

## Week 5 Assignment - Week 5: Cloud and API deployment

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Batch code: LISUM15

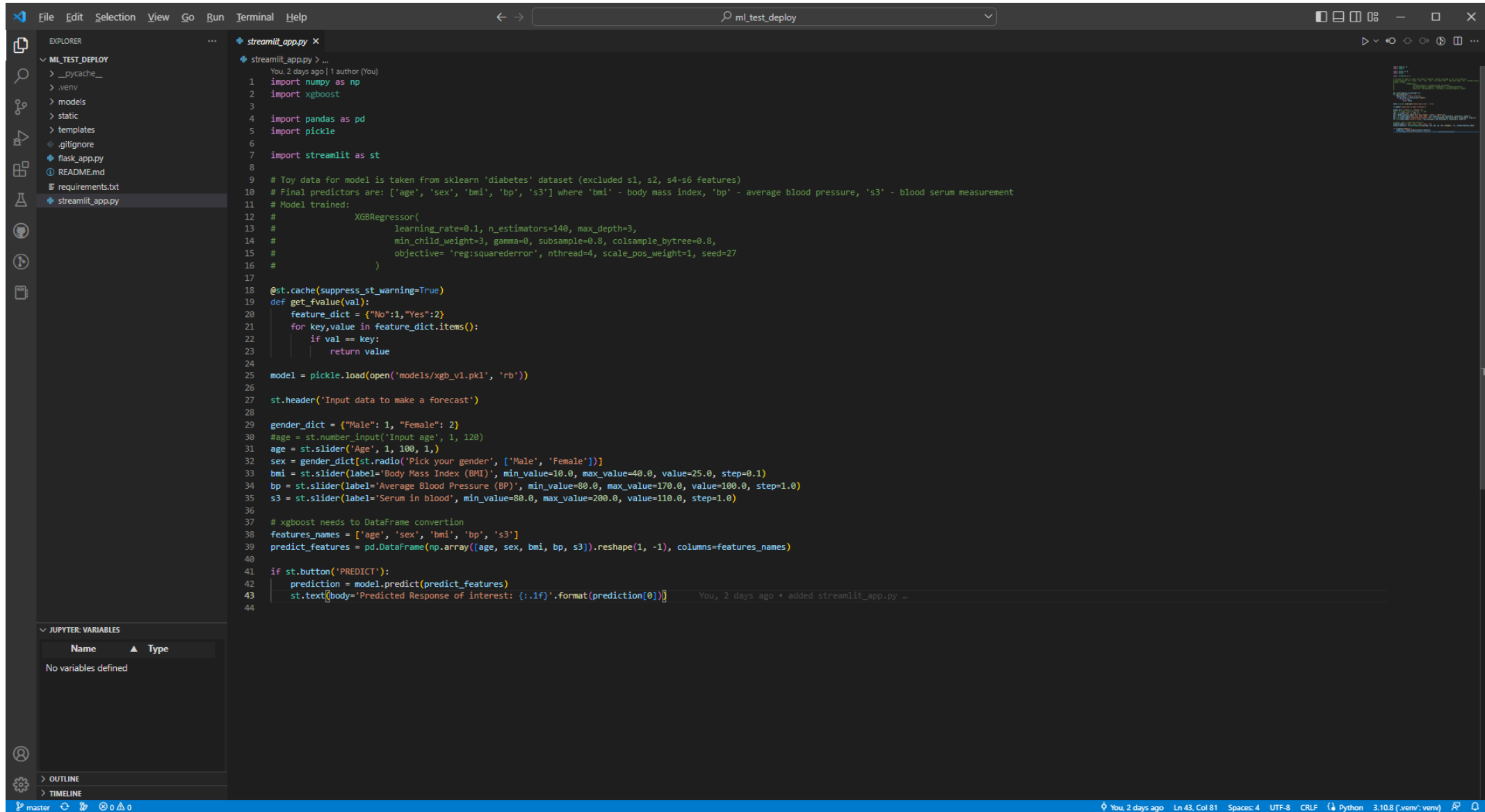
Submission date: Nov 28, 2022

Submitted to: Data Glacier

## 1. Initial code of Flask app

The image shows a JupyterLab environment with a dark theme. The top menu bar includes File, Edit, Selection, View, Go, Run, Terminal, and Help. The Explorer panel on the left shows a file tree for 'DATA\_GLACIER\_VI' containing files like \_\_pycache\_\_, flask\_app.py, flask\_testing.py, .vscode, launch.json, datasets, models, static, templates, index.html, week\_2-3, week\_4, .gitignore, and various assignment completion documents. The main editor displays the code for flask\_app.py, which imports numpy, pandas, and pickle, sets up a Flask app, and implements a prediction endpoint using an XGBRegressor model. The model is loaded from a pickle file and predicts based on input features like age, sex, bmi, bp, and s3. The bottom status bar shows 'main\*' and 'Python: Flask (data\_glacier\_v1)'. The right sidebar contains a Python Debug Console and a terminal window showing the command prompt for the 'GLacierVI' environment.

## 2. Changed app code to use streamlit library (necessary condition to deploy app in StreamlitCloud)



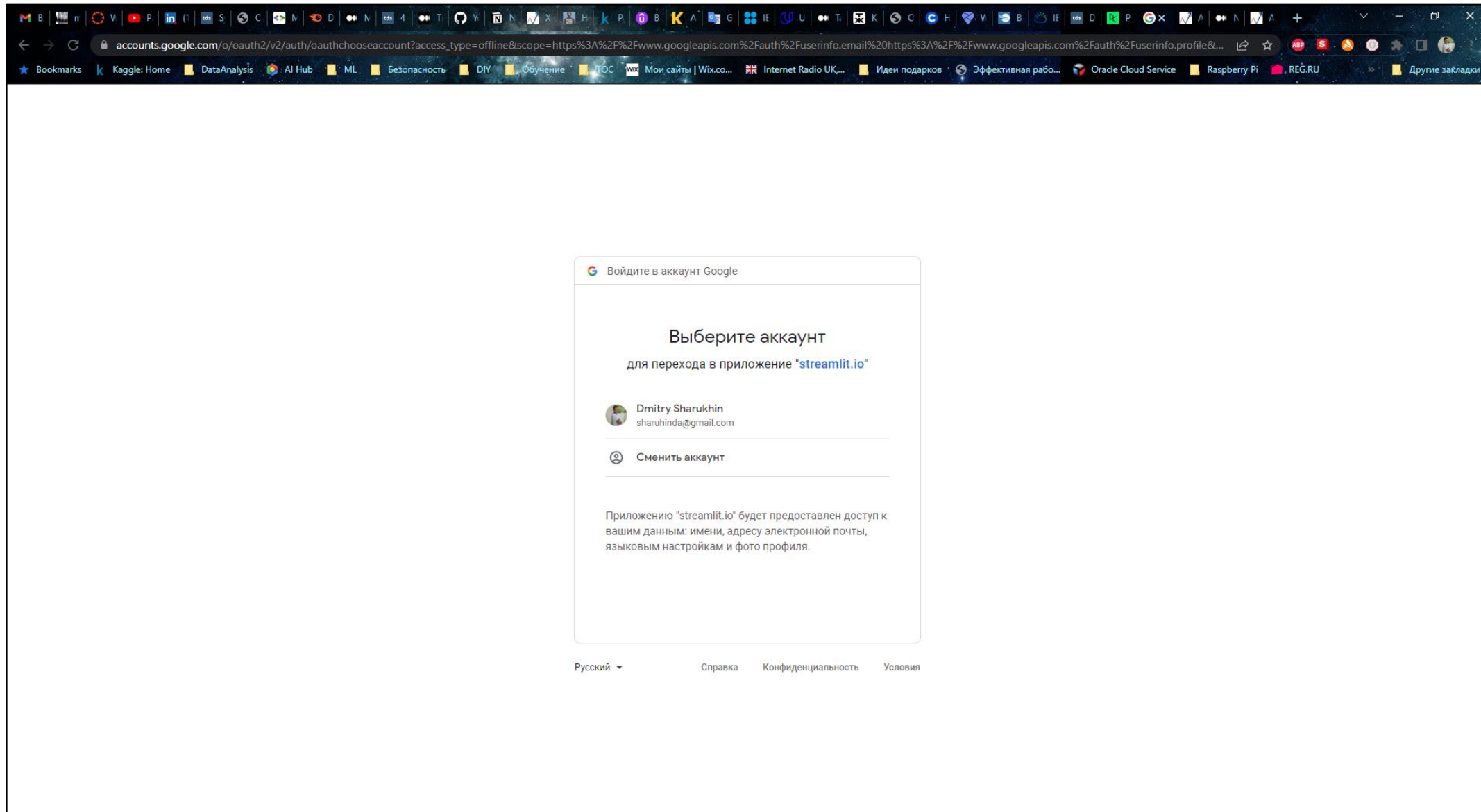
```
1 You 2 days ago | 1 author (You)
2 import numpy as np
3 import xgboost
4
5 import pandas as pd
6 import pickle
7
8 import streamlit as st
9
10 # Toy data for model is taken from sklearn 'diabetes' dataset (excluded s1, s2, s4-s6 features)
11 # Final predictors are: ['age', 'sex', 'bmi', 'bp', 's3'] where 'bmi' - body mass index, 'bp' - average blood pressure, 's3' - blood serum measurement
12 # Model trained:
13 #     XGBRegressor(
14 #         learning_rate=0.1, n_estimators=140, max_depth=3,
15 #         min_child_weight=3, gamma=0, subsample=0.8, colsample_bytree=0.8,
16 #         objective='reg:squarederror', nthread=4, scale_pos_weight=1, seed=27
17 #     )
18
19 @st.cache(suppress_st_warning=True)
20 def get_fvalue(val):
21     feature_dict = {"No":1, "Yes":2}
22     for key, value in feature_dict.items():
23         if val == key:
24             return value
25
26 model = pickle.load(open('models/xgb_v1.pkl', 'rb'))
27
28 st.header('Input data to make a forecast')
29
30 gender_dict = {"Male": 1, "Female": 2}
31 #age = st.number_input('Input age', 1, 120)
32 age = st.slider('Age', 1, 100, 1)
33 sex = gender_dict[st.radio('Pick your gender', ['Male', 'Female'])]
34 bmi = st.slider(label='Body Mass Index (BMI)', min_value=10.0, max_value=40.0, value=25.0, step=0.1)
35 bp = st.slider(label='Average Blood Pressure (BP)', min_value=80.0, max_value=170.0, value=100.0, step=1.0)
36 s3 = st.slider(label='Serum in blood', min_value=80.0, max_value=200.0, value=110.0, step=1.0)
37
38 # xgboost needs to DataFrame conversion
39 features_names = ['age', 'sex', 'bmi', 'bp', 's3']
40 predict_features = pd.DataFrame(np.array([age, sex, bmi, bp, s3]).reshape(1, -1), columns=features_names)
41
42 if st.button('PREDICT'):
43     prediction = model.predict(predict_features)
44     st.text(body='Predicted Response of interest: {:.1f}'.format(prediction[0]))
```

VS Code interface details:

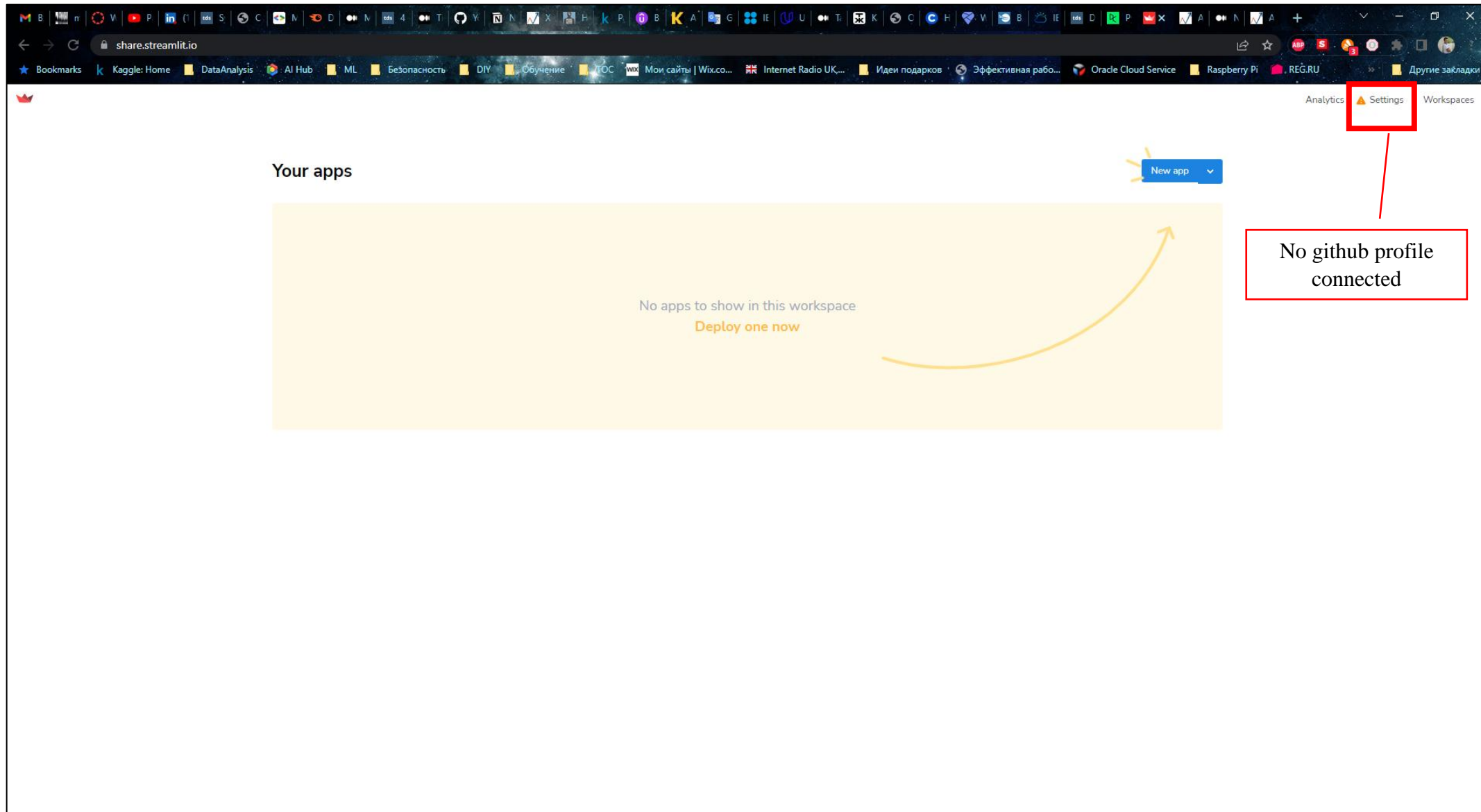
- File Explorer (Left):
  - ML\_TEST\_DEPLOY
    - \_\_pycache\_\_
    - .env
    - models
    - static
    - templates
    - .gitignore
    - flask\_app.py
    - README.md
    - requirements.txt
    - streamlit\_app.py (Selected)
- Jupyter Variables (Bottom Left):

Name	Type
No variables defined	
- Status Bar (Bottom): You, 2 days ago | Ln 43, Col 81 | Spaces: 4 | UTF-8 | CRLF | Python | 3.10.8 (.venv: .venv)

### 3. Login to Streamlit Cloud (<https://share.streamlit.io/>)



#### 4. Cloud homepage with no apps deployed and no github connection



## 5. Connected github profile to choose repository from

The screenshot shows the Streamlit user settings page for a user named 'sharuhinda'. The page is titled 'sharuhinda's apps' and has a 'New app' button. A modal window is open, displaying the 'Workspace settings' for 'sharuhinda'. The modal has a sidebar with links: 'Linked accounts', 'Members', 'Limits', and 'Support'. The main content area is divided into two sections: 'Primary identity' and 'Source control'. The 'Primary identity' section shows the user is logged in as 'sharuhinda@gmail.com' using Google. The 'Source control' section shows the user is logged in as 'sharuhinda' using GitHub, with a 'Disconnect' link. A red box highlights the text 'Github profile connected' with a red line pointing to the 'Source control' section. The browser's address bar shows the URL 'https://share.streamlit.io/LINKED\_ACCOUNTS'.

sharuhinda's apps

New app

Workspace settings  
sharuhinda

Linked accounts

Members

Limits

Support

Primary identity  
A primary account is required for others to give you access to view their apps.  
Logged in as sharuhinda@gmail.com using Google.

Source control  
A source control account is required to create and manage apps.  
Logged in as sharuhinda using GitHub. [Disconnect](#)

Github profile connected

[https://share.streamlit.io/LINKED\\_ACCOUNTS](https://share.streamlit.io/LINKED_ACCOUNTS)

## 6. Choosing repository to deploy app from

The screenshot shows a web browser window with the URL `share.streamlit.io/deploy`. The browser's address bar and bookmarks are visible at the top. The page content includes a "Back" link, a title "Deploy an app", and three input fields for deployment configuration. The "Repository" field contains `sharuhinda/ml_test_deploy`, the "Branch" field contains `master`, and the "Main file path" field contains `streamlit_app.py`. There is a link for "Advanced settings..." and a blue "Deploy!" button at the bottom.

[Back](#)

### Deploy an app

Repository [Paste GitHub URL](#)

`sharuhinda/ml_test_deploy`

Branch

`master`

Main file path

`streamlit_app.py`


[Advanced settings...](#)

[Deploy!](#)

## 7. Deployment process with log

sharuhinda-ml-test-deploy-streamlit-app-3wkmez.streamlit.app

Bookmarks: Kaggle: Home, DataAnalysis, AI Hub, ML, Безопасность, DIV, Обучение, TOC, Мои сайты | Wix.co..., Internet Radio UK..., Идеи подарков, Эффективная рабо..., Oracle Cloud Service, Raspberry Pi, REG.RU, Другие закладки.

 Your app is in the oven

```
Collecting rich==12.6.0
  Downloading rich-12.6.0-py3-none-any.whl (237 kB)
  237.5/237.5 K
Collecting scikit-learn==1.1.3
  Downloading scikit_learn-1.1.3-cp39-cp39-manylinux_
  30.8/30.8 MI
Collecting scipy==1.9.3
  Downloading scipy-1.9.3-cp39-cp39-manylinux_2_17_x8
  33.8/33.8 MI
Collecting semver==2.13.0
  Downloading semver-2.13.0-py2.py3-none-any.whl (12
Collecting six==1.16.0
  Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
Collecting smmap==5.0.0
  Downloading smmap-5.0.0-py3-none-any.whl (24 kB)
Collecting streamlit==1.15.1
  Downloading streamlit-1.15.1-py2.py3-none-any.whl (
  10.3/10.3 MI
Collecting threadpoolctl==3.1.0
  Downloading threadpoolctl-3.1.0-py3-none-any.whl (1
Collecting toml==0.10.2
  Downloading toml-0.10.2-py2.py3-none-any.whl (16 kB)
Collecting toolz==0.12.0
  Downloading toolz-0.12.0-py3-none-any.whl (55 kB)
  55.8/55.8 KI
Collecting tornado==6.2
  Downloading tornado-6.2-cp37-abi3-manylinux_2_5_x86
  424.0/424.0 K
Collecting typing_extensions==4.4.0
  Downloading typing_extensions-4.4.0-py3-none-any.wh
Collecting tzdata==2022.6
  Downloading tzdata-2022.6-py2.py3-none-any.whl (338
  338.8/338.8 K
Collecting tzlocal==4.2
  Downloading tzlocal-4.2-py3-none-any.whl (19 kB)
Collecting urllib3==1.26.13
  Downloading urllib3-1.26.13-py2.py3-none-any.whl (1
  140.6/140.6 K
Collecting validators==0.20.0
  Downloading validators-0.20.0.tar.gz (30 kB)
  Preparing metadata (setup.py): started
[11:17:40] ⚙ Spinning up manager process...
  Preparing metadata (setup.py): finished with status
Collecting watchdog==2.1.9
  Downloading watchdog-2.1.9-py3-none-manylinux2014_x
  78.4/78.4 KI
Collecting xgboost==1.7.1
  Downloading xgboost-1.7.1-py3-none-manylinux2014_x8
  193.6/193.6 M
Collecting zipp==3.11.0
  Downloading zipp-3.11.0-py3-none-any.whl (6.6 kB)
Building wheels for collected packages: validators
Building wheel for validators (setup.py): started
Building wheel for validators (setup.py): finished
Created wheel for validators: filename=validators-0
Stored in directory: /tmp/pip-ephem-wheel-cache-tai
Successfully built validators
Installing collected packages: pytz, commonmark, zipp
master sharuhinda/ml_test_deploy/master/streamlit_ap... >
```

8. App has been deployed and ready (assigned address: <https://sharuhinda-ml-test-deploy-streamlit-app-3wkmez.streamlit.app/>)

The screenshot shows a web browser window with the URL `sharuhinda-ml-test-deploy-streamlit-app-3wkmez.streamlit.app`. The application has a dark theme and is titled "Input data to make a forecast". It contains several interactive sliders and a radio button for inputting data. The inputs are: Age (set to 1), Gender (Male selected), Body Mass Index (BMI) (set to 25.00), Average Blood Pressure (BP) (set to 100.00), and Serum in blood (set to 110.00). A "PREDICT" button is located at the bottom of the input section. The footer of the application reads "Made with Streamlit" and includes a link to "Manage app".

Input data to make a forecast

Age

1

1 100

Pick your gender

☒ Male

☐ Female

Body Mass Index (BMI)

25.00

10.00 40.00

Average Blood Pressure (BP)

100.00

80.00 170.00

Serum in blood

110.00

80.00 200.00

PREDICT

Made with Streamlit

< Manage app



9. Making prediction

sharuhinda-ml-test-deploy-streamlit-app-3wkmez.streamlit.app

Bookmarks

Kaggle: Home

DataAnalysis

AI Hub

ML

Безопасность

DIV

Обучение

TOC

Мои сайты | Wix.co...

Internet Radio UK...

Идеи подарков

Эффективная рабо...

Oracle Cloud Service

Raspberry Pi

REG.RU

Другие закладки

Share ☆ ☰

Input data to make a forecast

Age

1

1

100

Pick your gender

Male

Female

Body Mass Index (BMI)

25.00

10.00

40.00

Average Blood Pressure (BP)

100.00

80.00

170.00

Serum in blood

110.00

80.00

200.00

Predict

Predicted Response of interest: 130.4

Made with Streamlit

Manage app