CGPA CALCULATOR

using Python Django

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STREAM: CSBS

SUBJECT: WEB APPLICATION LAB

Starting the Project Folder:

```
django-admin startproject core
cd core
```

To start the app :

```
python manage.py startapp home
```

settings.py

```
INSTALLED_APPS = [
    "django.contrib.admin",
    "django.contrib.auth",
    "django.contrib.contenttypes",
    "django.contrib.sessions",
    "django.contrib.messages",
    "django.contrib.staticfiles",
    "home",
]
```

models.py :

from django.db import models

from django.contrib.auth.models import User

class Subject(models.Model):

    user = models.ForeignKey(User, on_delete=models.SET_NULL, null=True, blank=True)

    name = models.CharField(max_length=255)

    grade = models.CharField(max_length=2, choices=[('S', 'S'), ('A', 'A'), ('B', 'B'), ('C', 'C'), ('D', 'D'), ('F', 'F')])

    credit = models.PositiveIntegerField()

```python
    def __str__(self):
        return f"{self.name} - Grade: {self.grade}, Credit: {self.credit}"
```

views.py :

```python
from django.shortcuts import render, redirect, get_object_or_404

from .models import Subject

from .forms import SubjectForm

from django.http import HttpResponse, JsonResponse, HttpResponseRedirect

from django.contrib import messages

from django.contrib.auth import login, authenticate

from django.contrib.auth.decorators import login_required

from django.contrib.auth.models import User

from django.contrib.auth import logout

# Mapping of letter grades to numeric values

GRADE_POINTS = {'A': 9, 'S': 10, 'B': 8, 'C': 7, 'D': 6, 'F': 0}

@login_required(login_url='/login/')

def cgpa_calculator(request):

    subjects = Subject.objects.all()

    form = SubjectForm()

      if request.method == 'POST':

            form = SubjectForm(request.POST)

            if form.is_valid():

                    form.save()

                    return redirect('cgpa_calculator')

# Calculate CGPA

    total_credits = 0
```

```python
        total_grade_points = 0

        for subject in subjects:
                total_credits += subject.credit
                total_grade_points += subject.credit * GRADE_POINTS.get(subject.grade, 0)

        if total_credits != 0:
                cgpa = total_grade_points / total_credits
        else:
                cgpa = 0

        context = {
                'subjects': subjects,
                'form': form,
                'cgpa': cgpa,
        }

        return render(request, 'index.html', context)
@login_required(login_url='/login/')
def edit_subject(request, subject_id):
        subject = get_object_or_404(Subject, id=subject_id)

        if request.method == 'POST':
                form = SubjectForm(request.POST, instance=subject)
                if form.is_valid():
                        form.save()
```

```python
                return redirect('cgpa_calculator')
        else:
            form = SubjectForm(instance=subject)

        context = {
            'form': form,
            'subject_id': subject_id,
        }

        return render(request, 'edit_subject.html', context)
@login_required(login_url='/login/')
def delete_subject(request, subject_id):
    subject = get_object_or_404(Subject, id=subject_id)
    subject.delete()
    return redirect('cgpa_calculator')
@login_required(login_url='/login/')
def result(request):
    subjects = Subject.objects.all()
    form = SubjectForm()
    if request.method == 'POST':
        form = SubjectForm(request.POST)
        if form.is_valid():
            form.save()
            return redirect('cgpa_calculator')
# Calculate CGPA
    total_credits = 0
```

```python
        total_grade_points = 0

        for subject in subjects:

                total_credits += subject.credit

                total_grade_points += subject.credit *
GRADE_POINTS.get(subject.grade, 0)

        if total_credits != 0:

                cgpa = total_grade_points / total_credits

        else:

                cgpa = 0

        context = {

                'subjects': subjects,

                'form': form,

                'cgpa': cgpa,

        }

        return render(request, 'pdf.html', context)
#login page for user
def login_page(request):

        if request.method == "POST":

                try:

                        username = request.POST.get('username')

                        password = request.POST.get('password')

                        user_obj = User.objects.filter(username=username)

                        if not user_obj.exists():

                                messages.error(request, "Username not found")

                                return redirect('/login/')

                        user_obj = authenticate(username=username,
password=password)
```

```python
                if user_obj:
                    login(request, user_obj)
                    return redirect('receipts')
                messages.error(request, "Wrong Password")
                return redirect('/login/')
            except Exception as e:
                messages.error(request, "Something went wrong")
                return redirect('/register/')
    return render(request, "login.html")
#register page for user
def register_page(request):
    if request.method == "POST":
        try:
            username = request.POST.get('username')
            password = request.POST.get('password')
            user_obj = User.objects.filter(username=username)
            if user_obj.exists():
                messages.error(request, "Username is taken")
                return redirect('/register/')
            user_obj = User.objects.create(username=username)
            user_obj.set_password(password)
            user_obj.save()
            messages.success(request, "Account created")
            return redirect('/login')
        except Exception as e:
            messages.error(request, "Something went wrong")
```

```python
            return redirect('/register')
        return render(request, "register.html")
#logout function
def custom_logout(request):
        logout(request)
        return redirect('login')
```

forms.py :

```python
from django import forms
from .models import Subject


class SubjectForm(forms.ModelForm):
        class Meta:
                model = Subject
                fields = ['name','credit', 'grade']
```

project/urls.py :

```python
from django.contrib import admin
from django.urls import include, path


urlpatterns = [
        path('admin/', admin.site.urls),
        path('', include('home.urls')),
]
```

app/urls.py :

```python
from django.urls import path
from .views import *


urlpatterns = [

        path('', cgpa_calculator, name='cgpa_calculator'),

        path('edit/<int:subject_id>/', edit_subject, name='edit_subject'),

        path('delete/<int:subject_id>/', delete_subject, name='delete_subject'),

        path('result/', result, name='result'),


        path('login/' , login_page, name='login'),

        path('logout/', custom_logout, name="logout"),

        path('register/', register_page, name='register'),



]
```
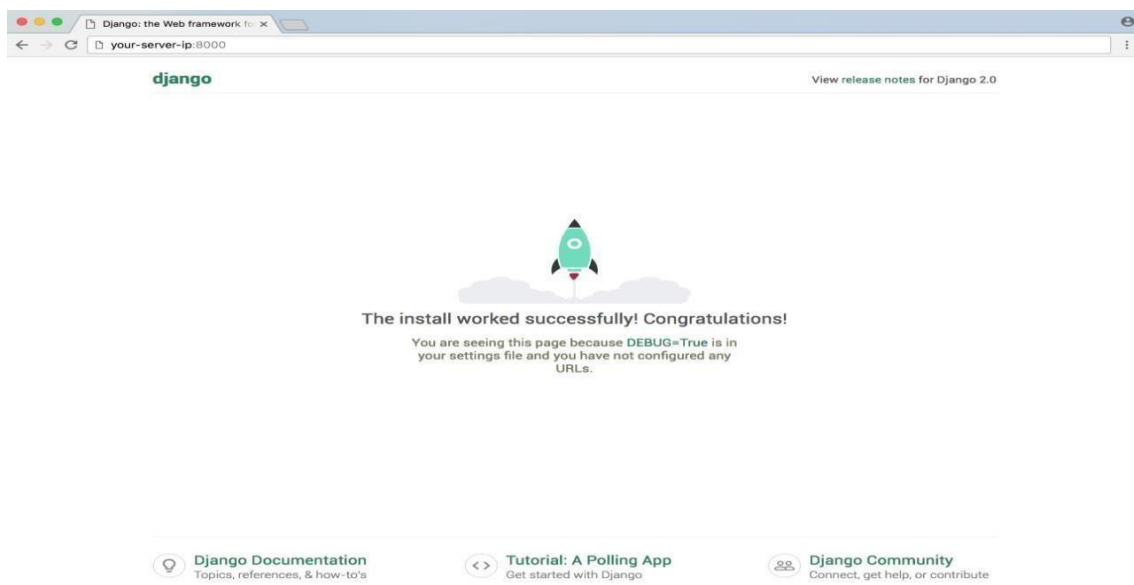
login.html :

```
<!doctype html>

<html lang="en">


<head>

    <!-- Required meta tags -->

    <meta charset="utf-8">

    <meta name="viewport" content="width=device-width, initial-scale=1">

    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet"

        integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLlm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOmLASjC" crossorigin="anonymous">

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.4.0/css/all.min.css">

    <title>CGPA Calculator</title>


</head>
<body>

    <br>
<br>
<br>


    <div class="container mt-4 bg-white col-md-3 card shadow p-3 " id="log">

        <div class="login-form">

            {% if messages %}
```

```
{% for message in messages %}
<div class="alert alert-success {{ message.tags }} mt-4" role="alert">
    {{ message }}
</div>
{% endfor %}
{% endif %}
<form action="" method="post">
    {% csrf_token %}
    <h4 class="text-center" style="font-family: 'Times New Roman', Times, serif;"> Login </h4>
    <div class="form-group">
        <input type="text" class="form-control" name="username" placeholder="Username" required
            style="background-color: #fff; border: 1px solid #ddd; border-radius: 5px; padding: 10px;">
    </div>
    <div class="form-group mt-2">
        <input type="password" class="form-control" name="password" placeholder="Password" required
            style="background-color: #fff; border: 1px solid #ddd; border-radius: 5px; padding: 10px;">
    </div>
    <div class="form-group mt-2">
        <button class="btn btn-light btn-block" style="margin-left: 138px;border: 0.5px solid black">Login</button>
    </div>
    <br>
```

</form>

                <p class="text-center" style="color: #555;">Create an

                        Account.</p>

            </div>

        </div>

</body>

</html>

register.html :

<!doctype html>

<html lang="en">

<head>

    <!-- Required meta tags -->

    <meta charset="utf-8">

    <meta name="viewport" content="width=device-width, initial-scale=1">

    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet"

        integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLlm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOmLASjC" crossorigin="anonymous">

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.4.0/css/all.min.css">

    <title>CGPA Calculator</title>

```html
</head>

<body>

    <body>

        <br><br><br><br>


        <div class="container mt-4 bg-white mx-auto col-md-3 card shadow p-3">

            <div class="login-form">

                {% if messages %}

                {% for message in messages %}

                <div class="alert alert-success {{ message.tags }}" role="alert" >

                    {{ message }}

                </div>

                {% endfor %}

                {% endif %}

                <form action="" method="post">

                    {% csrf_token %}

                    <h4 class="text-center" style="font-family: 'Times New Roman', Times, serif;"> Register </h4>

                    <div class="form-group">

                        <input type="text" class="form-control" name="username" placeholder="Username" required>

                    </div>

                    <div class="form-group mt-2">

                        <input type="password" class="form-control" name="password" placeholder="Password" required>

                    </div>
```

```html
                    <div class="form-group mt-2">
                        <button class="btn btn-light btn-block"
style="margin-left: 117px;border: 0.5px solid black">Register</button>
                    </div>
                    <br>
                </form>
                <p class="text-center" ><a href="{% url 'login'
%}">Log In </a></p>
            </div>
        </div>


    </body>


</html>
```

index.html :

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
    <title>CGPA Calculator</title>
</head>
<style>
    body {
        font-family: Arial, sans-serif;
```

```css
            margin: 20px;
        }
#calculator {
            max-width: 600px;
            margin: 0 auto;
            padding: 20px;
            border: 1px solid #ccc;
            border-radius: 5px;
        }

        h1{
            color: #333;
            text-align: center;
            font-family: 'Times New Roman', Times, serif;
        }
        form {
            margin-bottom: 20px;
        }
        button {
            padding: 10px;
            color: black;
            border: none;
            font-size: 13px;
            font-weight: bold;
            border-radius: 3px;
            cursor: pointer;
```

```css
        }
        table {
                width: 100%;
                border-collapse: collapse;
                margin-top: 20px;
        }
        th, td {
                border: 1px solid #ddd;
                padding: 10px;
                text-align: left;
        }
        th {
                background-color: #d9dad9d7;
                color: rgb(97, 93, 93);
        }
        #cgpa {
                font-weight: bold;
        }
        a{
                color: black;
        }
</style>
<body>
<div id="calculator">
        <h1 style="color: green;">GeeksforGeeks</h1>
        <h2 style="font-family: 'Times New Roman', Times, serif; text-
align:center;">CGPA Calculator</h2>
```

```html
<br>
<form method="post" action="{% url 'cgpa_calculator' %}">
        {% csrf_token %}
{{form.as_p}}
        <button type="submit">Add Subject</button>
<button> <a href="{% url 'result' %}">Generate Result</a></button>
</form>
<br>
    <table>
        <thead>
        <tr>
                <th>Subject</th>
                <th>Grade</th>
                <th>Credit</th>
                <th>Actions</th>
        </tr>
        </thead>
        <tbody>
        {% for subject in subjects %}
                <tr>
                        <td style="font-family: 'Times New Roman', Times, serif;">{{ subject.name }}</td>
                        <td style="font-family: 'Times New Roman', Times, serif;">{{ subject.grade }}</td>
                        <td style="font-family: 'Times New Roman', Times, serif;">{{ subject.credit }}</td>
                        <td>
```

```html
                    <button><a href="{% url 'edit_subject' subject.id
%}">Edit</a></button>

                    <button><a href="{% url 'delete_subject' subject.id
%}">Delete</a></button>

                </td>

            </tr>

        {% endfor %}

        </tbody>

    </table>

</div>

<br>

<button style="margin-left: 400px;"> <a class="ok" href="{% url 'logout'
%}">Logout </a></button>

</body>

</html>
```

edit_subject.html :

```html
<!DOCTYPE html>

<html lang="en">


<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-
scale=1.0">

    <title>Document</title>

</head>
```

```html
<body>
    <style>
        body {
            font-family: Arial, sans-serif;
            margin: 20px;
        }

        #calculator {
            max-width: 400px;
            margin: 0 auto;
            padding: 20px;
            border: 1px solid #ccc;
            border-radius: 5px;
        }

        h2 {
            font-family: 'Times New Roman', Times, serif;
        }

        button {
            padding: 10px;
            color: black;
            border: none;
            font-size: 13px;
            font-weight: bold;
            border-radius: 3px;
```

```
                cursor: pointer;

            }


            a {

                color: black;

            }

    </style>




    <div id="calculator">

            <br>


            <h2 style="text-align: center;">Edit Subject</h2>

            <br>

            <form method="post" action="{% url 'edit_subject'
subject_id=subject_id %}">

                    {% csrf_token %}

                    {{ form.as_p }}


                    <button type="submit">Save Changes</button>

            </form>

            <br>

            <button><a href="{% url 'cgpa_calculator'
%}">Cancel</a></button>


    </div>
</body>
```

</html>

OUTPUT:

Register

Username

Password

Register

Log In

Login

Username

Password

Login

Create an Account.

CGPA Calculator

Name: [_____]

Credit: [_____]

Grade: [--------- ▾]

Add Subject   **Generate Result**

Subject	Grade	Credit	Actions

Subject	Grade	Credit
Science	S	4
Maths	B	5
English	A	3
Hindi	C	5

CGPA: 8.352941176470589

Generate Receipt