Name: Batta Liu
Batch: LISUM10
Submission Date: June 28, 2022
Submitted to: Data Glacier and Data Science Group

Step 1:
Choose a toy model, the file name is knn_model.py

model.py | app.py | knn_model.py | battapp.py

```python
# K-Nearest Neighbors (K-NN)

# Importing the libraries
import pandas as pd
import pickle

# Importing the dataset
dataset = pd.read_csv('Social_Network_Ads.csv')
X = dataset.iloc[:, [2, 3]].values
y = dataset.iloc[:, 4].values

# Feature Scaling
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X = sc.fit_transform(X)

# Fitting K-NN to the Training set
from sklearn.neighbors import KNeighborsClassifier
classifier = KNeighborsClassifier(n_neighbors = 5, metric = 'minkowski', p = 2)
classifier.fit(X, y)

# Saving model to disk
pickle.dump(classifier, open('knn_model.pkl','wb'))

# Loading model to compare the results
knn_model = pickle.load(open('knn_model.pkl','rb'))
pred = knn_model.predict([[20, 80000]])
def int_to_word(decision):
    word_dict = {0:"Not buy", 1:"Buy"}
    return word_dict[decision]
print(int_to_word(pred[0]))
```

Step 2:
Create battapp.py based on app.py, and create characteristics.html based on index.html.

Name: Batta Liu
Batch: LISUM10
Submission Date: June 28, 2022
Submitted to: Data Glacier and Data Science Group

/Users/batta/Data_Glacier_Virtual_Internship/Flask-Deployment/battapp.py

model.py | app.py | knn_model.py | battapp.py

```python
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Tue Jun 28 00:49:58 2022

@author: batta
"""
import numpy as np
from flask import Flask, request,render_template
import pickle

app = Flask(__name__)
model = pickle.load(open('knn_model.pkl', 'rb'))

@app.route('/')
def home():
    return render_template('characteristics.html')

@app.route('/predict',methods=['POST'])
def predict():
    '''
    For rendering results on HTML GUI
    '''
    int_features = [int(x) for x in request.form.values()]
    final_features = [np.array(int_features)]
    prediction = model.predict(final_features)
    def int_to_word(decision):
        word_dict = {0:"Not buy", 1:"Buy"}
        return word_dict[decision]
    output = int_to_word(prediction[0])
    return render_template('characteristics.html', prediction_text='Purchase decis

if __name__ == "__main__":
    app.run(port = 3232,debug=True)
```

Name: Batta Liu
Batch: LISUM10
Submission Date: June 28, 2022
Submitted to: Data Glacier and Data Science Group

characteristics.html

```
<!DOCTYPE html>
<html >
<head>
  <meta charset="UTF-8">
  <title>ML API</title>
  <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Hind:300' rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300' rel='stylesheet' type='text/css'>
<link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">

</head>

<body>
 <div class="login">
  <h1>Predict Purchase Decision</h1>

    <!-- Main Input For Receiving Query to our ML -->
    <form action="{{ url_for('predict')}}"method="post">
    <input type="text" name="age" placeholder="Age" required="required" />
    <input type="text" name="estimated_salary" placeholder="Salary (Annual)" required="required" />
    <button type="submit" class="btn btn-primary btn-block btn-large">Predict</button>
    </form>

   <br>
   <br>
   {{ prediction_text }}

 </div>

</body>
</html>
```

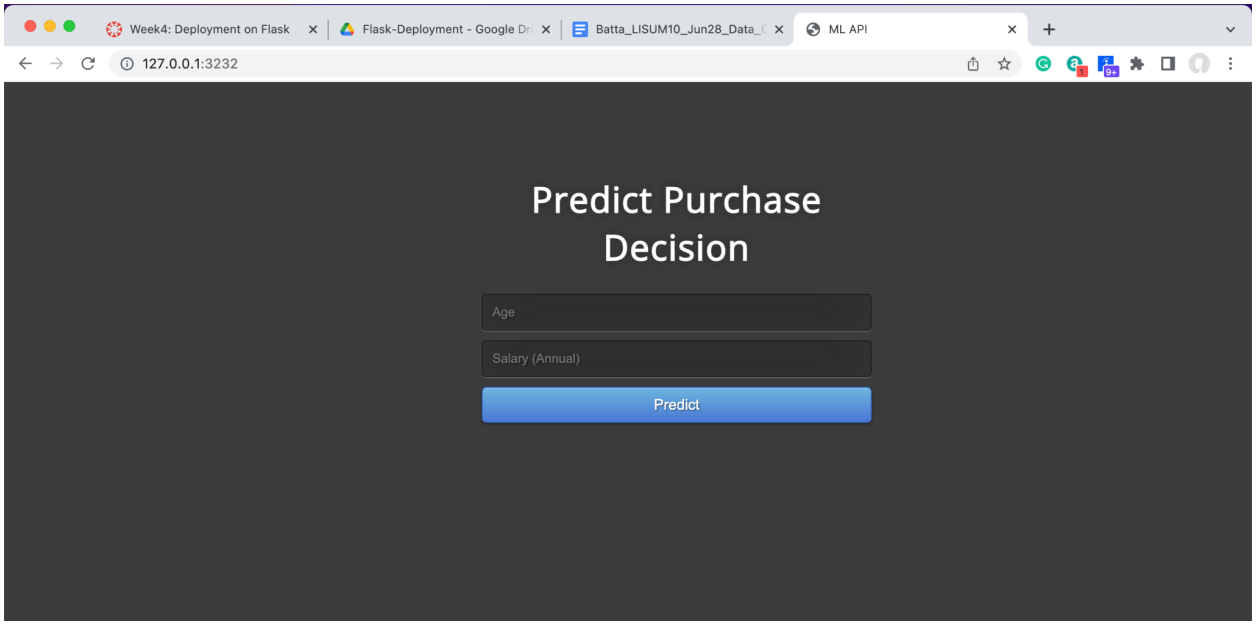
Step 3:
Deploy model on Flask.

Flask-Deployment — Python ◂ Python battapp.py — 80×24

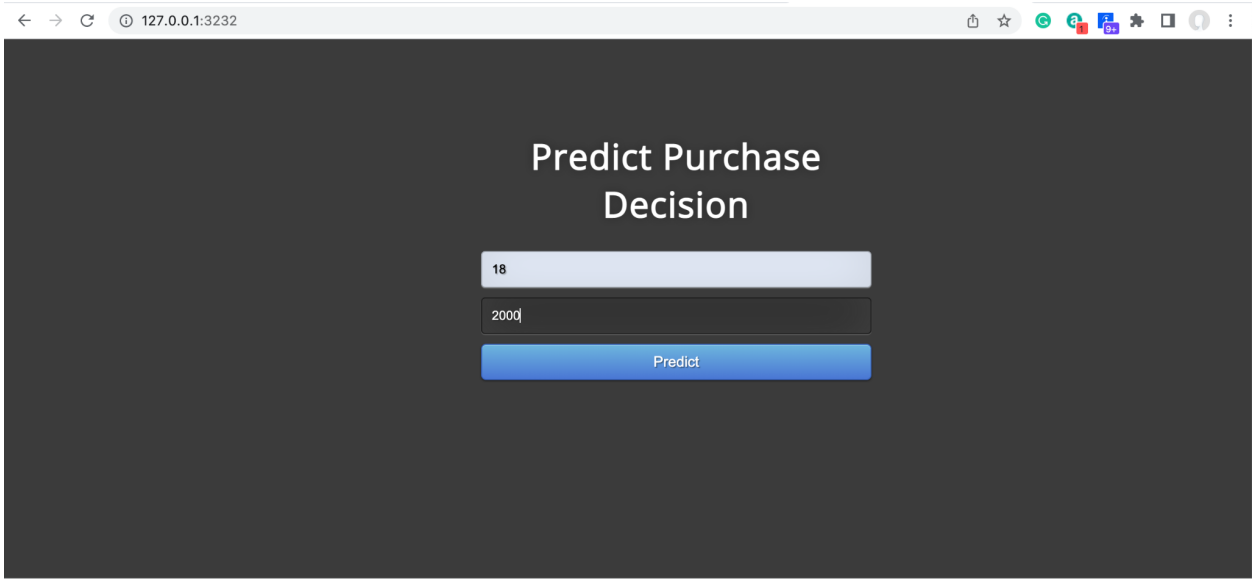
```
[Jiayis-Air:Flask-Deployment batta$ python3 battapp.py
/Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages/
sklearn/base.py:329: UserWarning: Trying to unpickle estimator KNeighborsClassif
ier from version 1.0.2 when using version 1.1.1. This might lead to breaking cod
e or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-
limitations
  warnings.warn(
 * Serving Flask app 'battapp' (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployme
nt.
   Use a production WSGI server instead.
 * Debug mode: on
 * Running on http://127.0.0.1:3232 (Press CTRL+C to quit)
 * Restarting with stat
/Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages/
sklearn/base.py:329: UserWarning: Trying to unpickle estimator KNeighborsClassif
ier from version 1.0.2 when using version 1.1.1. This might lead to breaking cod
e or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-
limitations
  warnings.warn(
 * Debugger is active!
```

Name: Batta Liu
Batch: LISUM10
Submission Date: June 28, 2022
Submitted to: Data Glacier and Data Science Group

Step 4:
Go to the url on browser.



Step 5:
Test the function of the webpage.



Name: Batta Liu
Batch: LISUM10
Submission Date: June 28, 2022
Submitted to: Data Glacier and Data Science Group