# Women’s Health Dashboard

*- Empowering Women Through Data-Driven Health Insights*

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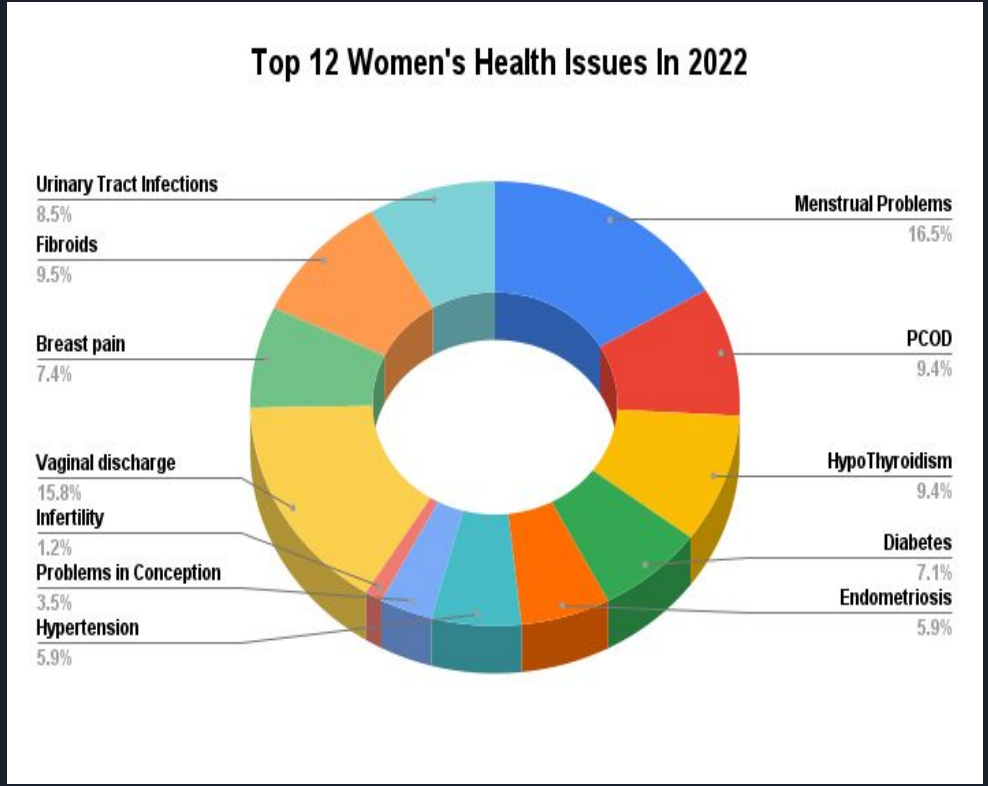
**Submitted for:** GUVI Shecodes Hackathon

# Problem Statement

Analyze datasets related to women’s health (e.g., maternal health, menstrual cycle patterns, mental well-being) to derive insights and predictions. Build data visualizations and predictive models to improve awareness and healthcare access.



# Introduction

The Women's Health Dashboard is a comprehensive tool designed to empower women by providing insights and predictions related to:

- Maternal health
- Menstrual cycles
- Mental well-being
- BMI and hydration tracking
- Built using Streamlit and machine learning models.

# Key Features

01 Maternal Health Predictor

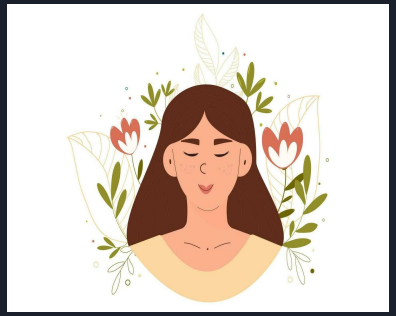
02 Menstrual Cycle Predictor

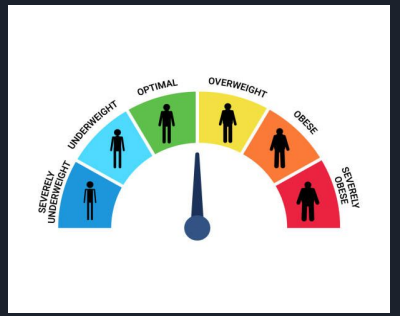
03 Mental Well-being Predictor

04 BMI Calculator

05 Hydration Tracker

06 Data Visualizations





# Technical Implementation

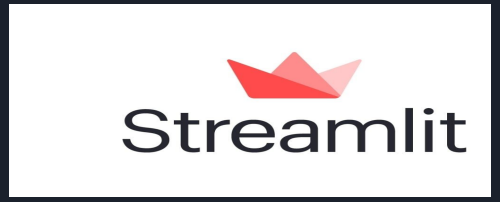
Frontend: Streamlit, HTML/CSS

Backend: Python, Pandas, NumPy

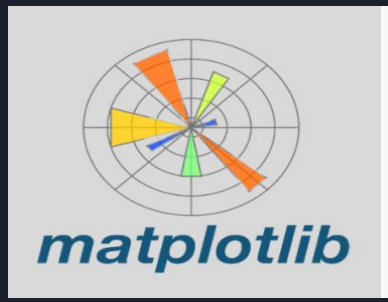
Machine Learning: Scikit-learn, Joblib

Data Visualization: Matplotlib, Seaborn

Deployment: Streamlit Sharing







# Design and Architecture

The project follows a modular and user-centric design approach:

1. **User Interface (UI):** - The dashboard is designed with a clean and intuitive interface.
   - Custom CSS is used to style the sidebar and navigation menu for better user experience.
   - Interactive input fields and buttons allow users to input data and receive predictions.

2. **Data Flow:** - User inputs are collected through Streamlit widgets.
   - Input data is processed using Python and passed to the respective machine learning models.
   - Predictions and recommendations are displayed dynamically on the dashboard.

3. **Machine Learning Models:** - Maternal Health Model: Predicts risk levels based on health metrics.
   - Menstrual Cycle Models: Predict regularity and ovulation dates.
   - Mental Health Model: Assesses mental well-being based on survey data.

4. **Data Visualizations:** - Visualizations are created using Matplotlib and Seaborn.
   - Graphs include box plots for maternal health factors, histograms for menstrual cycle lengths, and count plots for mental health trends.

# Home Page


localhost:8502
Navigation
Go to
Home
Maternal Health
Menstrual Cycle
Mental Well-being
BMI Calculator
Hydration Tracker
Deploy
Women's Health Dashboard
Welcome to the Women's Health Dashboard! Use the sidebar to navigate to different sections.
Women Wellness and How to Achieve It?
Empowering Women Through Health Awareness
Data Analytics for Women's Health Awareness
1. Maternal Health Risk Analysis
How each factor contributes to high-risk maternal health:
Distribution of Factors Contributing to High-Risk Maternal Health

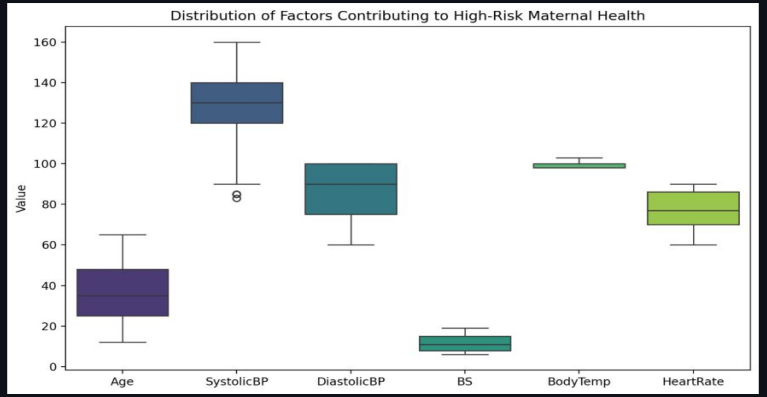
# Data Visualizations

Visualizations include:

- Maternal health risk factors.
- Menstrual cycle length distribution.
- Mental health trends.

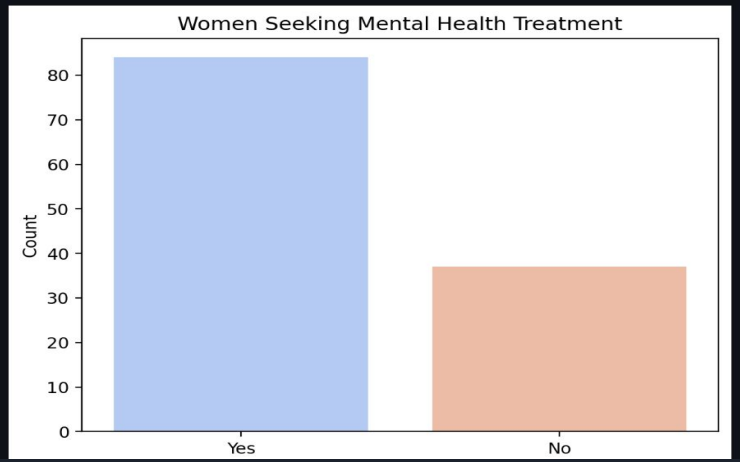
## 1. Maternal Health Risk Analysis

How each factor contributes to high-risk maternal health:



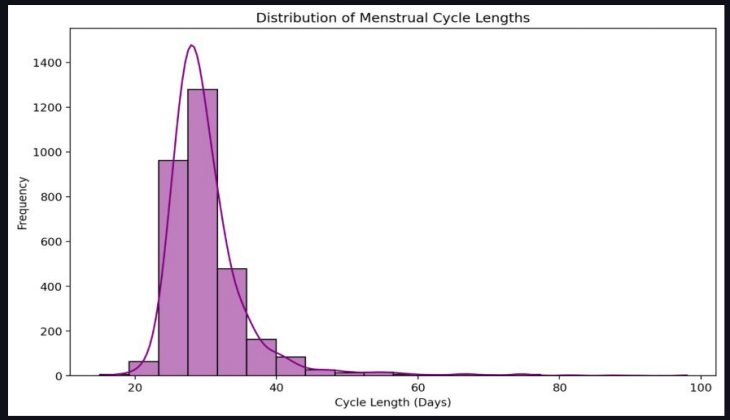

## 3. Mental Health Analysis

Number of women affected by mental health diseases:



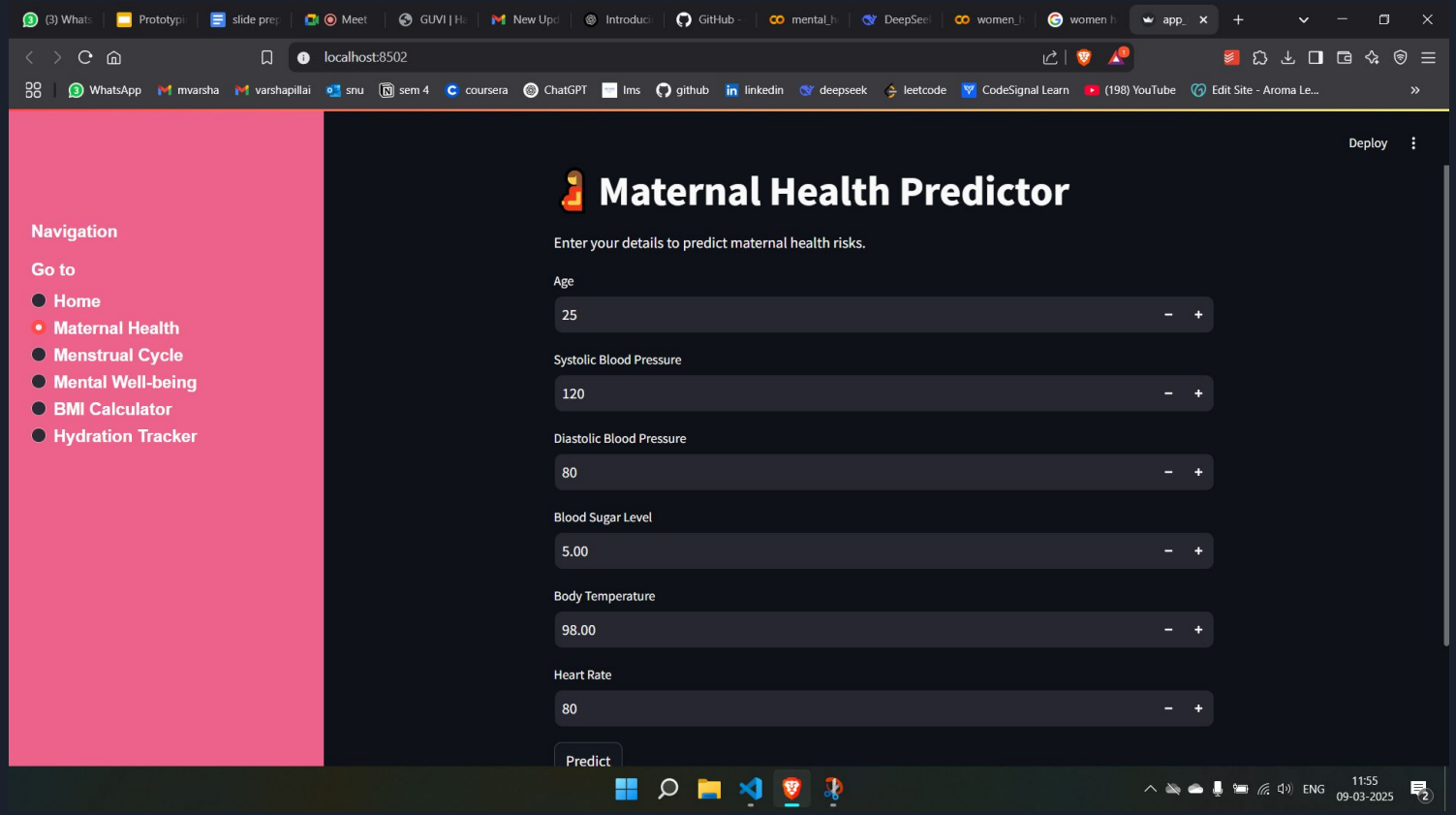

## 2. Menstrual Health Analysis

Distribution of Menstrual Cycle Lengths:

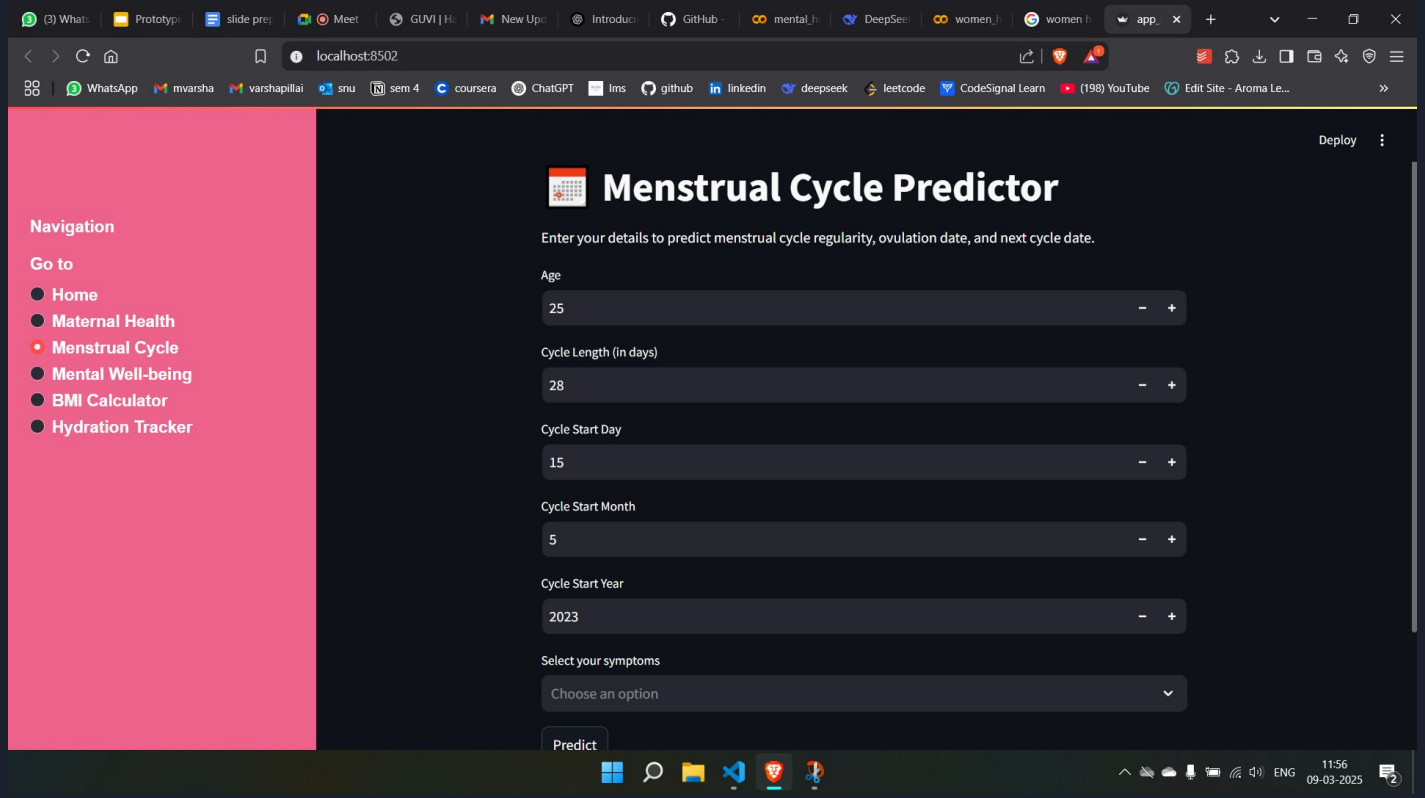



This graph shows the distribution of menstrual cycle lengths among women.

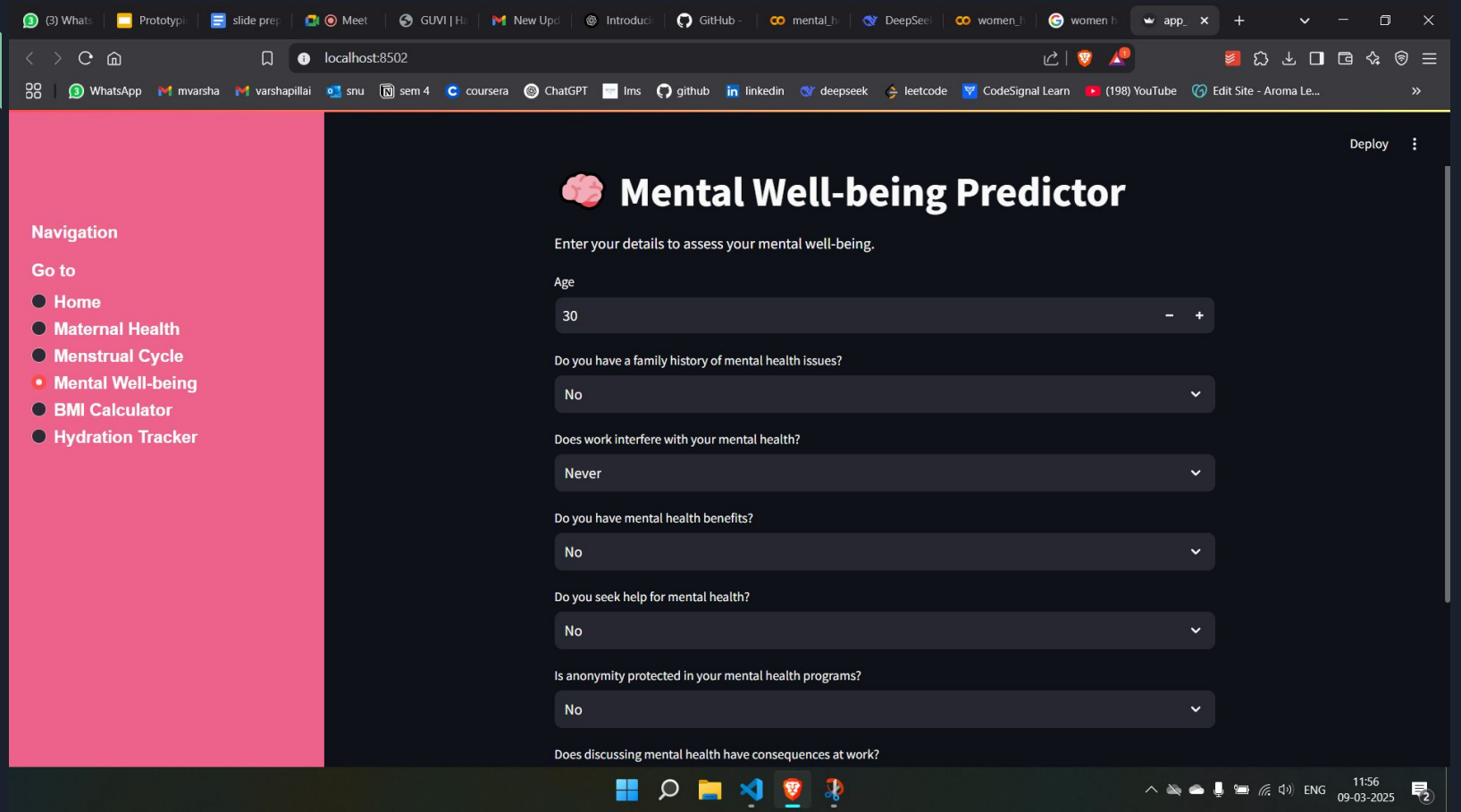
# Maternal Health Page



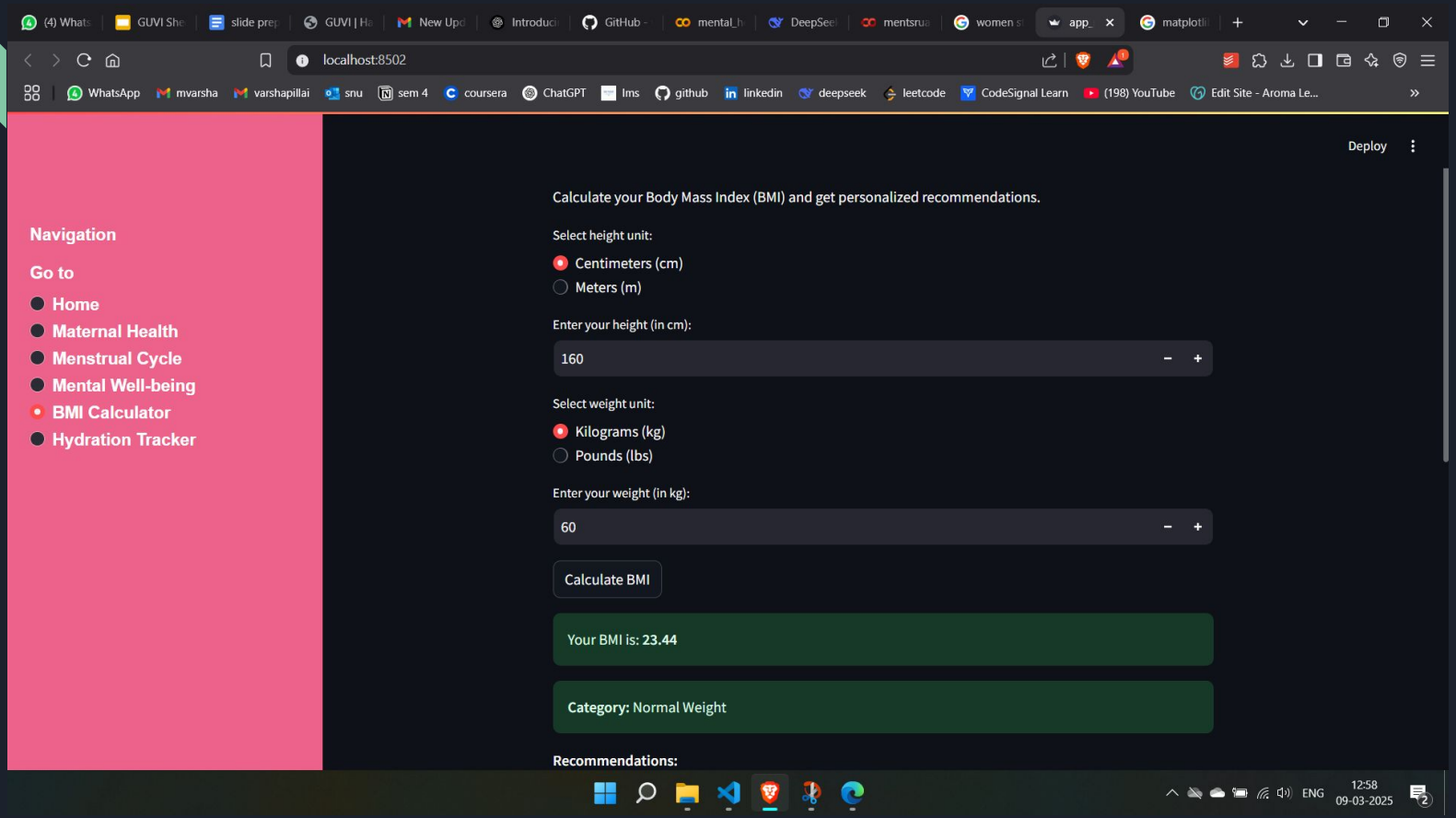
# Menstrual Cycle Page



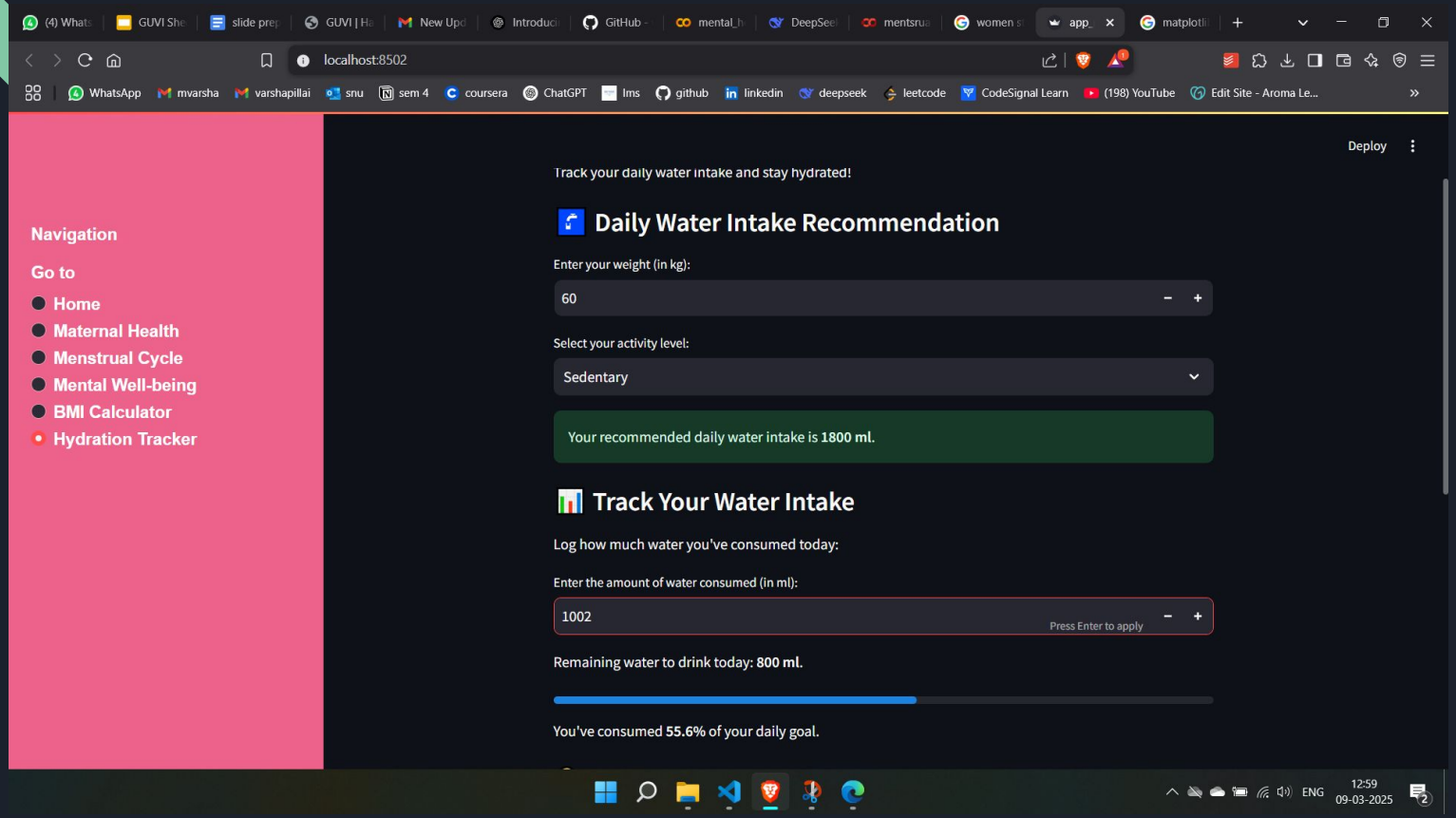
# Mental Well Being Page



# BMI Calculator Page



# Hydration Tracker Page



# Benchmarks and Performance

Maternal Health Model:

```
# Print results
print(f'Accuracy: {accuracy * 100:.2f}%')
print(f'F1-Score: {f1 * 100:.2f}%')
print(f'Precision: {precision * 100:.2f}%')
```

```
Accuracy: 81.28%
F1-Score: 81.34%
Precision: 81.85%
```

# Benchmarks and Performance

Mental Health Model:

```
Accuracy: 0.8085106382978723
Classification Report:
              precision    recall  f1-score   support

          No       0.56      0.82      0.67        11
         Yes       0.94      0.81      0.87        36
```

# Prototype Summary:

1. Home Page: - Overview of the dashboard and navigation options.
   - Graphs and analytics of women's health.
2. Maternal Health Page: - Input fields: Age, Blood Pressure, Blood Sugar, Body Temp, Heart Rate.
   - Output: Risk Level and Recommendations.
3. Menstrual Cycle Page: - Input fields: Age, Cycle Length, Cycle Start Date, Symptoms.
   - Output: Cycle Regularity, Ovulation Date, and Recommendations.
4. Mental Well-being Page: - Input fields: Age, Stress Level, Sleep Hours, Social Support, Mood.
   - Output: Mental Health Score and Recommendations.
5. BMI Calculator Page: - Input fields: Height, Weight.
   - Output: BMI and Recommendations.
6. Hydration Tracker: - Input fields: Weight, Activity level
   - Output: Optimal water level, progress bar and recommendations.

# Future enhancements:

- Integrate more datasets and increase accuracy.
- Add multilingual support to target a wide range of women even in rural areas.
- Develop as a mobile app integrate into smart devices like smartwatches.
- Incorporate real-time health monitoring.
- Add LLM based chatbot for better interaction and user experience.
- User profiling to enhance personalisation.

# Conclusion

The Women's Health Dashboard is a powerful tool that leverages data analytics and machine learning to improve women's health awareness and access to healthcare. By providing personalized predictions, recommendations, and visualizations, the dashboard empowers women to take control of their health. The project aligns perfectly with the hackathon's problem statement and demonstrates the potential of technology to drive positive change in healthcare.

# Acknowledgments

1. Scikit-learn Documentation: https://scikit-learn.org/

2. Streamlit Documentation: https://docs.streamlit.io/

3. Kaggle Datasets: https://www.kaggle.com/datasets