

## Web App Code for ipynb file to flask framework view

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Team ID	PPNT2022TMID40507
Project Name	Project - Visualizing and Predicting Heart Diseases with an Interactive Dashboard

### **Web App Code for ipynb file to flask framework view Visualizing and Predicting Heart Diseases with an Interactive Dashboard:**

#### **Heart\_prediction\_app.py**

```
# -*- coding: utf-8 -*-

import numpy as np
import pickle

from flask import Flask, request, render_template

# Load ML model
model = pickle.load(open('models.pkl', 'rb'))

# Create application
app = Flask(__name__)

# Bind home function to URL
@app.route('/')
def home():
    return render_template('Heart_Disease_Classifier.html')

# Bind predict function to URL
@app.route('/predict', methods =['POST'])
def predict():
    # Put all form entries values in a list
    features = [float(i) for i in request.form.values()]

    # Convert features to array
    array_features = [np.array(features)]

    # Predict features
    prediction = model.predict(array_features)

    output = prediction

    # Check the output values and retrieve the result with html tag based on the value
```

```

if output == 1:
    return render_template('Heart_Disease_Classifier.html',
                           result = 'The patient is not likely to have heart disease!')
else:
    return render_template('Heart_Disease_Classifier.html',
                           result = 'The patient is likely to have heart disease!')

if __name__ == '__main__':
    #Run the application

```

### **Heart Disease Classifier.html**

```

<html>

<head>

<!-- Bootstrap CSS -->

<link                                rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css"
integrity="sha384-
JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
crossorigin="anonymous">

<script    src="https://code.jquery.com/jquery-3.5.1.slim.min.js"    integrity="sha384-
DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
crossorigin="anonymous"></script>

<script    src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js"
integrity="sha384-
9/reFTGAW83EW2RDu2S0VKA1Zap3H66lZ81PoYlFhbGU+6BZp6G7niu735Sk7lN"
crossorigin="anonymous"></script>

<script    src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"
integrity="sha384-
B4gt1jrGC7Jh4AgTPSdUutOBvFO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
crossorigin="anonymous"></script>

<title>Heart Disease Test</title>

</head>

<body>

<!-- Java Script -->

<script    src="https://code.jquery.com/jquery-3.5.1.slim.min.js"    integrity="sha384-
DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
crossorigin="anonymous"></script>

```

```
<script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js"
integrity="sha384-
9/reFTGAW83EW2RDu2S0VKA1Zap3H66lZ81PoYlFhbGU+6BZp6G7niu735Sk7lN"
crossorigin="anonymous"></script>
```

```
<script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"
integrity="sha384-
B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
crossorigin="anonymous"></script>
```

```
<!-- Navbar-->
```

```
<nav class="navbar navbar-dark" style="background-color: rgb(13, 102, 87);">
```

```
<span class="navbar-brand mb-0 h1">Heart Disease Test</span>
```

```
</nav>
```

```
<div class="container">
```

```
<br>
```

```
<!--Form-->
```

```
<form action = "{{url_for('predict')}}" method = "POST" >
```

```
<fieldset>
```

```
<legend style="color: rgb(41, 15, 134);"><b>Heart Disease Test Form</b></legend><br>
```

```
<div class="card card-body" style="background-color: rgb(194 245 236 / 56%);">
```

```
<div class="form-group row">
```

```
<div class="col-sm-3">
```

```
<label for="age">Age</label>
```

```
<input type="number" class="form-control" id="age" name="age" required>
```

```
</div>
```

```
<div class="col-sm-3">
```

```
<label for="sex">Sex</label>
```

```
<select class="form-control" id="sex" name="sex" required>
```

```
<option disabled selected value> -- Select an Option -- </option>
```

```
<option value = "0">Female</option>
```

```
<option value = "1">Male</option>
```

```
</select>
```

```
</div>
```

```
</div>

<br>

<div class="form-group row">
  <div class="col-sm">
    <label for="cp">Chest Pain Type</label>
    <select class="form-control" id="cp" name = "cp" required>
      <option disabled selected value> -- Select an Option -- </option>
      <option value = "1">Typical Angina</option>
      <option value = "2">Atypical Angina</option>
      <option value = "3">Non-anginal Pain</option>
      <option value = "4">Asymptomatic</option>
    </select>
  </div>
  <div class="col-sm">
    <label for="trestbps">Resting Blood Pressure in mm Hg</label>
    <input type="number" class="form-control" id="trestbps" name="trestbps" required>
  </div>
  <div class="col-sm">
    <label for="chol">Serum Cholestoral in mg/dl</label>
    <input type="number" class="form-control" id="chol" name="chol" required>
  </div>
  <div class="col-sm">
    <label for="fbs">Fasting Blood Sugar > 120 mg/dl</label>
    <select class="form-control" id="fbs" name="fbs" required>
      <option disabled selected value> -- Select an Option -- </option>
      <option value = "0">False</option>
      <option value = "1">True</option>
    </select>
  </div>
</div>

<br>
```

```
<div class="form-group row">
  <div class="col-sm">
    <label for="restecg">Resting ECG Results </label>
    <select class="form-control" id="restecg" name="restecg" required>
      <option disabled selected value> -- Select an Option -- </option>
      <option value = "0">Normal </option>
      <option value = "1">Having ST-T wave abnormality </option>
      <option value = "2">Probable or definite left ventricular hypertrophy</option>
    </select>
  </div>
  <div class="col-sm">
    <label for="thalach">Maximum Heart Rate</label>
    <input type="number" class="form-control" id="thalach" name="thalach" required>
  </div>
  <div class="col-sm">
    <label for="exang">Exercise Induced Angina </label>
    <select class="form-control" id="exang" name="exang" required>
      <option disabled selected value> -- Select an Option -- </option>
      <option value = "0">No</option>
      <option value = "1">Yes</option>
    </select>
  </div>
  <div class="col-sm">
    <label for="oldpeak">ST Depression Induced</label>
    <input type="number" step="any" class="form-control" id="oldpeak" name="oldpeak"
    required>
  </div>
</div>
<br>
<div class="form-group row">
  <div class="col-sm">
    <label for="slope">Slope of the Peak Exercise ST Segment </label>
```

```
<select class="form-control" id="slope" name="slope" required>
<option disabled selected value> -- Select an Option -- </option>
<option value = "1">Upsloping</option>
<option value = "2">Flat</option>
<option value = "3">Downsloping</option>
</select>
</div>

<div class="col-sm">
<label for="ca">Number of Vessels Colored by Flourosopy</label>
<select class="form-control" id="ca" name = "ca" required>
<option disabled selected value> -- Select an Option -- </option>
<option value = "0">0</option>
<option value = "1">1</option>
<option value = "2">2</option>
<option value = "3">3</option>
</select>
</div>

<div class="col-sm">
<label for="thal">Thalassemia</label>
<select class="form-control" id="thal" name = "thal" required>
<option disabled selected value> -- Select an Option -- </option>
<option value = "3">Normal</option>
<option value = "6">Fixed defect</option>
<option value = "7">Reversable defect</option>
</select>
</div>
</div>
<br>
<div class="form-group">
<input class="btn btn-primary" type="submit" value="Result">
</div>
```

```

<!--Prediction Result-->
<div id ="result">
<strong style="color:red">{{ result }}</strong>
</div>
</div>
</fieldset>
</form>

</div>

</body>
</html>

```

SCRRENSHOT OF OUTPUT:

### USER INTERFACE:

The screenshot shows a web browser window with the title 'Heart Disease Test'. The address bar shows '127.0.0.1:5000'. The page has a dark green header with the text 'Heart Disease Test'. Below the header, the form is titled 'Heart Disease Test Form' in purple. The form itself is a light blue box containing the following fields:

- Age:** A text input field.
- Sex:** A dropdown menu with the option '-- Select an Option --'.
- Chest Pain Type:** A dropdown menu with the option '-- Select an Option --'.
- Resting Blood Pressure in mm Hg:** A text input field.
- Serum Cholesterol in mg/dl:** A text input field.
- Fasting Blood Sugar > 120 mg/dl:** A dropdown menu with the option '-- Select an Option --'.
- Resting ECG Results:** A dropdown menu with the option '-- Select an Option --'.
- Maximum Heart Rate:** A text input field.
- Exercise Induced Angina:** A dropdown menu with the option '-- Select an Option --'.
- ST Depression Induced:** A text input field.
- Slope of the Peak Exercise ST Segment:** A dropdown menu with the option '-- Select an Option --'.
- Number of Vessels Colored by Flourosopy:** A dropdown menu with the option '-- Select an Option --'.
- Thalassemia:** A dropdown menu with the option '-- Select an Option --'.

A blue button labeled 'Result' is located at the bottom left of the form box. The browser's taskbar at the bottom shows the date and time as 11-11-2022, 23:00, and the language as ENG IN.

## Heart Disease prediction presence or absence Analytics:

### Heart disease Presence:

Heart Disease Test

#### Heart Disease Test Form

Age	Sex		
30	Male		
Chest Pain Type	Resting Blood Pressure in mm Hg	Serum Cholesterol in mg/dl	Fasting Blood Sugar > 120 mg/dl
Atypical Angina	4	2	True
Resting ECG Results	Maximum Heart Rate	Exercise Induced Angina	ST Depression Induced
Having ST-T wave abnormal	70	Yes	2
Slope of the Peak Exercise ST Segment	Number of Vessels Colored by Flourosopy	Thalassemia	
Upsloping	2	Fixed defect	

**Result**

**The patient is likely to have heart disease!**

### Heart disease Absence:

Heart Disease Test

#### Heart Disease Test Form

Age	Sex		
50	Female		
Chest Pain Type	Resting Blood Pressure in mm Hg	Serum Cholesterol in mg/dl	Fasting Blood Sugar > 120 mg/dl
Non-anginal Pain	2	1	False
Resting ECG Results	Maximum Heart Rate	Exercise Induced Angina	ST Depression Induced
Normal	60	No	2
Slope of the Peak Exercise ST Segment	Number of Vessels Colored by Flourosopy	Thalassemia	
Flat	0	Normal	

**Result**

**The patient is not likely to have heart disease!**