

## FLASK DEPLOYMENT ASSIGNMENT

App Name: Predictor Loan

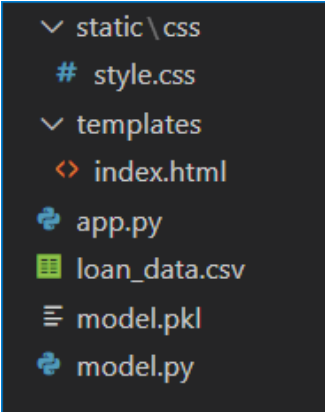
Version: 1.0

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Submitted to: Data Glacier

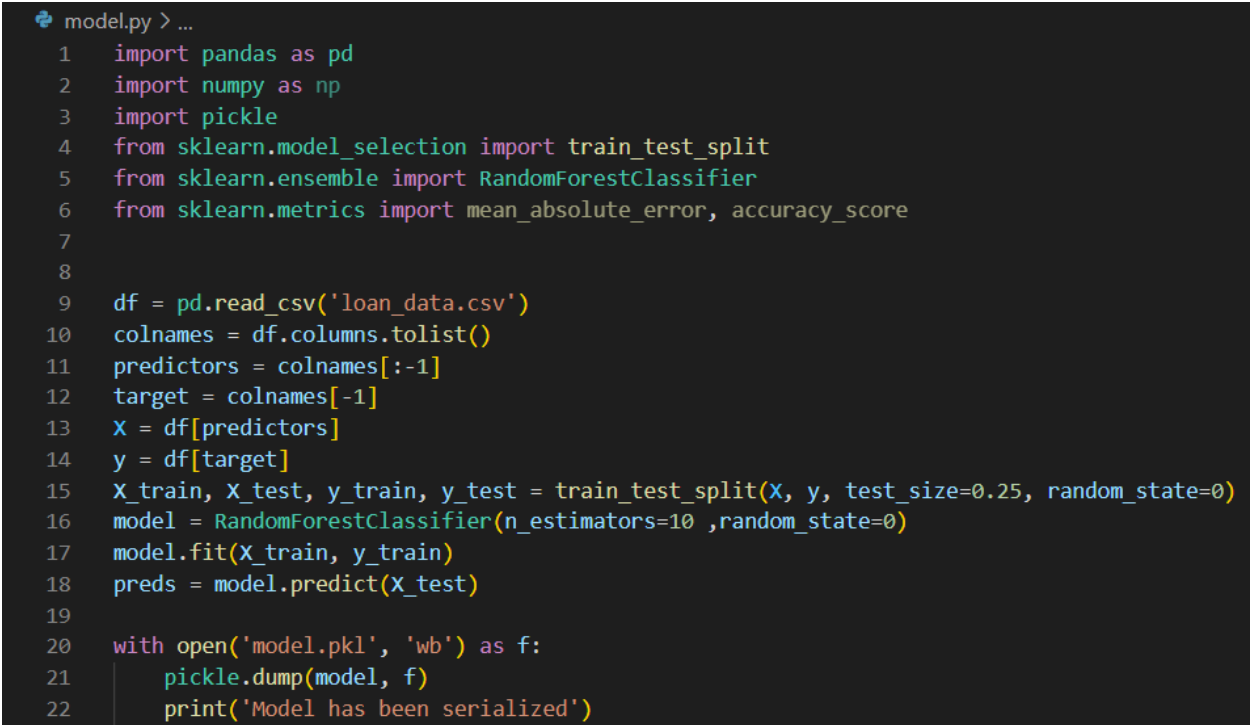
### 1. Files for the deployment



A screenshot of a file explorer window showing the following files and folders:

- static\css
  - # style.css
- templates
  - <> index.html
- app.py
- loan\_data.csv
- model.pkl
- model.py

### 2. Model serialization



```
model.py > ...
1  import pandas as pd
2  import numpy as np
3  import pickle
4  from sklearn.model_selection import train_test_split
5  from sklearn.ensemble import RandomForestClassifier
6  from sklearn.metrics import mean_absolute_error, accuracy_score
7
8
9  df = pd.read_csv('loan_data.csv')
10 colnames = df.columns.tolist()
11 predictors = colnames[:-1]
12 target = colnames[-1]
13 X = df[predictors]
14 y = df[target]
15 X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.25, random_state=0)
16 model = RandomForestClassifier(n_estimators=10, random_state=0)
17 model.fit(X_train, y_train)
18 preds = model.predict(X_test)
19
20 with open('model.pkl', 'wb') as f:
21     pickle.dump(model, f)
22     print('Model has been serialized')
```

### 3. App code (app.py)

```
app.py
app.py > ...
1  from django.shortcuts import render
2  import numpy as np
3  import pickle
4  from flask import Flask, request, render_template
5
6
7  app = Flask(__name__)
8  with open('model.pkl', 'rb') as f:
9      model = pickle.load(f)
10
11 @app.route('/')
12 def home():
13     return render_template('index.html')
14
15 @app.route('/predict', methods=['POST'])
16 def predict():
17     """
18     Predict with the data entered in the html page.
19     """
20     int_features = [int(x) for x in request.form.values()]
21     final_features= [np.array(int_features)]
22     prediction = model.predict(final_features)
23
24     if round(prediction[0]) == 0:
25         return render_template("index.html", prediction_text="The user will pay the debt")
26     else:
27         return render_template("index.html", prediction_text="The user won't pay the debt")
28
29 if __name__ == "__main__":
30     app.run(port=5000, debug=True)
```

### 4. Running the app in the localhost

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  JUPYTER
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS [redacted]\DATA_GLACIER\assignments\week4> python .\app.py
* Serving Flask app 'app'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 621-146-771
127.0.0.1 - - [28/Oct/2022 22:02:59] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [28/Oct/2022 22:02:59] "GET /static/css/style.css HTTP/1.1" 200 -
█
```

5. App in the browser

## Loans Predictor

Predict if a person will pay a loan

Credit Policy	<input type="text" value="Credit Policy"/>	1 if the customer meets the credit underwriting criteria, 0 otherwise
Interest rate	<input type="text" value="Interest rate"/>	Interest rate of the loan
Installment	<input type="text" value="Installment"/>	The monthly installments owed by the borrower
Log Annual Income	<input type="text" value="Log Annual Income"/>	Natural log of the self-reported annual income of the borrower
Debt-to-Income	<input type="text" value="Debt-to-Income"/>	The debt-to-income ratio of the borrower (amount of debt divided by annual income)
FICO	<input type="text" value="FICO"/>	FICO credit score of the borrower
Days with Credit Line	<input type="text" value="Days with Credit Line"/>	The number of days the borrower has had a credit line
Revolving Balance	<input type="text" value="Revolving Balance"/>	The borrower's revolving balance (amount unpaid at the end of the credit card billing cycle)
Revolving Line Utilization	<input type="text" value="Revolving Line Utilization"/>	The borrower's revolving line utilization rate (the amount of the credit line used relative to total credit available)
Inquiries in the last 6 months	<input type="text" value="Inquiries in the last 6 months"/>	The borrower's number of inquiries by creditors in the last 6 months
30+ days past due on a payment	<input type="text" value="30+ days past due on a payment"/>	The number of times the borrower had been 30+ days past due on a payment in the past 2 years
Derogatory Public Records	<input type="text" value="Derogatory Public Records"/>	The borrower's number of derogatory public records

Predict

Result

6. Writing some data to test the app

## Loans Predictor

Predict if a person will pay a loan

Credit Policy	<input type="text" value="1"/>	1 if the customer meets the credit underwriting criteria, 0 otherwise
Interest rate	<input type="text" value="0.1189"/>	Interest rate of the loan
Installment	<input type="text" value="829.1"/>	The monthly installments owed by the borrower
Log Annual Income	<input type="text" value="11.35040654"/>	Natural log of the self-reported annual income of the borrower
Debt-to-Income	<input type="text" value="19.48"/>	The debt-to-income ratio of the borrower (amount of debt divided by annual income)
FICO	<input type="text" value="737"/>	FICO credit score of the borrower
Days with Credit Line	<input type="text" value="5639.958333"/>	The number of days the borrower has had a credit line
Revolving Balance	<input type="text" value="28854"/>	The borrower's revolving balance (amount unpaid at the end of the credit card billing cycle)
Revolving Line Utilization	<input type="text" value="52.1"/>	The borrower's revolving line utilization rate (the amount of the credit line used relative to total credit available)
Inquiries in the last 6 months	<input type="text" value="0"/>	The borrower's number of inquiries by creditors in the last 6 months
30+ days past due on a payment	<input type="text" value="0"/>	The number of times the borrower had been 30+ days past due on a payment in the past 2 years
Derogatory Public Records	<input type="text" value="0"/>	The borrower's number of derogatory public records

Predict

## Result

The user will fully pay the loan