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```python
from flask import Flask, request,render_template
import numpy as np
import pickle

app = Flask(__name__)
with open('model.pkl', 'rb') as file:
    model = pickle.load(file)

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

@app.route('/predict',methods=['POST'])
def predict():
    # Change int to float
    int_features = [float(x) for x in request.form.values()]  |
    final_features = [np.array(int_features)]
    prediction = model.predict(final_features)

    output = prediction[0]  # Get the single prediction value
    return render_template('index.html',
        prediction_text='Daughter\'s height should be {:.2f}'.format(output))


if __name__ == "__main__":
    app.run(port=5000)
```

app.py file - main file which uses Flask packages to create web application

```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
import pickle

# Load your dataset
data = pd.read_csv('C:/Users/raina/Development/Data Glacier/Deployment Flask/heights.csv')

# Split dataset into features and target variable
X = data[['mheight']]  # Mother's height
y = data['dheight']    # Daughter's height

# Split the dataset into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=0)

# Train a linear regression model
model = LinearRegression()
model.fit(X_train, y_train)

# Save the trained model to a .pkl file
with open('model.pkl', 'wb') as file:
    pickle.dump(model, file)
```

regression.py file - regression model used to save as .pkl file for usage

```html
<!DOCTYPE html>
<html >

<head>
    <meta charset="UTF-8">
    <title>Mother's Height vs Daughter's Height</title>
</head>

<body>
    <div class="Login">
        <h1>Predict Daughter's Height</h1>

        <form action="{{ url_for('predict') }}" method="post">
            <input type="text" name="mheight" placeholder="Mother's Height"
required="required" />

            <button type="submit" class="btn btn-primary btn-black btn-large">
Predict</button>
        </form>

        <br>
        <br>
        {{ prediction_text }}

    </div>
</body>

</html>
```
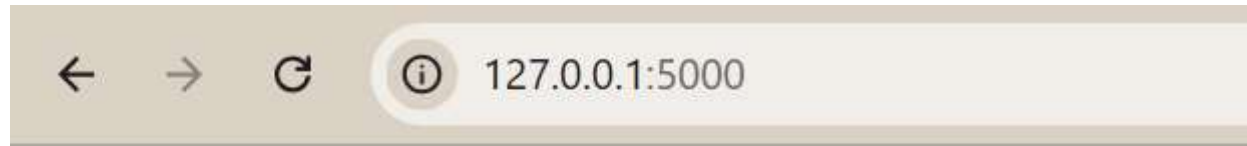
Index.html file - writes html for input and output along with buttons for app

```
PS C:\Users\raina\Development\Data Glacier\Deployment Flask> python app.py
C:\Users\raina\AppData\Local\Programs\Python\Python312\Lib\site-packages\sklearn\base.py:376: InconsistentVersionWarning
: Trying to unpickle estimator LinearRegression from version 1.5.1 when using version 1.5.2. 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 'app'
 * Debug mode: off
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
127.0.0.1 - - [27/Oct/2024 18:49:53] "GET / HTTP/1.1" 200 -
```

Flask deployment - method of deployment for server

← → C ⓘ 127.0.0.1:5000

Predict Daughter's Height

| Mother's Height | Predict |

Predict Daughter's Height

| 63 | Predict |

Predict Daughter's Height

| Mother's Height | Predict |

Daughter's height should be 64.04

Website - uses dataset combined with regression model to predict daughters height given mothers height in inches