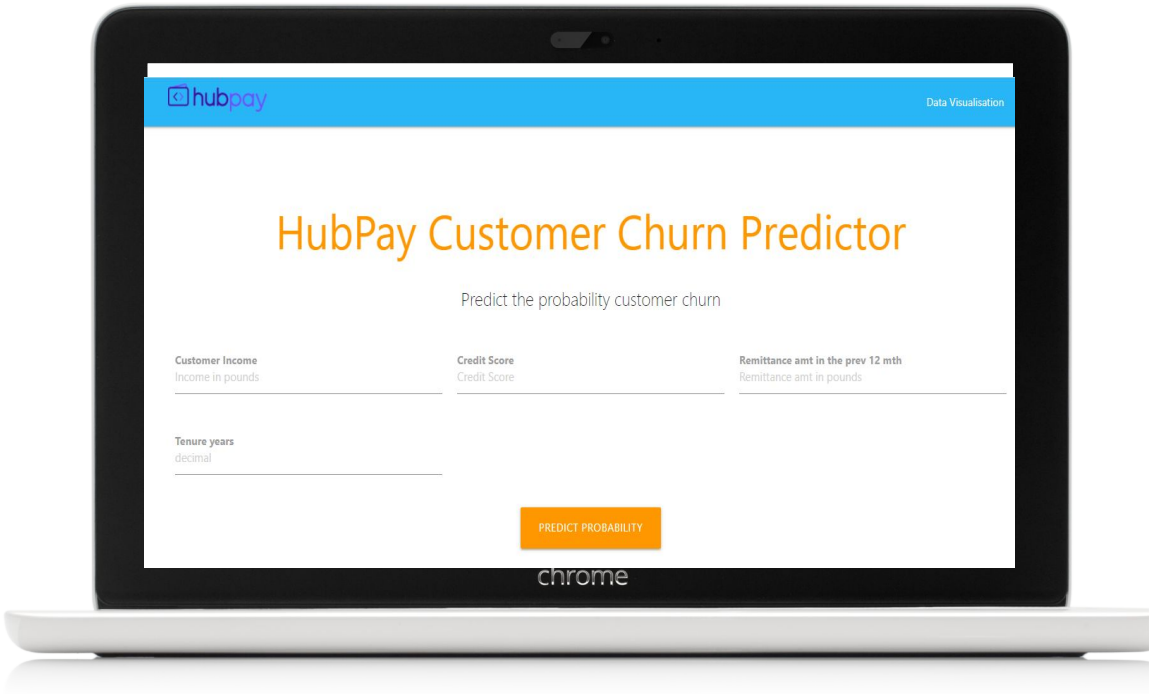
	precision	recall	f1-score	support
0	0.98	1.00	0.99	1242
1	0.97	0.71	0.82	86
accuracy			0.98	1328
macro avg	0.97	0.85	0.90	1328
weighted avg	0.98	0.98	0.98	1328



Created and deployed model on a landing page

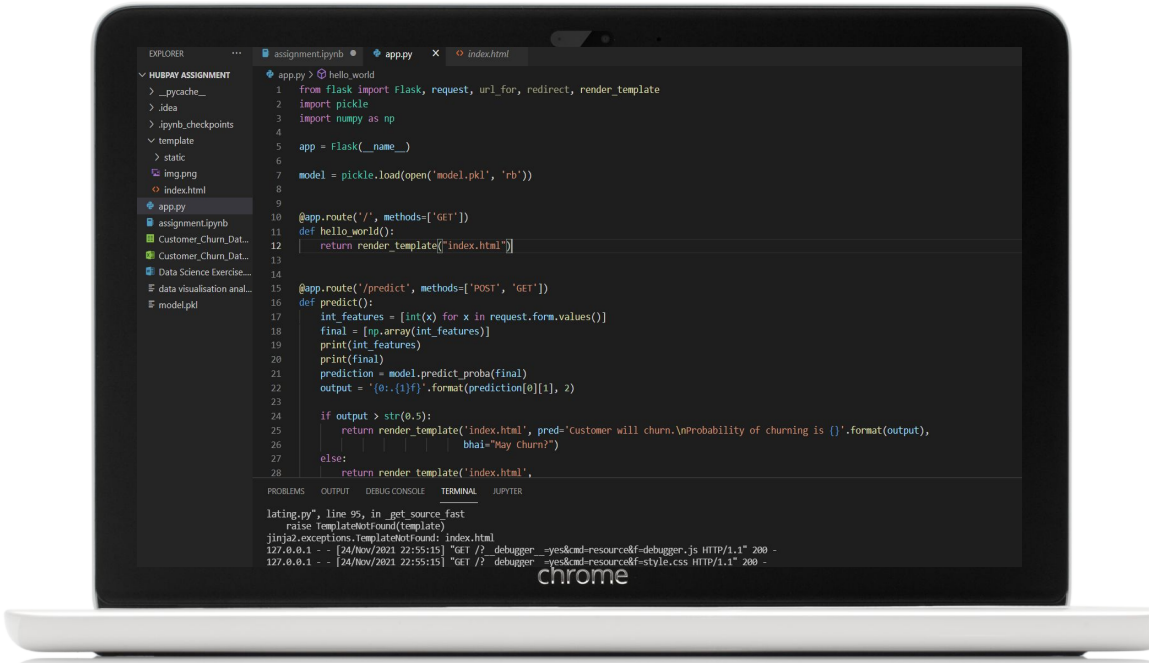
Landing Page

I created a landing page with a form where i can use to collect new data for potential prediction



App Deployment

I created a backend deployment route, where i connected and deployed my model.



Thanks