

Project : URL Shortener Web Application

What will our Web app do (Objectives)?

1. As the name suggests, it shortens URLs.
2. Users can also save URLs by coming to the web app.

Why do we need a URL Shortener?

Sometimes we need to share or send links and this can be tiresome and annoying to copy and paste long URLs. That is where URL shorteners come in. Not only it helps in shortening the URL but it also allows the user to copy the shortened URL with a click of a button.

The project consists of 2 parts:

1. Frontend (done with HTML, CSS, and Bootstrap)
2. Backend - Flask (Python)
3. Backend - Database ORM

Work Done

Import Libraries :

```
import os
from flask import Flask, redirect, request, render_template, url_for
from flask_sqlalchemy import SQLAlchemy
from flask_migrate import Migrate
import random
import string
```

Create Flask Object :

```
app = Flask(__name__)

if __name__ == '__main__':
    app.run(debug=True)
```

Configure for Database :

```
basedir = os.path.abspath(os.path.dirname(__file__))
app.config['SQLALCHEMY_DATABASE_URI'] = 'sqlite:/// ' + os.path.join(basedir,
'data.sqlite')
app.config['SQLALCHEMY_TRACK_MODIFICATIONS'] = False

db = SQLAlchemy(app)
Migrate(app, db)
```

Make Database Model :

```
class ShortenUrl(db.Model):
    id = db.Column(db.Integer, primary_key=True)
    actualUrl = db.Column(db.String())
    shortenUrl = db.Column(db.String(15))

    def __init__(self, actualUrl, shortenUrl):
        self.actualUrl = actualUrl
        self.shortenUrl = shortenUrl

    def __repr__(self) -> str:
        return f"{self.actualUrl} - {self.shortenUrl}"
```

Make URL Shortener Function :

```
def makeShortenUrl():
    availableChars = string.ascii_lowercase + string.ascii_uppercase +
string.digits
    while True:
        randomCharacters = random.choices(availableChars, k=7)
        randomCharacters = "".join(randomCharacters)
        shortenUrl =
ShortenUrl.query.filter_by(shortenUrl=randomCharacters).first()
        if not shortenUrl:
            return randomCharacters
```

Make Other Routes & their Functions :

```
@app.route('/', methods=['POST', 'GET'])
def home():
    if request.method == "POST":
        get_url = request.form["act_url"]
        url = ShortenUrl.query.filter_by(actualUrl=get_url).first()
```

```

        if url:
            return redirect(url_for("print_short_url", url=url.shortenUrl))
        else:
            shortenUrl = makeShortenUrl()
            shortUrl = ShortenUrl(get_url, shortenUrl)
            db.session.add(shortUrl)
            db.session.commit()
            return redirect(url_for("print_short_url", url=shortUrl))
    else:
        return render_template('showShortUrl.html')

@app.route('/<short_url>')
def redirection(short_url):
    act_url = ShortenUrl.query.filter_by(shortenUrl=short_url).first()
    if act_url:
        return redirect(act_url.actualUrl)
    else:
        return f'<h1>Url doesnt exist</h1>'

@app.route('/print/<url>')
def print_short_url(url):
    return render_template('showShortUrl.html', short_url_print=url)

@app.route('/history')
def history():
    return render_template('history.html', vals=ShortenUrl.query.all())

@app.route('/delete/<int:id>')
def delete(id):
    url = ShortenUrl.query.filter_by(id=id).first()
    db.session.delete(url)
    db.session.commit()
    return redirect("/history")

```

Make 3 HTML Templates :

- layout.html
- history.html
- showShortUrl.html

layout.html

```

<!doctype html>
<html lang="en">

<head>

```

```
<meta charset="utf-8">
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-
beta2/dist/css/bootstrap.min.css" rel="stylesheet"
    integrity="sha384-
BmbxuPwQa2lc/FVzBcNJ7UAyJxM6wuqIj61tLrc4wSX0szH/Ev+nYRRuWlolflfl"
crossorigin="anonymous">
<title>{% block title %} {% endblock %}</title>

<style>
    input[type=url] {
        width: 100%;
        padding: 12px 20px;
        margin: 8px 0;
        display: inline-block;
        border: 1px solid #ccc;
        border-radius: 4px;
        box-sizing: border-box;
    }

    input[type=submit] {
        width: 100%;
        background-color: #4CAF50;
        color: white;
        padding: 14px 20px;
        margin: 8px 0;
        border: none;
        border-radius: 4px;
        cursor: pointer;
    }

    input[type=submit]:hover {
        background-color: #45a049;
    }

    .maindiv {
        margin: auto;
        max-width: 500px;
        border-radius: 5px;
        background-color: #f2f2f2;
        padding: 20px;
    }

    #customers {
        font-family: Arial, Helvetica, sans-serif;
        border-collapse: collapse;
        width: 100%;
    }
```


History.html

```
{% extends "layout.html" %}
{% block title %}URL History{% endblock %}

{% block content %}
<center>
<h3>URL History</h3>
</center>

<div class="container my-3">
  <h4>Your URL List</h4>
  {% if vals|length == 0 %}
  <div class="alert alert-dark" role="alert">No URL found. Add your first
URL now!</div>
  {% else %}
  <table class="table" id="urls">
    <thead>
      <tr>
        <th scope="col">ID</th>
        <th scope="col">Original URL</th>
        <th scope="col">Short URL</th>
        <th scope="col">Action</th>
      </tr>
    </thead>
    <tbody>
      {% for url in vals %}
      <tr>
        <th scope="row">{{loop.index}}</th>
        <td>{{url.actualUrl}}</td>
        <td>http://127.0.0.1:5000/{{url.shortenUrl}}</td>
        <td>
          <a href="/delete/{{url.id}}" type="button" class="btn btn-
danger btn-sm mx-1">Delete</button>
        </td>
      </tr>
      {% endfor %}
    </tbody>
  </table>
  {% endif %}
</div>
{% endblock %}
```

showShortUrl.html

```
{% extends "layout.html" %}
{% block title %}URL Shortener{% endblock %}
```

```

{% block content %}
<center>
    <h3>URL Shortener</h3>
</center>

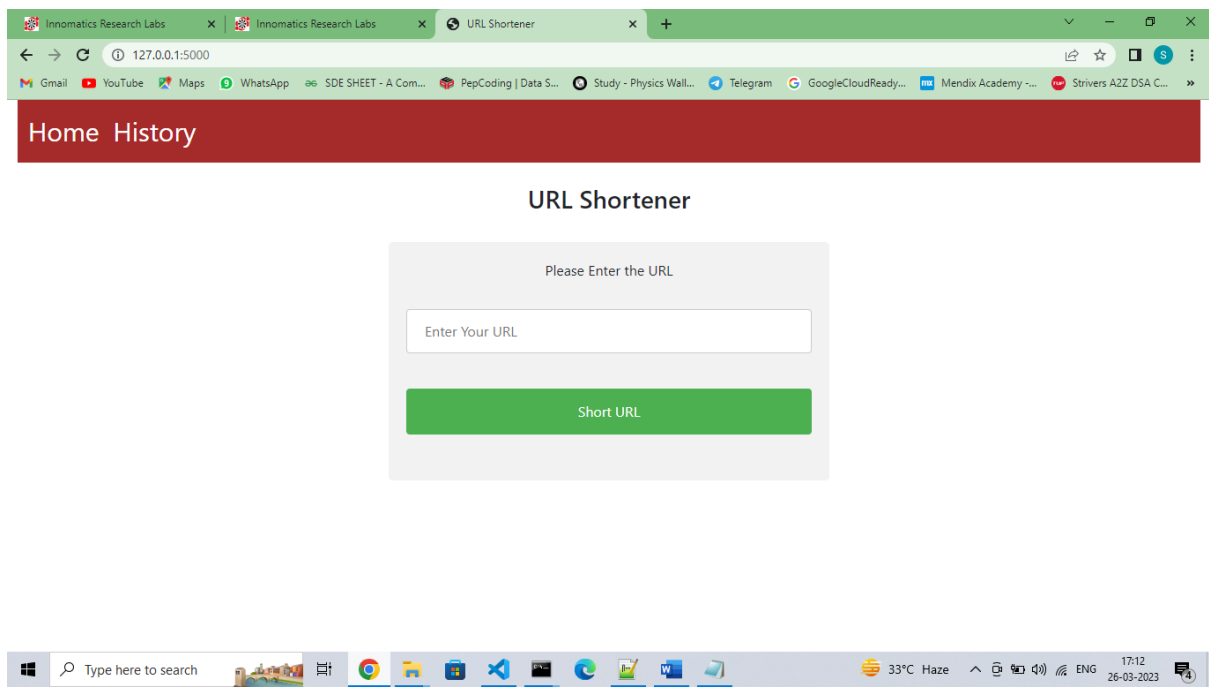
<script
src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.1/jquery.min.js"></scri
pt>
<script>
    function copyFunction(element) {
        var $temp = $("<input>");
        $("body").append($temp);
        $temp.val($(element).text()).select();
        document.execCommand("copy");
        $temp.remove();
    }
</script>

<center>
    <br>
    <div class="maindiv">
        <form action="/" , method="post">
            <label for="url_link">Please Enter the URL</label>
            <br><br>
            <input type="url" name="act_url" id="act_url" placeholder="Enter
Your URL" size="50">
            <br><br>
            <input type="submit" value="Short URL" class="btn btn-primary">
        </form>
        <br>
        {% if short_url_print %}
        <hr>
        <h5>Your Short URL is : </h5>
        <br>
        <p style="background-color: aqua"
id="shortUrl">http://127.0.0.1:5000/{{short_url_print}}</p>
        <button class="btn btn-warning"
onclick="copyFunction('#shortUrl')">Copy URL</button>
        </div>

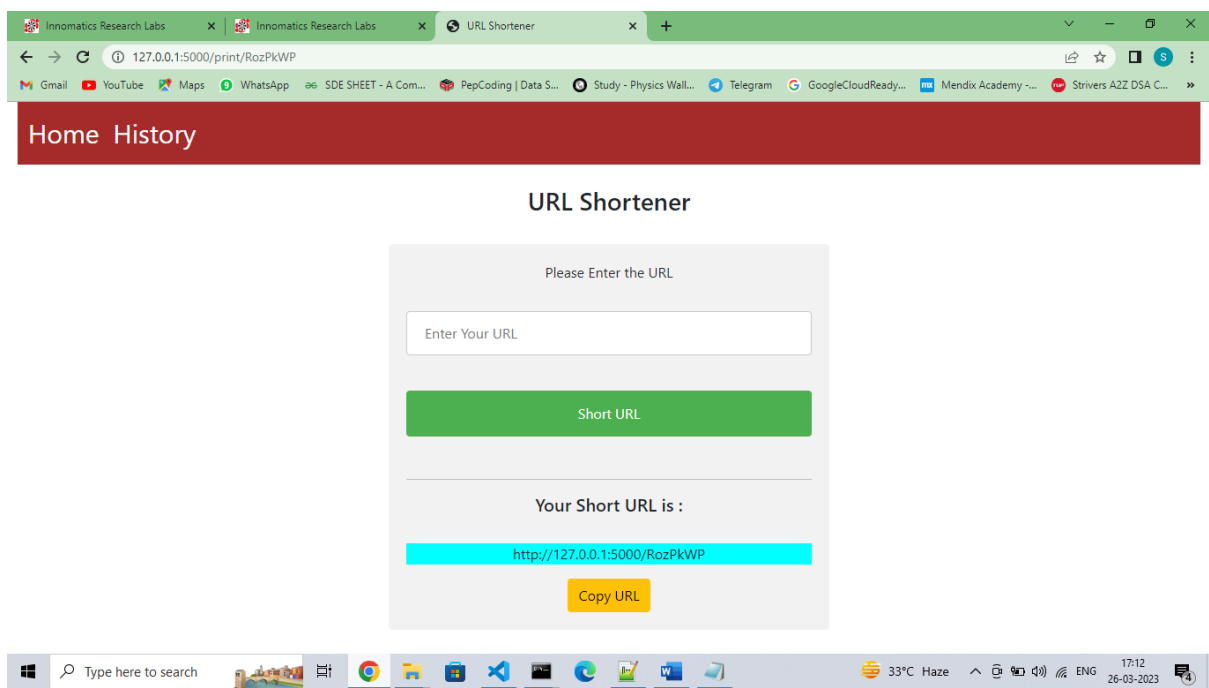
        {% endif %}
    </center>
{% endblock %}

```

Home Page :



Make Short URL :



History Page :

Innomatics Research Labs x Innomatics Research Labs x URL History x +

127.0.0.1:5000/history

Gmail YouTube Maps WhatsApp SDE SHEET - A Com... PepCoding | Data S... Study - Physics Wall... Telegram GoogleCloudReady... Mendix Academy ... Strivers A2Z DSA C...

Home History

URL History

Your URL List

ID	Original URL	Short URL	Action
1	https://innomatics.edmingle.com/myaccount/#/materials/187700/assignment/56049	http://127.0.0.1:5000/rRjixKQ	Delete
2	http://www.gcettb.ac.in/	http://127.0.0.1:5000/cZbt8G1	Delete
3	http://www.gcettb.ac.in/dfzhzgh	http://127.0.0.1:5000/k6AcZNn	Delete
4	https://innomatics.edmingle.com/myaccount/#/course/66078/lesson/617675?lesson=617675&lesson_type=material§ion=189402&subject=187700	http://127.0.0.1:5000/FtOeC87	Delete
5	https://github.com/	http://127.0.0.1:5000/8WqYjy9	Delete
6	http://youtube.com	http://127.0.0.1:5000/G4kREy6	Delete
7	https://innomatics.edmingle.com/myaccount/#/materials/187700/assignment/56040	http://127.0.0.1:5000/yidvpVr	Delete
8	https://www.youtube.com/	http://127.0.0.1:5000/RozPkWP	Delete

Type here to search 33°C Haze 17:12 26-03-2023