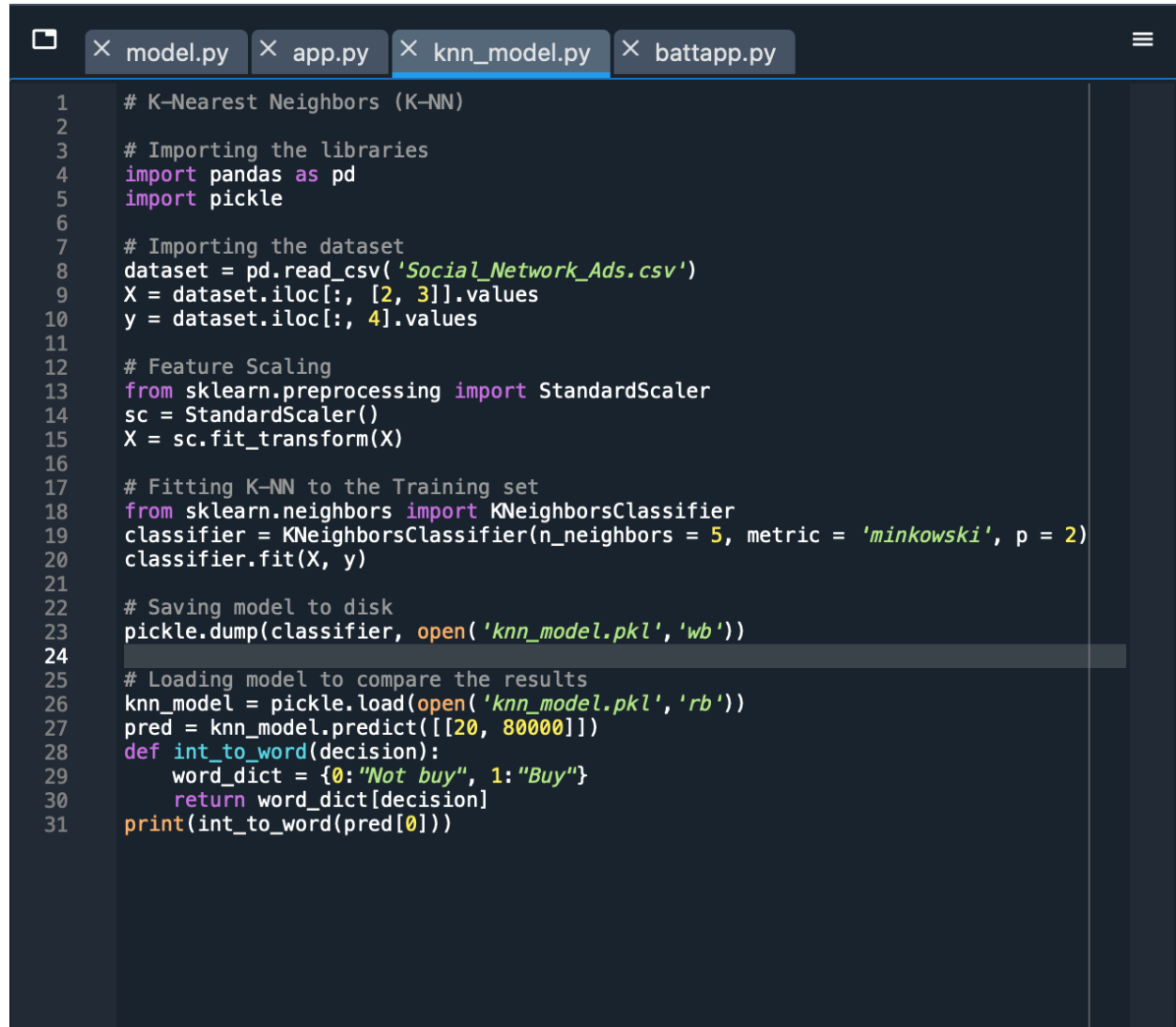


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Step 1:

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



```
1  # K-Nearest Neighbors (K-NN)
2
3  # Importing the libraries
4  import pandas as pd
5  import pickle
6
7  # Importing the dataset
8  dataset = pd.read_csv('Social_Network_Ads.csv')
9  X = dataset.iloc[:, [2, 3]].values
10 y = dataset.iloc[:, 4].values
11
12 # Feature Scaling
13 from sklearn.preprocessing import StandardScaler
14 sc = StandardScaler()
15 X = sc.fit_transform(X)
16
17 # Fitting K-NN to the Training set
18 from sklearn.neighbors import KNeighborsClassifier
19 classifier = KNeighborsClassifier(n_neighbors = 5, metric = 'minkowski', p = 2)
20 classifier.fit(X, y)
21
22 # Saving model to disk
23 pickle.dump(classifier, open('knn_model.pkl', 'wb'))
24
25 # Loading model to compare the results
26 knn_model = pickle.load(open('knn_model.pkl', 'rb'))
27 pred = knn_model.predict([[20, 80000]])
28 def int_to_word(decision):
29     word_dict = {0: "Not buy", 1: "Buy"}
30     return word_dict[decision]
31 print(int_to_word(pred[0]))
```

Step 2:

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

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

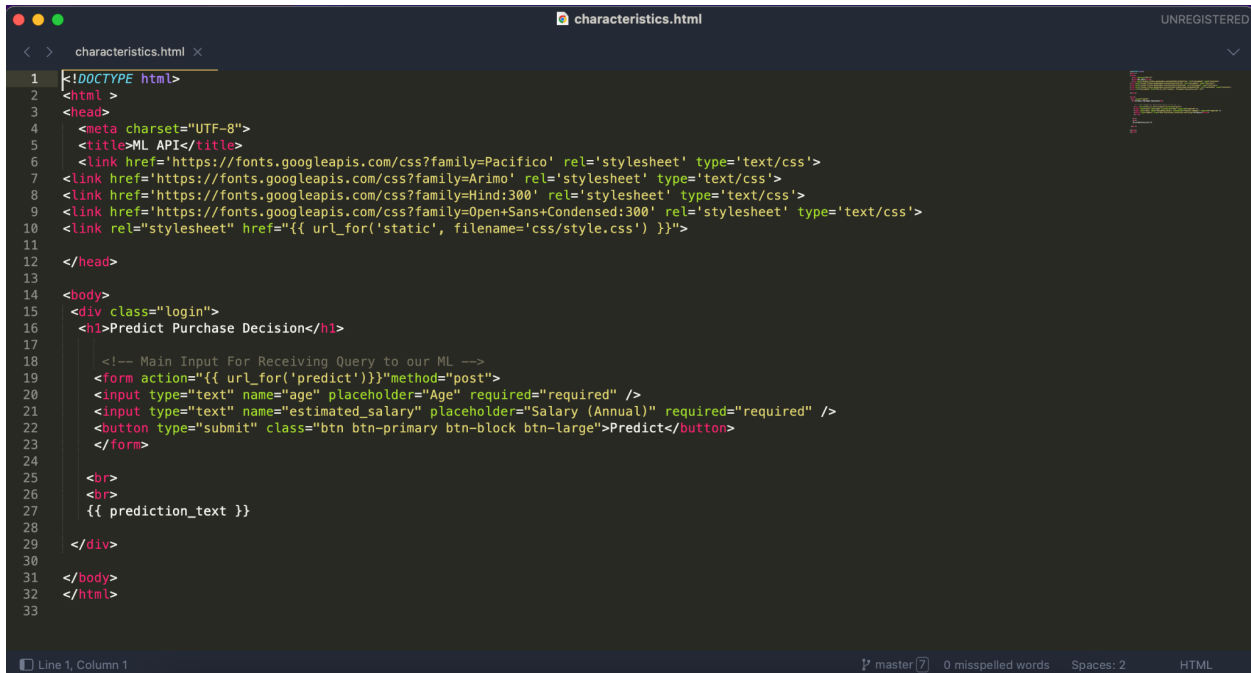
```
1  #!/usr/bin/env python3
2  # -*- coding: utf-8 -*-
3  """
4  Created on Tue Jun 28 00:49:58 2022
5
6  @author: batta
7  """
8  import numpy as np
9  from flask import Flask, request, render_template
10 import pickle
11
12 app = Flask(__name__)
13 model = pickle.load(open('knn_model.pkl', 'rb'))
14
15 @app.route('/')
16 def home():
17     return render_template('characteristics.html')
18
19 @app.route('/predict', methods=['POST'])
20 def predict():
21     '''
22     For rendering results on HTML GUI
23     '''
24     int_features = [int(x) for x in request.form.values()]
25     final_features = [np.array(int_features)]
26     prediction = model.predict(final_features)
27     def int_to_word(decision):
28         word_dict = {0: "Not buy", 1: "Buy"}
29         return word_dict[decision]
30     output = int_to_word(prediction[0])
31     return render_template('characteristics.html', prediction_text='Purchase decis.
32
33 if __name__ == "__main__":
34     app.run(port = 3232, debug=True)
35
```

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```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <meta charset="UTF-8">
5   <title>ML API</title>
6   <link href="https://fonts.googleapis.com/css?family=Pacifico" rel="stylesheet" type="text/css">
7   <link href="https://fonts.googleapis.com/css?family=Arimo" rel="stylesheet" type="text/css">
8   <link href="https://fonts.googleapis.com/css?family=Hind:300" rel="stylesheet" type="text/css">
9   <link href="https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300" rel="stylesheet" type="text/css">
10  <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
11 </head>
12
13 <body>
14   <div class="login">
15     <h1>Predict Purchase Decision</h1>
16
17     <!-- Main Input For Receiving Query to our ML -->
18     <form action="{{ url_for('predict') }}" method="post">
19       <input type="text" name="age" placeholder="Age" required="required" />
20       <input type="text" name="estimated_salary" placeholder="Salary (Annual)" required="required" />
21       <button type="submit" class="btn btn-primary btn-block btn-large">Predict</button>
22     </form>
23
24     <br>
25     <br>
26     {{ prediction_text }}
27
28   </div>
29 </body>
30 </html>
```

Step 3:

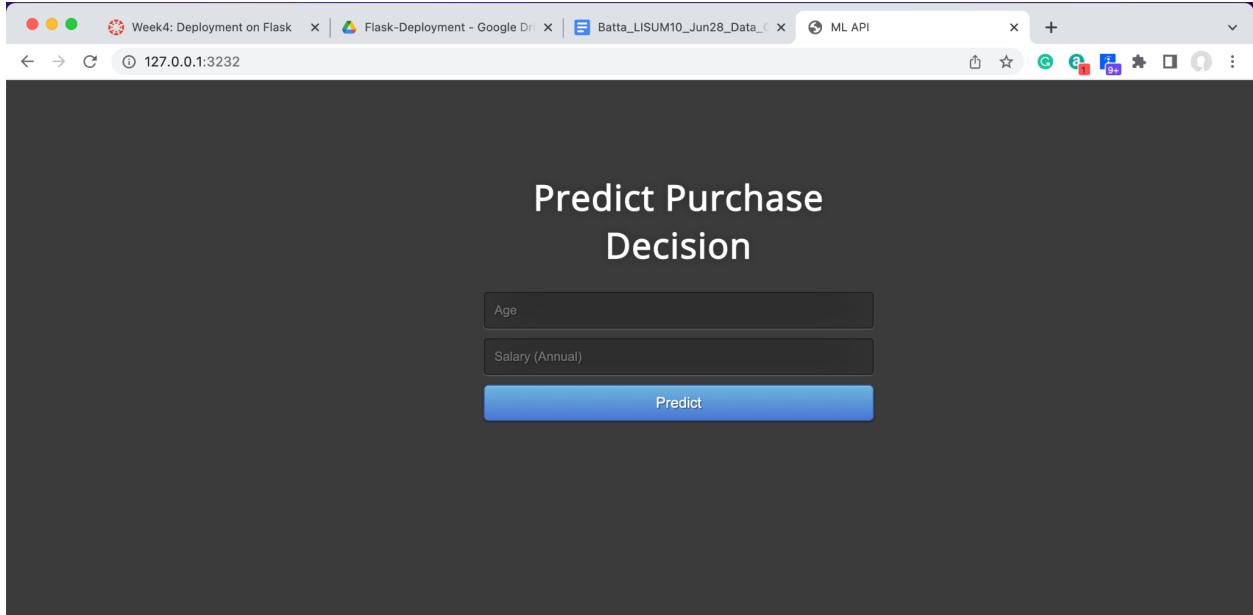
Deploy model on Flask.



```
Flask-Deployment — Python • Python battapp.py — 80x24
[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 KNeighborsClassifier from version 1.0.2 when using version 1.1.1. This might lead to breaking code 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 deployment.
  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 KNeighborsClassifier from version 1.0.2 when using version 1.1.1. This might lead to breaking code 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!
```

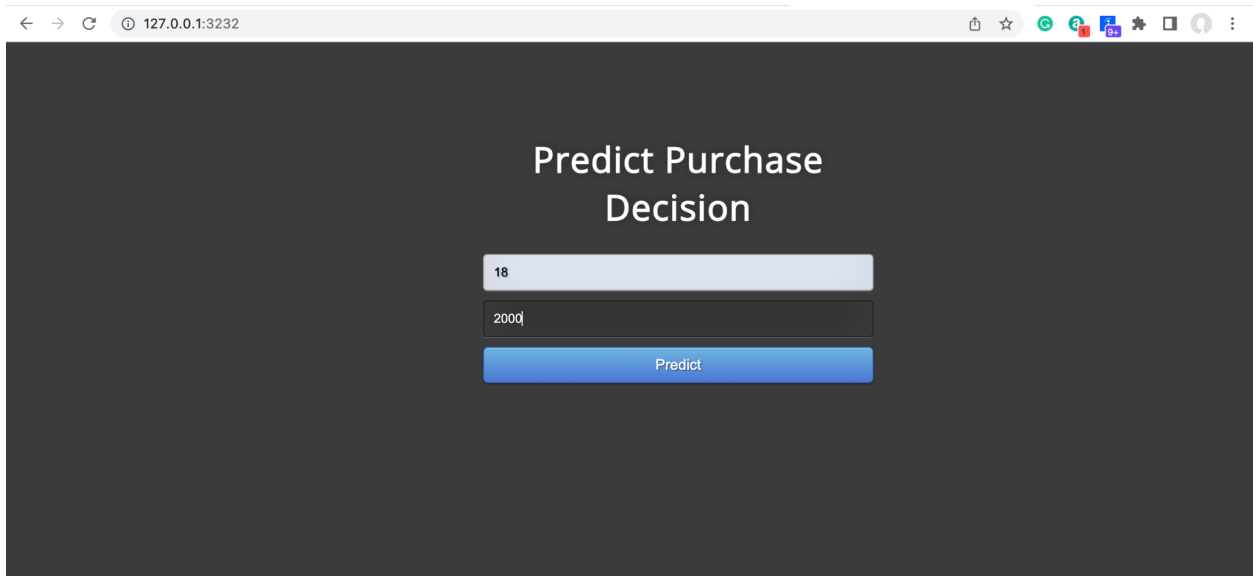
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Step 4:
Go to the url on browser.



A screenshot of a web browser window. The address bar shows the URL '127.0.0.1:3232'. The page has a dark gray background with the title 'Predict Purchase Decision' in white text. Below the title, there are two input fields: 'Age' and 'Salary (Annual)'. A blue 'Predict' button is located below the input fields. The browser's tab bar shows several tabs, including 'Week4: Deployment on Flask', 'Flask-Deployment - Google Dr...', 'Batta_LISUM10_Jun28_Data_', and 'ML API'.

Step 5:
Test the function of the webpage.



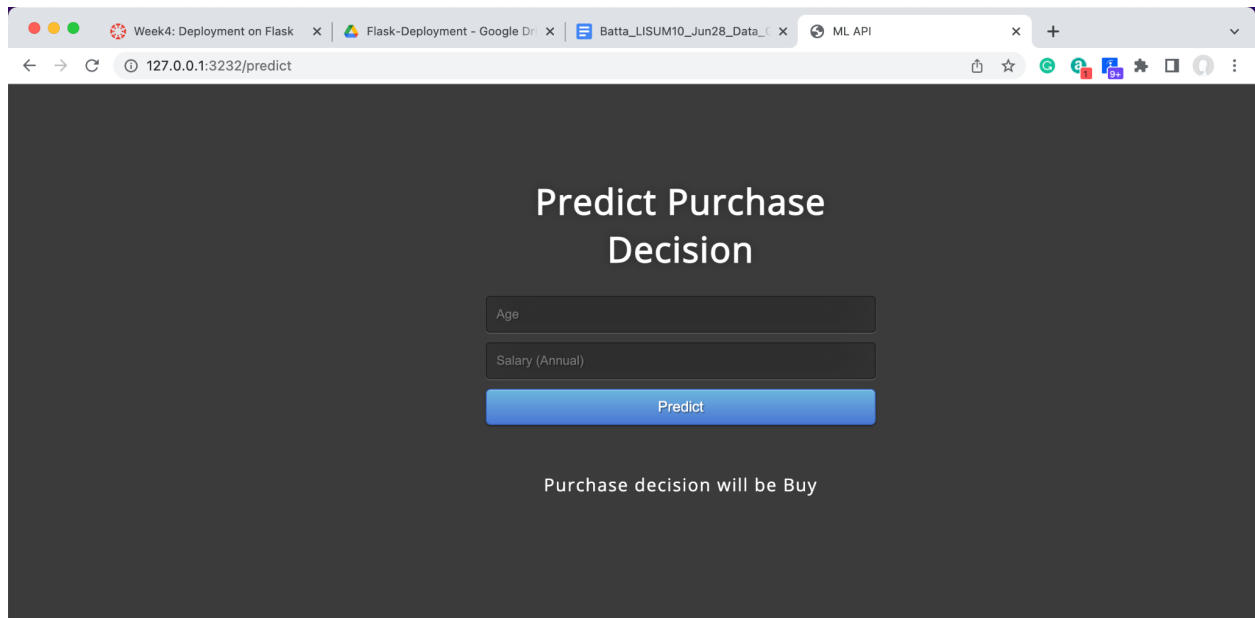
A screenshot of the same web browser window as in Step 4, but with input values. The 'Age' field contains the number '18' and the 'Salary (Annual)' field contains the number '2000'. The 'Predict' button remains blue. The browser's address bar still shows '127.0.0.1:3232'.

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The screenshot shows a web browser window with the address bar displaying "127.0.0.1:3232/predict". The browser tabs include "Week4: Deployment on Flask", "Flask-Deployment - Google Drive", "Batta_LISUM10_Jun28_Data_...", and "ML API". The main content area has a dark background with the title "Predict Purchase Decision" in white. Below the title are two input fields: "Age" and "Salary (Annual)". A blue "Predict" button is positioned below these fields. At the bottom, a message states "Purchase decision will be Buy".